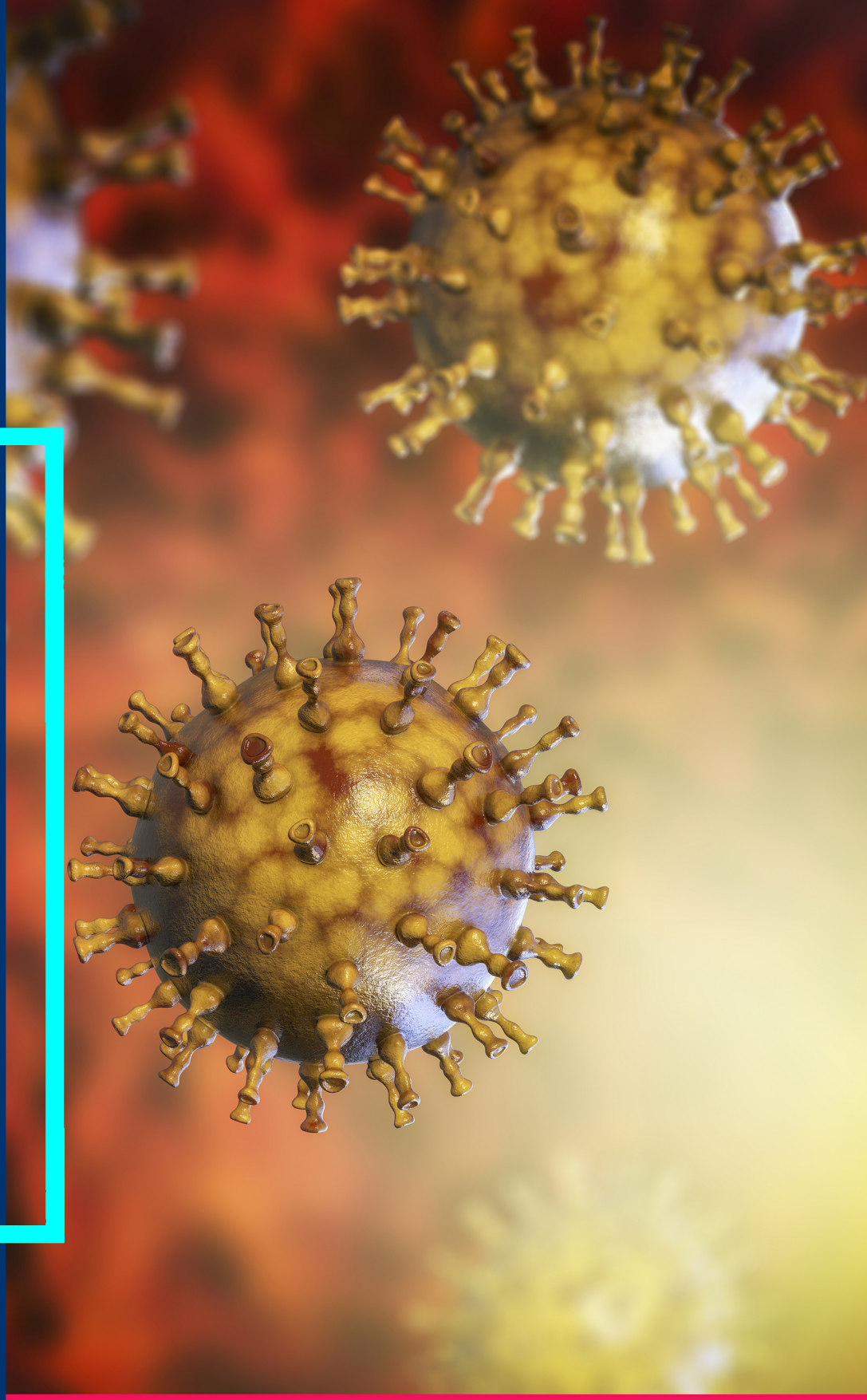
THE SHINGLE SOLUTION



Blue Heron Health News

By: Julissa Clay

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How to Use This Book

Since there is such a wealth of information contained within the pages of this book, it is understandable that not everyone will want to read everything. For this reason, the book is divided into very easy-to-use sections.

'*Part I: Where to Begin*' addresses the basic facts about what shingles is, how it can affect you, what tests are used to get a diagnosis, how it may benefit you and a brief review of how the book aims to tackle the disease.

'*Part II How Our Machinery Works to Produce Either Health or Disease'* describes in detail exactly how your body works in order to stave off a viral infection, particularly in regards to those found in the herpes family. In the same respect, this is also the section that covers how the virus alters our ability to fight it off as well as all the dietary and lifestyle factors that lend it extra power over our biology – factors that we mostly have control over.

'*Part III: Calling in Nature's Cavalry*' encompasses all the tools you have at your disposal to heal yourself and rid your nervous system of shingles once and for all. These include a diet high in lysine, vitamins, minerals, herbal botanicals and unique therapeutic interventions that are all designed to tackle shingles and repair the body after the war is over.

'*Part IV: The Part Where You Win*' is exactly that. This is the part you should go when you want to start the protocol and take matters back into your own hands, giving you the step-by-step plan that this whole book is about!

The appendix section at the back of the book contains useful materials that you will need during the course of the program. They include a pain relief guide, a compendium of the basic recipes used throughout the course of the protocol and a supplements guide which gives you details on the natural supplements you'll be taking. The last appendix is a printable template which you may want to use when working with your food diary.

PART I
Where to Begin

1.1 Introduction

When embarking on a journey, what we think has a highly profound effect on how we arrive at our final destination, especially when it comes down to any goals concerning health. I personally believe that no true healing takes place in the body without a shift in mindset. Naturally, one of the foundational principles in this book will relate to the mind and how one thinks.

Having picked up this book, you probably have at least a basic idea of what Shingles is - that is to say; a type of virus that causes pain in the nerves, rashes on the skin and that comes from chicken pox. This view may be a great place to start if you've never heard of Shingles in your life before; however, if you have been living with the condition or somebody close to you has been, then this view is not particularly helpful and could cause more harm than good.

If you define disease in the context of the negative symptoms that arise as a result and then identify with the concept, the body intelligently responds in kind. This view does nothing to address 1) the true cause of Shingles, 2) that disease is not necessarily a permanent state of being, 3) the relatively negative misconception many have of viruses in general, and 4) that much can be done to tackle the viruses that cause us harm. In a sense, this simplistic idea sets us up with a predetermined mindset of doubt about whether this condition can change or not, placing a limit on our thinking; which is something I personally would like to dispense with throughout the course of this book. Thinking and feeling repeatedly, "I have Shingles" (a.k.a. I am that) cannot be conducive to true healing. If you have a Shingles diagnosis, this is worse because you have the physical sensations of the symptoms that seemingly affirm this view, but I would like to point out that it's still only one side of the story. Shingles is an expression of imbalance in the body and through just a little bit of understanding and effort, one can shift any expression of imbalance to one of balance.

With this in mind, I would like to present to you, the reader, with a broader view of the body that appreciates how it works as a whole. Our bodies are comprised of a complicated series of networks that are capable of self-healing, auto-regeneration and maintaining a healthy micro-ecosystem. By connecting the dots between the immune system, all the bacteria and viruses that inhabit us, our diets, our mindsets and how it all interacts with the environment; we are able to see a much fuller picture and grapple with a truer reflection of how our bodies operate. From this expanded view, one is able to understand that both 'health' and 'disease' are merely transient states of the body, rather than something that is permanently fixed or stuck. Equipped with the right knowledge and tools, we can become the masters of our health and well-being, able to adapt to any challenges presented to us. With that thought, I would say your journey to achieving well-being is already off to a good start!

1.2 A Word on Viruses and the 'Micro-verse' at Large

Shingles is caused by a virus.

Before I discuss what shingles is in more detail, I would like to take a moment to bring your attention to the concept of a virus - what is a virus? A virus is essentially a fragment of genetic material contained within a protein coat; or in other words, strands of DNA or RNA contained within a sealed carrying device. Viruses are capable of infecting cells of a host (plant, animal or bacteria) that are typically much larger than itself through physical contact made with the host. After contact is made, most viruses inject their genetic material into the host cell or bacteria, after which it begins to dominate - which may or may not be a bad thing, as explained below.

Viruses do not appear to be dead or alive, so they are referred to as being infectious agents, rather than living organisms. Very similar to a parasite, computer virus or program, they use host cells to replicate, thereby either adding to or taking over the system. Many viruses use the resources of the cell to replicate or simply insert themselves into the DNA of the host cell, causing the cell to do all the replication work for it when the cell divides. With this insertion into the host DNA, viruses can also change the genotype of the cell, causing the either the cell or bacteria to become infected, pathogenic and/or resistant to antibiotics.

I would like to stress here that not all viruses are bad for us and some may even be necessary to our survival!

In the last few decades, scientists have been thoroughly exploring all the various human microbiomes in niche organs of the body, uncovering a world of friendly bacterial activity that plays a vital role in our immune system, digestion and nutrient absorption. Probiotic bacteria out-number human cells in the body by a ratio of ±10:1 and regulate many bodily functions via the by-products they manufacture. Without our friendly gut bugs, we would not be able to break down food, our immune system's would never be able to keep calm or discern intruders and we would not be able to maintain good overall health[1].

Upon deeper investigation, research has shown that at a deeper level beyond the microbiome, there exists what is known as the human virome. Even though scientists have known of it's presence for a few decades already, they have only managed to unravel ±1% of what they estimate inhabits the human virome. This is due to the sheer volumes of viruses that inhabit us and all our already trillions of bacteria! The virome exists on a smaller scale than the microbiome and forms a part of it, with multiple types of viruses co-habiting our bacterial colonies - both within the gut and all other organ systems of the body. Some of these viruses do good, others appear neutral, some are dormant and others are pathogenic. Our bodies are truly a diverse and highly complex eco-system.

Placing this information into a more Shingles-oriented context, I hope you are beginning to see that there are two sides to the equation: viruses that promote health and viruses that promote disease. Some researchers theorize that we already inherently have every single virus known to

mankind, good or bad, and that we only become overrun by a bad virus when the state of our immune system's shift, allowing for that virus to dominate.

Viruses are also linked with several other diseases, such as Alzheimer's Disease[2] and cancer[3], due to the way in which they alter the immune system and switch our genes. In order to bring the body back into balance from viral imbalance, it is important to switch our genes back into a healthy configuration, get our immune system's to work properly and make sure we are only inhabited by positive gut bacteria and beneficial viruses. This book's protocol is aimed at doing just that, simultaneously working as a preventative measure for all these states of disease and rather promoting a strong state of health. Some viruses have also been linked to both rapid and natural aging; thought to be a major factor in the aging process that depletes our bodies of resources and weakens our immune systems on all fronts. Even why our hair loses color could be potentially linked to pathogenic viral agents and as such, it's possible that this book's protocol may have additional anti-aging benefits that science has yet to uncover!

In the next chapter I will discuss in more detail how the shingles virus is capable of taking over and how our immune system's work (including the microbiome and virome portions) to keep the balance. Improving our immune function and shifting the dominance of positive bacteria and their beneficial viruses is one of the sole aims of this book. The following chapters will detail factors that initiate virus reactivation or that weaken the immune system, natural interventions you can use to empower your immunity and halt the virus in it's tracks, alongside tools such as a simple health program designed with all this information already factored into the formula.

1.3 What is Shingles?

Shingles is the common name for a specific manifestation of the chickenpox virus or varicella zoster virus[4] (VZV). The "pocks", fevers and respiratory symptoms that result upon first time exposure to the virus is what modern medicine classifies as an acute varicella attack or chickenpox. After this initial attack, the varicella virus becomes dormant in the nervous system of anyone who has been exposed. The vast majority of people (more than 90%) have been exposed to chickenpox at some point in their lives and still contain the virus suspended in a latent form in their nervous systems; typically the dorsal root ganglia which are neurons that exit either end of the spinal column[5].

In spite of all having the virus, only ±20-30% of exposed people tend to develop shingles later on in life as a consequence, while the remaining 70-80% still harbor the virus in a dormant state. In susceptible individuals, VZV reactivates as the varicella zoster virus, causing cold sores through viral shedding and typically persistent pain in the nerves.

The virus tends to favor our nerve endings and begins replicating from there when reactivated before spreading to the skin via infecting immune cells that try to protect the neurons at the primary site of VZV reactivation. Most strains of VZV hangout in the dorsal root ganglia, which is the part of our nervous system that extends out of the spinal column, connecting the central nervous system to the peripheral nervous system. In rare cases, herpes zoster can infect and reactivate in the sensory ganglia of the cranial nerve. The infection spreads throughout the body via the nerves, lymphatic system, immune cells and bloodstream until it reaches the surface of the skin. Symptoms (such as nerve pain, fever and fatigue) often present themselves at least 48 hours prior to skin lesions during incubation, shortly after the immune dips and the virus reactivates.

Varicella zoster belongs in the alpha-herpes virus family, which is why both chickenpox and shingles outbreaks resemble cold sores; a common symptom associated with most herpes viruses. Accordingly, other names for VZV are Human Herpesvirus 3 or Herpes Zoster. While the varicella zoster virus is responsible for both chickenpox and shingles, scientists will typically make the distinction by referring to chickenpox as either varicella or varicella virus; while shingles is called by the full name or herpes zoster, even though they are one and the same virus. The word Zoster originates from the Greek word meaning "girdle" or "belt", a reference to where the cold sores commonly manifest in shingles; mainly around the waist, hips, torso and thighs.

The reactivation of latent chickenpox (shingles) is different to the initial acute attack (chickenpox) in that the reactivated form does not express itself in the lungs and is therefore not an airborne disease. A person with shingles is still contagious through physical contact and could potentially transmit an acute attack of chickenpox to a person for the first time. The cold sores present in either chickenpox or shingles contain fragments of the live varicella zoster virus. This being said, the cold sores in chickenpox differ in appearance to herpes zoster; being described as having singular "dew drop" blisters with red swollen skin around the affected area. In contrast, Shingles' cold sores usually have multiple of these blisters in one area.

The way Herpes Zoster viral infection progresses is broken down into three unique stages[6]:

1. **Pre-eruptive stage.** Pain or sensations in the skin and nerves can be felt at least 48hours prior to infection. Fever, fatigue and light sensitivity are common.
2. **Acute eruptive stage.** Typical shingles blisters appear in clusters all over the infected areas of the body, usually near and on the torso and thighs. The blisters often burst before drying out, are accompanied by non-localized pain in the nerves and are infectious to others who have little or no immunity to chickenpox. This stage lasts 2-4 weeks on average, usually with the pain subsiding completely with the rash.
3. **Chronic infection stage.** Pain that lasts longer than 30 days after the blistering rash subsides signals that the person is having a chronic latent infection and suffering nerve damage. The pain is often disabling and could last longer than 12 months.

Shingles has a wide variety unique expressions too, depending on the kind of bacteria it forms viral relationships with. Some cases of Shingles present themselves as other conditions (mimicking them), such as multiple sclerosis, eczema, chemical burns, etc; or become reactivated due to other infections. For example, it is quite common to find antibiotic-resistant forms of Staphylococcus Aureus bacteria at shingles cold sore sites. Nasty strains of Staphylococcus and Streptococcus bacteria appear to be common infections that go hand-in-hand with Shingles.

VZV also writes itself into the genetic code of our bacteria and cells, especially nerve cells, making sure our own bodily systems and allies work to produce and protect the virus. This is actually not limited to the VZ virus but applies to many viruses in general. Viruses appear to plug and play with the genetic coding of all life forms, learning and adapting as they go along. This means that even though we are talking about varicella zoster virus, the way it interacts with the genes of two people will differ and cause further unique strains of the same virus. It's typically the state of our immune system's that gives rise to these variations, as the virus will begin to adapt to whatever challenges it is presented with.

A clear example of this is a subset condition of Shingles known as Herpes Zoster Ophthalmicus; in which the varicella zoster virus reactivates in any part of the nervous system that involves the eyes, contributing extra eye symptoms to the ones already characteristic of the virus[7].

Part of the way viruses work is by keeping the body in a state of low-grade inflammation while they hijack our cells and good bacteria. In this way, Shingles may also be seen as a continuous state of inflammation and chronic immune suppression - especially in the nerve endings, blood and skin. Chronic inflammation and a constantly wired immune system can also give rise to leaky gut: a condition in which the gut is breeched with micro-punctures, immune tolerance is low, the immune system is over-stressed and the gut microbiome is in a state of ill health. All of these factors are crucial components of our frontline immune defenses, which will be discussed in more detail later on in the book.

Other viruses in the alpha-herpes virus family share a few close traits with VZV, particularly herpes simplex virus I. Not surprisingly, those with Shingles may suffer from other herpes virus infections simultaneously, particularly if they have crippled immunity. Examples of viral herpes co-infections include Cytomegalovirus, Epstein-Barr Virus and Herpes Simplex. Therefore, this

book may be beneficial in general for those who are currently fending off other types of herpes viruses.

The logic behind tackling all viruses is generally similar and usually revolves around strengthening immunity; yet many of the same immune mechanisms and remedies that specifically tackle herpes zoster will naturally pertain to several members of the herpes family as well. Keep in mind that there are still differences between all herpes strains and that the basic similarities point to a few joint replication pathways, some overlapping genes, favoring nerve endings (being 'neurotropic' viruses) and producing similar symptoms of chronic inflammation, cold sores and enhanced pain.

1.3.1 Symptoms of Shingles

Shingles has different symptoms that present themselves at different times, depending on the state and stage the virus is in. The most common symptoms are a rash, pain and nerve inflammation, which are discussed below in more detail.

Rash

During latency, the shingles virus expresses a few genes that keep the virus suppressed in a dormant state, also referred to as the lysogenic cycle. The moment the virus expresses or reactivates, switching into it's lytic (destructive) cycle, an acute attack of shingles results, giving rise a few days later to an itchy rash of cold sores or blisters typically seen around the waist, hips, thighs and sometimes the torso. The rash often makes the skin feel very sensitive and any slight touch can feel painful, itchy or both. Often people battle to sleep purely due to the rash.

The individual cold sores are slightly different to chickenpox in that they do not resemble "a dew drop on a rose petal," but have several "droplets" that seem to collect in one spot. Individual clusters of these blisters tend to last about 3-5 days while the entire rash often disappears within 21 days without treatment. However, without proper treatment, Shingles is likely to remain dormant in the nerves and keep recurring when the host's immunity takes a dip.

Nerve Inflammation

Shingles is related to the original herpes simplex virus type 1 (HSV-1) and therefore some of it's symptoms overlap. Varicella zoster virus is capable of hanging out throughout the entire nervous system of the body, including in the brain. It has been shown that herpes viruses in general overburden and confuse the immune system through promoting chronic low-grade inflammation to express in the body, particularly in nerve endings. In the brain, the release of this persistent inflammation can cause neurological symptoms associated with mood disorders, heightened pain, sleep problems, lowered cognition and so on. Many elderly individuals who suffer from Shingles have notably reduced cognition after an episode due to this neuro-inflammation. The research shows that Shingles (or any other pathogenic herpes virus infections) increases the risk of contracting dementia, Alzheimer's Disease and other similar brain disorders in the same fashion.

Pain

Heightened pain in the context of herpes zoster is a common symptom of the disease and is officially called "herpetic neuralgia". The pain can begin two days or more before the rash occurs and lasts for 2-4weeks after the rash has abated. There is a chance that the pain will continue for a prolonged period of time, at which point the pain is referred to as post-herpetic neuralgia and the infection is deemed chronic (see in the next section). The risk is higher with age, in women, in those with previous or existing chronic illnesses, who are on immune suppressive medications and those who are infected in the facial nerves connecting to the eyes (ophthalmic shingles). More details on what causes the pain experienced in shingles are discussed under the complications section (see 'Post-herpetic neuralgia').

Other

Since the nervous system is the dominant site of viral infection and the nervous system connects every organ system of the body, one may experience a boarder spectrum of symptoms from head to toe. The most commonly reported symptoms aside from cold sores and pain are often expressed in the digestive tract (mainly the liver, spleen and intestines but occasionally other digestive organs as well), the lymphatic system, sinuses and kidneys.

A few examples of other classic symptoms of herpes zoster infection include:

- Fever
- Fatigue
- Swollen lymph glands
- Light sensitivity
- Tingling sensations in the nerves
- Headaches
- Irregular bowel movement
- Digestive difficulties
- Trouble sleeping or impaired sleep quality
- Peeing too much or too little

1.3.2 Herpes Zoster Complications

As VZV can infect bacteria, neurons, immune and blood cells, it has the ability to spread to most compartments of the body in those with compromised immune systems. This in turn can give rise to other complications that form usual shingle profiles in people; however, these complications are also what can make diagnosis tricky, as viruses have the tendency to mimic other conditions.

The protocol described later on in this book has taken into account all shingles complications and is able to treat all of them, with uniquely-tailored advice where necessary. For those who have picked up this book and are having difficulty with shingles for the first time, it is likely that complications will not express and that if they do, they will be easily resolved. For those of you who have been battling with chronic shingles reactivation for a long time, it will take longer for the body to re-establish its healthy baseline and repair itself.

1.3.2.1 Post-Herpetic Neuralgia

If you have shingles or know somebody with the condition there is a high chance that they could also contract post-herpetic neuralgia, where the pain does not subside as soon as the rash does. For most with this complication, the pain persists for 30 days, but may last for a year or longer. In some rare cases, the pain may subside and flare up again persistently.

The risk of developing post-herpetic neuralgia increases with age. Those who are between the ages of 55 and 59 stand a 27% chance of developing it, while those over the age of 70 stand a 73% risk on average. The risk is also greatly increased in those who are affected by Shingles in the optic nerve. Interestingly, women appear to have a higher chance of developing post-herpetic neuralgia than men.[8] Scientists believe that this is possibly related to sex hormones[9] and the changes they make to the brain and nervous system through natal growth, puberty and maturation.[10]

COX-2 is part of the cellular mechanism directly involved in creating anxiety[11] and acute pain by over-stimulating pain receptors in neurons[12], particularly as seen in shingles patients. Lesser activation of this mechanism is also responsible for causing itchiness.[13] Pain can also be produced by outright neuronal damage caused by excessive inflammation or calcium influx (typically seen in over-excited or "excitotoxic" neurons). In those who develop severe post-herpetic neuralgia, it is likely that heightened viral brain inflammation will also be observed, alongside an eventual autoimmunity towards pain receptor activation[14] [15]. This vicious cycle of herpes-induced pain, inflammation and autoimmunity is also largely tied into why shingles patients who have chronic infections with constant neuralgia are at an increased risk of developing nerve damage or other chronic diseases. Conversely, autoimmune patients are also at a much higher risk of contracting shingles[16] as the state of an autoimmune immune system is ideal for the virus to thrive.

On a positive note, COX-2 inhibition is known to provide pain relief, prevent pain receptors from being activated and constitutes the basis for how NSAIDs work[17]. AMPK activation inhibits COX-2, as do many herbal botanicals, and both have been linked to markedly lowering pain and injury in those with debilitating nerve damage. As discussed in the chapter to follow, NSAIDs and other painkillers are not ideal for using during a shingles outbreak as they suppress the immune system and contribute to perpetuating viral latency and reactivation in the long-run. Aside from the fundamental focus of the protocol being AMPK regulation, other natural methods have been described in the protocol later on that work better with our biology for pain relief.

The common treatment is the use of painkillers in combination with antiviral therapy and sometimes with the added use of corticosteroids. In the natural remedy section of the book, I will cover a few simple and effective plant extracts that one can use instead of pharmaceuticals. It is important to understand that pharmaceuticals - particularly in these categories - are agents that commonly suppress the immune function, which is not helpful for fighting off Shingles and can lead to creating a chronic infection.

1.3.2.2 Chronic Infection

If post-herpetic neuralgia does not subside after 30 days and persists, then the infection is classified as chronic and has a higher chance of spreading systemically. Chronic shingles reactivation and continuous post-herpetic neuralgia can last indefinitely, but tends to subside after 12 months on average, depending on the state of the immune system of the infected person.

1.3.2.3 Disseminated or Systemic Varicella Zoster Infections

The virus may spread systemically throughout the whole body via the nervous system, blood and lymphatic system, eventually infecting more of the skin and other organs as well. This is potentially the most severe form and can be fatal if left untreated. As any organ can be affected, there can be any number of symptoms due to chronic inflammation and cellular damage. In susceptible individuals, heart attacks, comas, indigestion, metabolic problems and nerve spasms are all possible scenarios.

Other common symptoms of zoster due to the spread of the virus through the bloodstream include:

- Bone mineral loss
- Tooth loss
- Tooth abscesses
- Cavities
- Stiffening of the arteries and joints

While it is more commonly seen in those with chickenpox, it is technically possible for varicella zoster virus to infect the lungs too. However, as shingles, the latent virus is not thought to be contagious through breathing onto others unless they lack immunity to chickenpox or have a severely malfunctioning immune system, such as in the case of HIV patients.

1.3.2.4 Resistant Staphyloccocus Aureus & Other Secondary Infections

As VZV dips the immune, it is known to form relationships with resistant bacteria and other herpes viruses. Sometimes the rash will take on a unique appearance when more than one infection is occurring. Secondary infections can lead to chronic shingles episodes due to immune suppression and continuous immune activation.

Aside from other herpes viruses, one of the most common microbes Herpes Zoster seems to work with is Staphylococcus Aureus. S. Aureus produces redness, swelling and a very itchy rash that can appear anywhere on the skin and eventually develops a yellow crust. S. Aureus spots should never be provoked or scratched as this can lead to severe internal swelling and damage. Thanks to the overuse of antibiotics, many people are exposed to antibiotic-resistant strains of S. Aureus (especially in doctor's rooms or hospitals), making it very difficult to treat in the conventional sense. Resistant S. Aureus is often persistent, recurring in continuous cycles until properly treated and can also be triggered through vector transmission (i.e. through mosquito, flea, tick, spider and animal bites or scratches).

In the case of Shingles, S. Aureus forms a formidable partnership with the virus that results in continuous immune suppression. If the virus reactivates, the immune weakens and can result in S. Aureus infection. The opposite may also occur where the Staphylococcus infection causes a dip in the hosts immunity that leads to the reactivation of varicella zoster.

S. Aureus and other resistant bacteria often evade conventional treatment by cycling between different forms. In the case of resistant staphylococcus, it cycles between being dispersed throughout the bloodstream (planktonic form) and clumping together to form thick colonies or biofilms. Modern therapeutics are not very effective against biofilm activity and mostly hone in on targeting live infections in the dispersed state.[18]

Fortunately, there are a few natural remedies that happen to boost AMPK, tackle pathogenic biofilm formation, persistent S. Aureus infections and a number of other resistant pathogens. I have included these as part of the general protocol to make sure that those who follow it are safe from other opportunistic pathogens while working towards building an optimal immune function.

1.3.2.5 Severe Nerve Damage & Paralysis

Particularly in the elderly and immune-compromised, Shingles can cause paralysis due to continuous nerve damage. Muscle weakness, losing control of one's bladder and breathing problems as a result of the diaphragm being paralyzed are all also possibilities. This is a rare complication that only happens in a very small percentage of people and is often seen in combination with autoimmunity or musculoskeletal conditions. The severity of this complication is not usually extreme enough to cause permanent paralysis or damage and often resolves when the current round of Shingles reactivation ends for those who have these symptoms. Those who have chronic shingles attacks or disseminated VZV stand a higher chance of experiencing nerve damage and paralysis.

The moment you begin to follow the protocol, however, you will already be on your way to helping your body repair any damaged nerve endings. The next section of the book explains how and why.

1.3.2.6 Herpes Zoster Ophthalmicus

This is a condition in which Shingles is active in the optic portion of the trigeminal nerve and often results in swelling and pain around the eyes as well as a rash on the forehead. The rash above and around the eye is typically seen on one side of the face only. The chronic inflammation experienced in the eyes may result in varying degrees of vision loss and debilitating pain. Roughly about 25% of people with Shingles will present symptoms of this complication[19] and it is also one of the easiest shingles diagnoses to mistake for another eye condition entirely.

1.3.2.7 Ramsay-Hunt Syndrome

Some complications of Shingles involve its spread to the nerves of the inner ear and mouth, which can cause additional symptoms such as pain and blistering in the ear, throat and on the

outside of the ear. Dizziness, hearing loss and loss of taste may also occur as a result, all of which is known as Ramsay-Hunt Syndrome. These symptoms tend to appear like a passing ear or throat infection and are not usually associated with long-term damage to the nerves in these areas; however it can increase the risk of full-body dissemination of the virus. Ramsay-Hunt Syndrome can make it difficult to chew food or swallow, making fluids easier to digest for those with this complication. All symptoms are known to subside with the suppression of the shingles virus.[20]

1.3.2.8 Severe Brain Inflammation (Meningoencephalitis)

Severe inflammation of the brain and particularly in the meninges (gland-like tissue surrounding the brain and spinal chord) is common in those who contract herpes viruses or experience reactivation of them. The net effect of swollen and inflamed meninges can vary from headaches to migraines, poor quality of sleep to outright insomnia, nausea to seizures, difficulty with focus to battling with memory recall, dizziness to blurred vision and so on.[21] The reason the meninges become inflamed during a shingles infection is due to the sudden burst of immune activity in the area. Symptoms usually abate with an active infection, yet brain and nerve damage can result after prolonged intensive brain inflammation of this degree has persisted through time.

One of the worst symptoms of this complication is typically interrupted sleep, as during sleep is the only time that the brain and spinal chord can drain their fluids and rid themselves of toxic cellular by-products. In this case, the infection keeps one awake at a time that one urgently needs to rest in order to properly eliminate viral particles and to keep the immune system functioning optimally. Sleep will be discussed in more detail later on in the book.

1.3.2.9 Cancer & Other Chronic Diseases

Many viruses are linked with both increasing the risk and the onset of cancer and a few other chronic lifestyle diseases due to the potential for chronic low-grade inflammation in the bloodstream. Diabetes, Alzheimer's Disease, indigestion, leaky gut, metabolic syndrome, heart disease, liver disease and many more will be made worse in the person who is suffering from chronic shingles reactivation.

VZV is no exception and has been shown to increase the risk of contracting cancer, particularly of the lymphatic system[22]. Conversely, those with cancer had a higher risk of contracting shingles[23] and both conditions are linked to suppressed immunity and chronic low-grade inflammation. Certain proteins that VZV up-regulates in cells tamper with their lifespans[24], causing them to become "immortal" and inhibiting cellular pathways[25] that are associated with the onset of some types of cancer. [26]

Another disease specifically associated with shingles is Alzheimer's Disease[27]. Shingles attempts to deactivate a specific cellular pathway by taking antiviral proteins, fusing them with amyloid beta and causing them to turn into amyloid beta hybrid plaques. These plaques are essentially hardened lumps of protein which eventually cause neurons to capsize and twist into neurofibrillary tangles. Due to impaired immunity and repair mechanisms, these malfunctioning neurons are not eliminated and thus there are gaps in synaptic function resulting in dementia. The

same pathway involved here is regulated by AMPK (refer to the mitochondria section in Part II) and is known to maintain targeted antiviral apoptosis [28].

The good news is that the entire protocol of this book eradicates both shingles and the forms of cancer it is associated with as well as protecting the brain from neurodegenerative diseases. The majority of medicinal plant interventions outlined later on in the book are adept at regulating the lifespan of our cells and creating an internal environment in which tumors are unable to grow.

1.4 Diagnostic Tools: Testing for Varicella-Zoster Virus & Other Viral Herpes Strains

Herpes Zoster is usually easily diagnosed by a physician purely based off the clinical presentation of symptoms. You have very likely picked up this book after receiving your diagnosis already, however you may want to have yourself tested to clarify if you truly have shingles and not another member of the herpes virus family. It is a known fact that as many as 10% on average (possibly more) of the specimens tested in laboratories contain herpes simplex virus and not varicella zoster virus. Furthermore, shingles symptoms can be confused with allergic reactions or combined with them.

1.4.1 Polymerase Chain Reaction Testing

To ensure that the doctor's diagnosis is accurate and also in the case of complications or abnormalities, it is best to get the doctor to send a sample to a laboratory for testing. The most sensitive method scientists currently have for testing if shingles is active is through polymerase chain reaction testing, in which a swab of the infected skin is sent to the lab and checked for VZV. It is a good idea to insist on this type of test and to make sure that you are not actually fighting off a HSV infection instead.[29]

1.4.2 ELIZA

Enzyme-linked immunosorbent assay or ELIZA is a test that sense levels of shingles antibodies in the blood. This method is not as sensitive as PCR and can lead to inaccurate results that contain false negatives[30]. This means that you may have it when it says you don't or you may not have it when it says you do.

However, in some cases of shingles, ELIZA is more useful than PCR as it can potentially detect if shingles has become systemic. In patients who present the VZV rash in an unusual place or who may be suspected of instead having another clinical problem and not herpes zoster, the ELIZA test can help to confirm if the abnormality is indeed related to shingles or not[31].

One thing that ELIZA can help with is showing the status of your immune system and whether it is still on high alert against herpes zoster. In this way, you can get a rough sense of your progress, however it's not a requirement. The results from the test will show the antibodies, which typically begin to die down 3.5 weeks into reactivation as the body resolves the outbreak.

1.4.3 Other

There are no other tests that are worth mentioning in regards to diagnosing shingles. However, even if the diagnosis was confused for a different herpes virus, the protocol in this book also covers treating those with HSV-1 and may possibly also treat other herpes viruses.

1.5 The BRIGHT SIDE of Contracting Shingles

Believe it or not, contracting shingles actually does have a bright side to it!

In patients who suffer from severe chronic diseases that suppress immunity, the ones who contract shingles as a result tend to live longer, in spite of what one might expect. This is due to the fact that the immune system of those who had shingles tends to be better than those who did not have it, particularly in cases where bone marrow is depleted. In those who required bone marrow transplants, shingles sufferers were better equipped at integrating foreign matter from a donor than those who did not contract a shingles flair-up. Last but not least, while shingles can cause the onset of certain cancers, it has the ability to protect the body from other types such as gliomas.[32]

At any point in time that you feel disheartened by the negative aspects of having a shingles infection, I would like to challenge you to remember the positive side: shingles is bound to make you a survivor!

1.6 Can Shingles Truly Be Cured?

Just remember that destructive viruses like varicella zoster are few and far between when compared with the estimated trillions and trillions of positive viruses we have inhabiting us, all forming part of the beautiful complexity that is our immune system! Both sides - our immune system and the herpes zoster virus - are continuously learning from one another and finding new ways to fight back or sabotage the progress of the other side. Every time the virus goes back into latency and no shingles spots are present, your immune system is winning and if one battle can be won, so can the war!

The good news is that resistant strains of bacteria and their viruses can be effectively dealt with using natural remedies that work to boost our overall immunity, as well as helping to target specific organisms. In this book, I will show you how inner biological peace can be achieved. Through knowing what your immune system needs to maintain balance in the body, you can win back your health once and for all!

In order to truly heal from Shingles or any host-destructive virus, we need to:
1) Stop the virus from binding and replicating, halting it in it's tracks.
2) Destroy and eliminate or detoxify virally corrupted cells (including both bacterial and human cells).
3) Switch genes back into a healthy configuration, otherwise the virus will infinitely "reprint" itself genetically every time the cell is copied.
4) Regenerate any damaged areas of the body through boosting mitochondrial function.
5) Maintain a robust immune system which includes a thriving, diverse gut microbiome swarming with friendly bacteria alongside their potentially ***beneficial*** viruses!

In the following part of the book, we will look in more detail at what is currently known to reactivate the varicella zoster virus (which roughly boils down to anything that suppresses immunity); followed by natural remedies that can be used to combat the virus and help you or a family member take their health back into their own hands!

PART II
How Our Machinery Works to Produce Either Health or Disease

Everyone is afraid of contracting a disabling disease without fully understanding the amazing set of protective mechanisms that the body contains, designed to automatically heal and preserve our state of health. Too much focus is placed on disease in society today and not enough is placed on the cure - which, as I am about to reveal to you, lies within your immune system and the way your body operates as a whole. Reclaiming back your health is a very important step to ridding yourself of any chronic ailment and it all begins with your mindset, a dedication to want to change and a willingness to learn about how your body works. The moment you better your understanding of your biology, you will form a much deeper, connected relationship with your body and through the process, you will become the master of your own state of health.

On that note, it's important to consider that the majority of disease is merely an expression of a state of imbalance in the body that is caused by chronic inflammation[33] and not some unseen force to be feared. Inflammation is not the enemy either, however; it is a natural faucet of the immune system and a by-product of our mitochondria (a component found in all our cells). When the body produces too much inflammation on a continuous basis, the way our cells communicate becomes disrupted and many systems begin to work sluggishly, causing a buildup of toxicity which results in more damage. If this nasty cycle of inflammation continues, tissue and organ damage eventually ensue, as the body's repair mechanisms fail to repair the damage and clean up the fallout. There are a number of reasons that can cause the body to become unbalanced in this seemingly self-sabotaging manner, many of which I will address throughout this section of the book.

In the case of Shingles, reactivation is thought to occur due to a dip in the immune system which allows it to then express and dominate[34]. As explained below, the virus tries its best to evade and suppress the immune system[35] and keep our body in a state of chronic low-grade inflammation in order to keep itself running, like a computer virus. The moment the scales have shifted back in favor of our immunity and not in favor of chronic inflammation, the virus is put to rest once again and a state of balance can then be achieved.

Below I have outlined exactly how the immune system works to create both disease and health with respect to Shingles.

2.1 How the Body Protects Itself Against Shingles Through the Immune System

The immune system comprises of a series of complex systems in the body that are designed to keep it running optimally. Many people have a limited idea of the immune system, viewing it in terms of our lymphatic system, white blood cells and thymus gland. However, every single cell in the body contributes to our immunity too and is equipped with an array of brilliant defense mechanisms to help control for any foreign dangers.

Not to mention, most don't realize that the immune system consists of both pro and anti-inflammatory components. Anti-inflammatories are commonly mistaken for immune "suppressing" agents. However, when the anti-inflammatory arm of the immune is not working coherently, the pro-inflammatory part has no choice but to malfunction. As I am about to illustrate in the passages below, we need to boost our immunity to win the battle against Shingles and in the majority of cases, this means boosting both arms of the immune system and not just the inflammatory side.

2.1.1 Innate Immunity

The innate immune system is the part of our immunity that we are born with and constitutes a part of every cell in the body, as well as specific immune cells. It also happens to be the first line of defense that becomes triggered by pathogenic material during an active infection and is made up of many complex mechanisms - all of which work to fuel the adaptive part of our immunity and shape the immune response as a whole.[36]

Our innate immunity consists of innate immune cells, certain intracellular defense mechanisms (e.g. running a fever) and the signals our cells transmit to communicate about a problem and its solution.

Cytokines, Interferons and Other Immune Cell Signals

Upon infection, white blood cells and ordinary cells that form part of the connective tissue near the infected site begin to express cytokines. A cytokine is the name given to any protein compound produced by the immune cells of the body as part of the immune's response to any danger. Essentially, cytokines form the basis for how the immune system communicates to navigate threats. When a certain pattern of cytokines is released in response to a specific threat that the immune has previously encountered, the immune system recognizes the pattern and responds in an appropriate fashion. In this way, immune cells become more intelligent as we live our lives, developing an intricate memory bank of patterns that are elicited by specific cytokines in combination with foreign proteins and other signs of stress due to invasion or damage.

Cytokines consist of interferons, interleukins and growth factors; all of which exert powerful influences on all other cells. Some of our bodily tissue cells can also release cytokines as a way to prime the immune system to danger or to help signal for damage-control and repair. Cytokines

consist of both inflammation promoting compounds and anti-inflammatory compounds and between the two types, they guide (pro-inflammatory) and contain (anti-inflammatory) the immune response.

When cytokine signals go out of control, the perfect mechanisms that would otherwise keep the powerful inflammatory immune response contained begin to get faulty. In this way, the immune system can begin to cause harm to the body's own tissues by getting stuck in loops of inflammation, which is basically another word for cell signals that are made to attack faulty cells. Many bad viruses are capable of toppling the fine balance of signals our cells send out in order to take over, with Shingles being no exception. Many of the symptoms generated by the virus, such as severe pain, are the result of faulty immune signaling provoking an over-reactive inflammatory response. Inflammatory cytokines have been linked to heightened pain, neuralgia, disease severity and nerve damage.[37]

However, I will stress again that neither inflammation nor cytokines are the enemy here and that we also need these inflammatory messengers to alert the fighting force within our immune systems to mount a counter attack against foreign invasion. The trick is to keep the immune system in a stable balance between both of it's anti-inflammatory and pro-inflammatory components. Shingles actively attempts to disable multiple aspects of the immune system, but the moment one takes the initiative to correct those aspects, the virus stands absolutely no chance. The mitochondria are key players in regulating cytokine production and ensuring the immune system mounts an effective (balanced) attack.

One of the main set of cell signals I will be focusing on include interferons, which constitute part of our body's first line of defense against pathogens[38]. Interferon-gamma (IFN-y) in particular is used to target viruses in our cells and stimulates a powerful inflammatory attack by the immune system that has been proven to entirely squash viral infections[39], including VZV[40]. Interferon-gamma is secreted by immune cells, namely T cells and NK cells, as well as through the up-regulation of interferon stimulated genes[41] - all of which in turn enhance the fighting power of these cells[42]. However, as inflammation is critically involved in stimulating both pain and our immune cells; the trick is to also boost the other (anti-inflammatory) branch of the immune system to keep the attack confined to the infected areas of the body and to prevent excessive damage in the process. This can be achieved through supporting the mitochondria which regulate the severity of inflammation, as discussed in the section below.

Other interferons (-alpha and -beta) are also required for the proliferation of immune responses that can help to keep the powerful action of IFN-y in check.[43] These interferons are typically activated and regulated by the mitochondrial AMPK pathway[44] and are required for immune cell proliferation and innate antiviral defense.

Nitric Oxide

Nitric oxide (NO) is a gas that the cells produce as an innate defense mechanism to eradicate viruses and bacteria. We also produce it during exercise where we break a sweat and it is one of the main things being produced by cells when we are running a fever and fighting off infection. When interferons are not doing their job properly, nitric oxide is the primary innate form of

cellular defense that we have; yet it also has an important role to play in guiding an immune attack even when our interferons are functional.[45]

Nitric oxide has additional benefits such as improving neuronal, heart and blood health parameters, which are very useful during and after a shingles infection to avoid serious injury. Furthermore, NO has been shown to have anticancer ability.[46]

There are only two issues with NO production in the case of fighting shingles. The first is that the cell requires a steady supply of arginine to create it, while varicella zoster uses arginine as a means to replicate. However, AMPK (described under mitochondria) is also known to regulate the effect of nitric oxide as well as be required for its production. The moment the AMPK pathway is regulated, the virus cannot use arginine to replicate and our cells can then begin to mount an efficient attack with both interferons and nitric oxide.[47]

The second issue with NO production is that viruses are masters at manipulating it for their own benefit. Research has shown that chronic infection with most viruses, including shingles, perpetuates the release of NO in cells and contributes to the buildup of toxic nitrogen-based gases like ammonia. In this context, excessive NO production can contribute to immune decline and chronic inflammation, perpetuating the infection.[48]

For this reason, the beginning of the protocol is going to revolve around starving the virus of arginine through a lysine-oriented diet, while simultaneously boosting AMPK and the rest of the immune system. Lysine is arginine's counterpart and blocks its activity as well as boosting AMPK and anti-inflammatory cytokines. Even though we are going to up the ratio of lysine to arginine, it’s virtually impossible to not consume arginine as it is ubiquitously found in the majority of foods – nor would you ever want to not consume it as nitric oxide is an important component of our innate immune defenses. When the anti-inflammatory arm of the immune system is functioning optimally, which is what the diet will do, nitric oxide production can take place effectively without causing the immune system to malfunction and help to tackle herpes zoster head on!

Innate Immune Cells

Cells of the innate immune system are continuously on patrol for threats and do not exhibit any working "memory" against foreign invaders (with NK cells being an exception). This is the primary difference between the innate and adaptive immune systems.

Innate immune cells comprise of the following:

- Neutrophils
- Monocytes
- Macrophages
- Dendritic cells
- Natural Killer cells

While all of the above cells are important, I have only honed in on a few of them that are key players in warding off shingles. Nevertheless, the protocol will help to boost the activity of all of them.

Natural Killer Cells

As the name implies, natural killer cells are the 'killers' of our immune system - a part of the primary military force working tirelessly to exterminate any threats, particularly viral ones. It is estimated that natural killer (NK) cells form between 5 and 20% of the white blood cells circulating our bodies at any given time[49]. You can find them residing in the blood, lymph glands and liver, yet they will move to areas where an active viral infection is occurring, such as the neurons in the case of Shingles.

They are also responsible for wiping out infectious cells and help to eliminate viruses from the system entirely, destroying any cells with viral DNA or RNA. Natural killer cell functions overlap with CD8+ T cell functions in this respect, however their mode of detecting viral particles is very different to T cells and therefore a far larger variety of scenarios are covered for between the two types. NK cells contain many surface detecting receptors that respond in situ when faced with a viral infection. Typically, the infected site signals for their proliferation when certain combinations of inflammatory compounds are released.

NK cells are also intimately involved in repairing damaged nerve endings by digesting faulty components, essentially pruning nerve endings to allow for new growth to take place.[50] This dovetails perfectly with the anti-herpes ability of the mitochondria in terms of regulated cell death, renewal and repair (as described in the next section).

Even though natural killer cells technically fall under the innate immune system, they have very recently been found to house a memory that changes in accordance with the different infections they are presented with - an adaptive immune cell characteristic.[51] When faced with a specific inflammatory pattern associated that it recognizes as associated with a pathogen, the memory of natural killer cells are evoked, leading to the generation and spread of more specific NK cells that are capable of responding faster to the specific infection at hand.

In terms of Shingles, there is plenty of research to show that natural killer cells work to control viral replication through the way they release inhibitory compounds such as interferons. Due to the way in which NK cells are vital for removing infected cells, boosting our NK cell count is crucial for fighting off shingles once and for all, making sure that it can never reactivate itself ever again!

However, the virus is also adept at evading the detection of NK cells, as well as impairing their functions.[52] Research has recently shown that the memory of natural killer cells is enhanced through regulating autophagy[53], which is a function of the mitochondria and the AMPK pathway (see below). When NK cells memory functions are working optimally, they will easily identify (or "remember") what type of NK cells are needed for dealing with VZV upon detection of a threat. Through a series of cell signaling events, NK cells that are specifically primed to effectively mount an attack against the virus will be deployed on mass. This response has been

shown to be impaired in those with a suppressed immune system, such as the elderly. However, this is exactly the kind of surveillance the body requires in order to prevent reactivation from occurring.

NK cells also release interferon-gamma, which is an especially powerful immune signal that can effectively eradicate shingles; yet at the same time, if left unattended, IFN-y can cause unprecedented inflammation and ultimately contribute to the progression of several other chronic diseases. However, in the case of those with Shingles, both NK cell function and the secretion of IFN-y is typically impaired[54].

It's important to boost the fighting power of our NK cells as well as moderate their activity during an active infection. The pathway that enhances NK cell memory (AMPK) is the same pathway in the immune system that helps to suppress inflammation, ensuring that immune responses remain coordinated and contained in a way that does not result in long-term damage. This pathway regulates our mitochondria and lifespan, which will be addressed in the following section. Mitochondrial dysfunction is highly implicated in NK cell dysfunction[55], alongside aging and the onset of chronic disease. This is a common pattern seen in VZV-infected immune cells and is due to the deactivation of AMPK, contributing to the cells malfunction through mitochondrial dysfunction. Refer to the mitochondria section for more information.

Natural killer cell functions are also commonly impaired in people who have compromised immune systems, such as the elderly, those with obesity, cancer, other viral infections and other inflammatory chronic diseases; all of which are associated with both shingles and mitochondrial dysfunction. Many pharmaceutical medications will also suppress immune function in multiple ways that can contribute to impairing NK cell function (as discussed in section 2.2).

Dendritic Cells

Dendritic cells are known as 'antigen presenting cells' as they are continuously scanning the body for foreign proteins. The moment they find one, they take it to a relevant wing of the immune system, signaling for B cells to make antibodies and T cells (along with other immune cells) to divide and grow, forming a crucial part of our innate immunity. In the case of Shingles and many herpes viruses, it is observed that most individuals fighting them had impaired dendritic cell ability.[56] During reactivation, dendritic cells infected with the virus are manipulated into sending out signals that prevent them from calling on T cells to proliferate and take charge of the situation.[57] Once again, when the AMPK pathway is supported in dendritic cells, they are capable of functioning properly[58] [59] and contribute toward an efficient defense against VZV.

Macrophages

Macrophages are innate immune cells that literally scan the body for threats to "eat"; digesting corrupted cells and pathogenic matter in order to break them down and allow for elimination. Aside from helping to eradicate viral infections through their unique form of digestion, macrophages are important for several other bodily functions that are applicable to those with Shingles[60]:

- Maintaining stem cell viability and bone marrow health

- Aiding in brain regeneration and development
- Supporting lung health
- Promoting fat burning
- Mediating the formation of scar tissue
- Regulating other immune responses
- Lowering inflammation and damage

One of the most remarkable observations made of macrophages is that they seem to have a larger supply of mitochondria than other immune cells and are capable of passing on some of their extra ones to parts of the body that need them more. This was specifically observed in neurons and the result ended up in resolution of pain due to the increased mitochondria delivered to the area by the macrophage. Extra mitochondria delivered into neurons by macrophages also improve the neurons ability to repair themselves after being damaged[61] and therefore macrophages are crucial in the repair process after shingles, which is known to cause complications with severe nerve tissue damage as a consequence.

In terms of shingles, macrophages are important for both side of our immunity; for both controlling the invasion and repairing the body afterwards. However, as per usual, the virus will try to co-opt macrophages into working for its own advantage in a number of ways[62] [63], largely through up-regulating inflammation and reducing the cell's capacity to function. Once again, AMPK activation through mitochondrial support serves to stabilize macrophage function in the face of a shingles outbreak. It does this by enhancing the macrophage's ability to digest foreign proteins and pathogens[64], as well as through lowering inflammation and mediating the immune response[65].

2.1.2 Mitochondria

Scientists have only recently discovered that the mitochondria are perhaps the most important components of our cells (organelles), alongside the nucleus. Without the mitochondria, none of our cells would have any of the energy they need to function. The mitochondria are essentially little factories that continuously work hard to ensure our cells remain in balance. They process nutrients to generate energy and have their own pool of DNA (separate to the nucleus) that carries out genetic instructions for substances to be produced which guide the immune response, such as immune cell signals, antioxidants and more. Essentially the complex cell signaling pathways governed by the mitochondria are able to modulate inflammation and regulate the majority of our immune's responses, as well as providing the immune system with the literal fighting power that it needs (energy in the form of ATP) in order to overpower any invading pathogen[66].

In spite of the mitochondria's importance, it has only recently come to light in the last decade or so that the mitochondria largely regulate our immunity, lifespans, regeneration capacity and the state of our health in general! The mitochondria in every cell are responsible for controlling the cells lifespan - which literally translates to the lifespan of our body as a whole. Mitochondrial DNA (mtDNA) is capable of inducing programmed cell death (apoptosis), cellular deep-cleaning (autophagy) or the production of protective, life-extending compounds that enhance our

longevity, healing and immunity (antioxidants), such as glutathione. Furthermore, mitochondria are required for both parts of the immune system to function: both the pro-inflammatory fighting force and the anti-inflammatory repair force. All of these functions are crucial to ensuring our immune system is functioning properly and also important for conquering Shingles once and for all!

Mitochondria also act as immune signals in their own right. When mitochondrial contents are found in circulation, they automatically bind to other immune cells, triggering the release of more signaling compounds and setting off an alarm that helps coordinate the immune system to effectively protect the body. In this way, mitochondria are vital for mounting an attack.

It's important to keep the majority of our mitochondria healthy and intact for more reasons than simply fending off shingles. We need healthy mitochondria so that the body can function optimally and live a longer, happier existence. When the mitochondria become dysfunctional, they release chronic low-grade inflammation, which eventually creates auto-immune conditions, other chronic lifestyle illnesses and/or contributes to the aging process. It has been shown that as we age, we collect larger amounts of faulty mitochondria that generate low-grade inflammation and contribute to aging by impairing the body's repair mechanisms. Mitochondrial dysfunction is one of the reasons why elderly individuals are very much more at risk of contracting disease and is also associated with many age-related disorders like dementia and muscle loss[67].

The good news is that preserving mitochondrial function can help to mitigate the effects of aging[68], reverse shingles and promote proper healing in the nerves[69] (as well as in all other tissues of the body). There are many nutritious foods that can help boost mitochondrial function as well as keep the immune system strong - a topic that shall be covered in more depth in part III.

Cell Death

Contrary to what you might think, cell death is a natural function that we need in order to remain in a state of health, as without it, the body would end up accumulating damaged cells. When mitochondria are threatened and their membranes are damaged, they automatically signal for the cell to die off. In fact, there are whole branches of medical research dedicated to looking into the way the body destroys outdated cells and allows for new ones to grow - much like how trees shed their leaves in Autumn to allow for the rise of new shoots in Spring.

Cancer is a good example of a disease in which apoptosis has been disabled in cells, causing them to become "immortal," which is clearly undesirable. Shingles is not surprisingly associated with the onset of cancer and in the same step, tumor-growth has been shown in many cases to begin as a viral infection that modulates cell death (or cancerous immortality), like VZV. If science were to one day discover how we can live immortally, I suspect the secret would likely not be on keeping old cells forever, but rather on how to keep replenishing our cells so that they are constantly fresh, so to speak. If we had any hope of doing that, then we most certainly need our mitochondria intact!

When it comes down to defending ourselves against Shingles, cell death is a very important part of our immunity and required to permanently dispel the virus from the nervous system. Not

surprisingly, Shingles is incredibly adept at modulating cell death[70] (in more ways than one[71]), doing so to its own advantage and at the disadvantage of our mitochondria. In fact, all alpha-herpes viruses have the ability to modulate cell death to suit their needs for replication and protein synthesis from within the host's cells[72] [73].

In the nerve cells that Shingles latently infects, it attempts to encode proteins in the DNA portions that prevent these cells from undergoing apoptosis which also contributes to how the virus survives for many years before reactivating. From there, the virus spreads along to the skin, causing the signature Shingles rash. In infected skin cells, immune cells and other types of cell, the virus manipulates the cell's own signals in order to induce dramatic levels of inflammation, in effect spurring on massive amounts of both pain and cellular damage, as seen commonly seen in Shingles cases. These inflammation cascades eventually cause a broken loop where the immune system stops functioning properly and is unable to mount an effective defense. In immune suppressed individuals, signals may be overactive or suppressed and cause a quicker decline in health alongside further complications of shingles (described in the previous chapter).

In the case of infection (or shingles reactivation) where the immune system becomes aware of the threat, the mitochondria begin to up-regulate the release of inflammation, cytokines and other signaling compounds, acting as a central communication device in every cell that guides the immune response. Healthy mitochondria of infected cells will begin to ruthlessly initiate apoptosis (cell death) by generating large amounts of free radicals (that cause inflammation signal cascades) either in response to mitochondrial membrane damage or stress in other cell organelles, like the ER. When the mitochondria initiate cell death in this regulated manner, it clears up virally infected cells and acts as a further signal to the immune system to focus on the area with an appropriate response.

However, there are other forms of cell death that are not desirable and easily become deregulated by faulty mitochondria. Apoptosis technically refers to a type of cell death that is non-inflammatory, initiated by mitochondria and required for our body to remain healthy and renewed - this is the type of cell death we want to happen on a continuous basis in order to keep our vitality intact.

The other types of cell death that occur tend to generate mass amounts of inflammation. These are commonly incited by pathogens (including Shingles) and include necrosis, pyroptosis and necroptosis.[74] The latter three types tend to occur in the midst of a flare-up when the infection is undergoing its peak and the contents of the cells also act as signals to the rest of the immune system.

In those with chronic Shingles re-activation or chronic post-herpetic neuralgia, the negative types of cell death are known to persist through long periods of time, forming the basis for chronic low-grade inflammation and entirely inhibited repair mechanisms. The virus protects the lifespan of the neurons it latently infects while attempting to trigger cell death in other cells of the skin, blood vessels, immune cells, etc.[75] - almost like a distraction from the real source of the issue to keep the immune system in an over-reactive, under-functional state. In this way, VZV can remain alive for years, keep reactivating in the nervous system and hold the body in a state of chronic low-grade inflammation. Invoking constant (faulty) inflammatory immune activity is the

main way that shingles evades immune detection, which works in favor of its prolonged survival and ability to remain dormant for years. Eventually, all the symptoms from nerve and organ damage to persistent chronic pain can result as a consequence due to not enough cell turnover. Naturally, chronic low-grade inflammation and inflammatory cell death (induced by pathogens) have also been associated with the progression of cancer, Alzheimer's Disease, spinal cord injury, traumatic brain injury, multiple sclerosis, liver damage, kidney disease, sepsis, and cardiovascular disease.[76] Both immune and mitochondrial dysfunction are also associated with all the above and more[77], pointing towards the importance of mitochondrial health in leading a long healthy life!

Should the balance be shifted back toward mitochondrial apoptosis and the immune be kept strong throughout the infection, the body can beat the virus at its own game and conquer the infection once and for all, by appropriately getting rid of faulty virally-imprinted cells. As with all negotiations, you have to work your way through the right channels to get the desired outcome - the logic within our bodies is the same, as everything is governed by the channeled movement of cell signals - which, lest we forget, are powered thanks to the energy output of our mitochondria.

Autophagy

Autophagy is another function of the mitochondria[78] that plays a huge role in our innate immunity. You can think of autophagy as every cell's way of taking out the trash, including faulty cell components. The process involves the generation of a membrane or envelop that swallows the parts of the cell that are faulty, essentially recycling the base building blocks and forming a major part of cellular repair. When the cell is under nutrient starvation, autophagy can also act as a way to generate more nutrients for the cell to use.[79] Autophagy can also initiate regulated apoptosis in the cell, depending on the degree of repair required, or if foreign proteins were discovered inside the cell by its innate sensors. The mitochondria are one of the most important targets for autophagy, requiring adequate renewal to sustain the energy output of the cell. In the elderly and those with compromised immunity, mitophagy (mitochondrial autophagy) has been shown to be impaired time and time again.[80]

In the case of Shingles and many other herpes viruses[81], autophagy (and mitophagy) is employed to the advantage of the virus to ensure continuous replication and avoid apoptosis. The way the virus does this is by creating stress on the ER (Endoplasmic Reticulum) - the ER being another organ inside our cells that deals with protein synthesis. When the ER gets placed under pressure, it swells up and automatically initiates autophagy in order to be cleansed. VZV uses the ER to help replicate itself and its own proteins, which causes the ER to bloat in size and triggers for the cell to initiate autophagy to cleanse the ER. At the last minute, the virus disables autophagy[82], preventing itself from being demolished via either apoptosis or autophagy. In this way, the virus also uses partial autophagy to relieve the stress on the ER and allow for more proteins to be produced.[83] After enough rounds of this, the virus has made many copies of itself inside the cell and causes the cell to burst, releasing cascades of inflammation and perpetuating the infection. In a similar fashion, VZV can also ensure that the neurons it latently infects will remain alive with the virus in hibernation for years. From there, the virus spreads throughout the body during reactivation and wreaks havoc in the nerves, skin, blood and more.

Should autophagy be allowed to carry through to completion, the virus would be destroyed (xenophagy) and the cells would be repaired. Thankfully, the mitochondrial AMPK pathway has the ability to entirely regulate both apoptosis and autophagy, stimulate the regenerative powers of the immune system, lower pain and prevent the reactivation of shingles once and for all!

Victory with the AMPK pathway

As I explained above, to tackle shingles, we need the anti-inflammatory part of our immune system online as well as the fighting force. AMPK (AMP-activated protein kinase) is an energy sensing molecule which regulates mitochondrial metabolism and energy production. There are many pathways within the mitochondria which are governed by AMPK activation[84], including energy homeostasis within the cell, apoptosis, autophagy, tissue regeneration, moderating inflammatory immune responses[85], as well as making the immune response swifter by boosting immune cell memory. AMPK can be viewed as a bridge between innate and adaptive immunity[86] - a bridge that needs to be repaired in those with suppressed immune systems as seen in herpes virus infections!

When activated, AMPK manages to keep the immune response contained and focused without causing excessive inflammation[87]. It also helps the immune system to quickly resolve any inflammatory responses; the same responses responsible for the heightened pain felt in a shingles infection. Furthermore, AMPK stimulates the regeneration of nerves and all other tissues through maintaining a healthy cell turnover.

In the case of Shingles, AMPK activation has been shown to be a potent inhibitor of viral replication. Aside from the anti-shingles activity of boosting immunity, regulating cell life and detox, AMPK also up-regulates the mitochondrial burning of fats for more energy and halts the cellular production of fats via inhibiting FAS (Fatty Acid Synthase)[88]. This adds an extra dimension to the way that AMPK inhibits viral replication as shingles has been shown to use lipids or fats in the body to infiltrate and infect new cells. Research reveals that inhibiting fat synthesis in the cells did not fully put an end to the latent infection but did stop viral replication of proteins[89]. However, AMPK also inhibits viral protein production in the cell and cholesterol synthesis, covering the equation from all angles. This effect also extends to other herpesvirus family infections such as Epstein-Barr.[90] FAS inhibition can also prevent the growth and spread of tumors.[91]

Due to the fact that AMPK is so potent, herpesviruses like human cytomegalovirus[92], and to some extent VZV, have evolved to manipulate AMPK signaling to their advantage in order to replicate in peace. In spite of that, dietary and lifestyle factors can interrupt this viral takeover of the AMPK pathway by activating and regulating it, ensuring that the entire immune system remains stable.

The list of AMPK benefits for those with shingles goes on to include reversing the majority of shingles complications in the following ways:
Regulated AMPK activation promotes...

1. The hosts defenses against staphylococcus aureus, salmonella, acne bacteria, E. Coli, Helicobacter Pylori (responsible for stomach ulcers) and numerous other opportunistic

pathogens that might invade while the immune is down during or after shingles reactivation[93].

2. The turnover of healthy mitochondria and tissue through stimulating repair mechanisms in the body.
3. The inhibition of amyloid-beta plaque formation, either induced via the virus or faulty mitochondria. This means AMPK lowers the risk of Alzheimer's Disease and other dementia-related disorders.
4. Lowered inflammation by moderating the activity of cytokines like interferon-gamma[94]. This in turn prevents extreme brain inflammation, nerve damage, paralysis, chronic pain[95] and more.
5. Apoptosis in several types of tumors and dramatically decreases the risk of getting cancer.
6. A balanced cholesterol profile alongside a decreased risk of obesity, gut issues and metabolic syndromes.
7. Regulating skeletal muscle[96]; i.e. promoting fat burning, proper muscle mass and preventing muscle wasting or weight gain.
8. Proper energy metabolism in all cells, leading to additional energy for repair and regeneration. AMPK activation lowers fatigue in those with chronic fatigue syndrome.[97] [98]

Targeting AMPK is the perfect solution to ensuring shingles never reactivates again and that is largely what this book is all about. As a bonus, the protocol will also have additional AMPK-related benefits for longevity and anti-aging, particularly where well-being, dementia and immunity are concerned!

I would also like to point out that while the protocol will be focusing on boosting both arms of the immune system with a particular emphasis on AMPK activation; excessive (unregulated) activation of this pathway is not optimal and can cause imbalances in the body. For example, chronic AMPK activation can prevent the growth and spread of many types of cells, including stem cells[99]. Furthermore, excessive AMPK activation is known to induce heightened levels of free radical release, which also results in impaired mitochondrial function. The trick is to keep AMPK regulated (neither over- nor under- functioning) so that the mitochondria and immune system can remain in balance. During an acute attack of Shingles, a focus on AMPK activation is required to inhibit the virus and repair the cells, which will largely be carried out through supplements and shifting the lysine to arginine dietary ratio in this book's protocol. Once the acute viral attack is over and the viral load has been eliminated properly, the protocol will shift into a more balanced amino acid ratio that focuses on strengthening overall immunity and longevity.

Sirtuin Proteins

Sirtuins are a group of proteins that regulate DNA repair, faulty or viral gene inhibition and mitochondrial function. Out of the seven of these proteins, SIRT1 is exactly the one we need to activate the AMPK pathway and keep the mitochondria stable[100]. The mitochondria are responsible for handling SIRT3, SIRT4 and SIRT5 and the other proteins (2,6 and 7) are managed by other areas from within the cell. SIRT6 has been associated with inducing COX-2

production[101], a protein that is commonly associated with chronic pain and injury in the nerves, as seen in VZV and herpetic neuralgia. SIRT1 inhibits COX-2 expression via stimulating AMPK[102] and in a similar manner, the protein indirectly regulates the functions of all the other sirtuins in its family.

SIRT1's benefits go beyond the fact that it boosts AMPK and regulates our immunity. It has been shown that SIRT1 can act as an inhibitor of viral replication on its own accord, clamping down on foreign DNA or RNA[103]. HSV-1 attempts to control SIRT1 to its own advantage as one mechanism that it controls autophagy and apoptosis in the cell, suggesting that shingles may do so as well. However, there are many nutrients that are known to stimulate AMPK activation and regulate its function completely - like resveratrol - effectively preventing viral control of the AMPK pathway and bringing the cell back into balance.

Even though SIRT1 regulates the mitochondria, we need the mitochondria to have stores of NAD+ available to promote more SIRT1. NAD+ was shown to promote SIRT1 and AMPK activation as well as promoting the regeneration of aged stem cells via autophagy induction[104], revealing that both are required for optimal regeneration of the nervous system as well as for reversing shingles. I have included NAD+ and other mitochondrial cofactor supplements in the protocol as well as foods that promote it in the diet.

2.1.3 Adaptive Immunity

The adaptive immune system forms another branch of our immunity and as the name suggests, it's main function is to constantly adapt to new threats real-time and create better strategies to deal with foreign materials that enter the body. Usually adaptive immune responses kick-in after the innate immune system has identified the threat.

The adaptive immune system can be viewed almost like a memory bank of all the infections we've ever contracted and how the body dealt with those infections too. Each time the body wages war with a pathogen, the adaptive immune system stimulates the production of appropriate immune cells that are perfectly equipped to fight the infection. In this way, a specific targeted approach is carried out by the body against foreign invaders, with shingles being no exception.

Antibodies

Antibodies are proteins that are secreted by B cells (described below) in response to a foreign protein, referred to as an antigen (antibody generator)[105]. Antibodies can be viewed like the antidote to a poison. When antibodies come into contact with pathogens and their toxins, they bind to them and render them chemically inert, unable to bind to cells or produce harm. This allows for the immune system to break them down and excrete them from the body.

When our immune systems are exposed to antigens for the first time, a number of antibodies are released in an attempt to find a best match for the current threat. After each trial, revisions are made and new antibodies are released until a perfect match is found. Every time the same threat

emerges for the immune system to deal with, it is (in theory) able to mount a swifter defense with a memory of what worked previously for the same pathogen.

Those who get shingles typically display a good antibody generation response, however in those who are aged, this response may be impaired[106]. Shingles is also classically known to thwart the presentation of antigens to the appropriate B cells that make antibodies, cleverly slowing down the process at the beginning of the infection. In order to keep antibodies and B cells strong, it's important to pay attention to the health of our bones (especially bone marrow) and the thymus gland (as discussed later on).

Adaptive Immune Cells

The main immune cells involved in the adaptive immune system are B and T lymphocytes (white blood cells). When infected cells let off specific inflammation compounds, they signal for the adaptive immune system to generate a host of mature B and T cells that are primed to take out the infection.

T Lymphocytes

T lymphocytes (T cells) are white blood cells (lymphocytes) that mature in the thymus gland in response to an invasion. There are several types of T cells, each with unique functions, however the most important ones for the sake of combating shingles include CD8+ and CD4+ T cells.

Both of these cells, like NK cells, are designed to storm a site of infection and take down any foreign intruders. Amazingly these cells have the ability to sense pathogens inside other cells and take actions to either destroy the infected cell or support the infected cell. Another similarity between NK cells and these T cells is that AMPK and healthy mitochondria[107] are required to regulate their action and promote their proliferation. These specific types of T cells are primed to remember how to respond to an invasion and AMPK has also been shown to enhance their memory and swiftness of action.[108] T cells also release anti-inflammatory compounds and can differentiate into helper T cells, which are largely involved in containing inflammation to one area and speeding its resolution. CD4+ T cells have been shown to release IL-2, which is known to help all other immune cells proliferate, lower inflammation and even act as an effective inhibitor of postherpetic neuralgia and pain.[109]

Lysine and leucine are two supplements I have included in the protocol that are known to dramatically enhance both AMPK signaling as well as boost the proliferation of T cells by bolstering the cell signal IL-10.[110] It is interesting to note here that Lysine's amino acid counterpart also induces the induction of IL-10, however it comes with the unwanted expression of TNF-alpha and IL-4, which have beneficial functions in the body but are both equally associated with chronic pain and tumor growth in the long-run. Considering both chronic pain and cancer lie within the realm of Shingles complications, I have tailored the protocol towards increasing the amount of lysine in proportion to arginine in the anti-herpesvirus diet, so that your immune system tackles the virus in the least painful way possible!

B Lymphocytes

As explained above, B cells are known for adapting to foreign threats by producing streams of antibodies to contain the virus and are produced in the bone marrow via stem cells. It is observed that those who have compromised immunity or who are aged display malfunctioning B cells. Dysfunctional B cells in these populations are shown to stop producing as many antibodies and instead contribute to heightened levels of bodily inflammation. AMPK is known to regulate the pathway that has been shown to breakdown in our B cells as we age, adding to the already endless list of mitochondrial AMPK benefits.

Aside from supporting AMPK and the mitochondria, ensuring one looks after the bones, blood, bone marrow and the thymus gland is important to ensure optimal B cell growth and function.

Thymus Gland

The thymus gland is responsible for producing T lymphocytes and ensuring they mature properly[111]. The moment we are born, the thymus gland begins to deteriorate at a slow pace, shrinking over time and eventually becoming faulty during old-age. This is a process known as thymic involution. Naturally, mitochondrial dysfunction, oxidative stress and inflammation have been shown to speed up this process. As you might imagine, thymic involution lowers the ability of the elderly immune system to respond to infections swiftly and is closely linked to the aging process. This is another reason why elderly persons are more susceptible to infections and why it's important for us to boost the function of the thymus gland in order to put an end to VZV reactivation. Some scientists will go as far to say that the thymus is the pacemaker of our lifespans[112], however research into mitochondria have since challenged this view in regards to the state of our immunity.

In the aged thymus gland, less new T cells are produced, making it more difficult for the immune system to mount an attack against new threats that are not in its memory banks. However, for the loss of new T cell production, the immune system of the elderly compromises with T cells that have already matured with robust memories, capable of efficiently dealing with known complications.[113]

In spite of this being the classical view, research has revealed that the thymus gland is capable of being regenerated and goes through subtle fluctuations in both shrinking and growing at different stages of our development. The regulation of both thymic and skin cell genes is carried out by a set of proteins known as Forkhead Proteins. A specific forkhead protein known as FOXN-1 has been shown to induce the regeneration of the thymus gland[114] and a decrease in this protein is observed in the aged thymus[115]. This protein happens to be regulated genetically by our mitochondria[116] and therefore, renewing the mitochondria via promoting mitophagy and regeneration also helps to protect and repair the thymus gland. Boosting mitochondrial antioxidants such as catalase[117] and glutathione are also paramount to slowing the process of thymic involution and improving our overall immunity. AMPK activation has also been shown to protect thymus cells[118] as well as boost the production of FOX family proteins like FOXN-1.[119]

While it’s hardly ever mentioned, it’s important to note that the thymus also plays a major role in regulating hormones in the body, secreting master hormones such as melatonin and working closely with the thyroid, hypothalamus and pineal glands to achieve balance. Specific hormones secreted by the thymus (like thymulin) have also been shown to prevent virally-induced brain damage, lower nerve inflammation and even decrease pain[120]; suggesting a further role for thymic decline and susceptibility to infections like shingles in the aged individual.

This book's anti-Shingles protocol has integrated foods, supplements and activities that help to enhance thymic function, as discussed later on.

2.1.4 The Gut Microbiome & Virome

When looking at the world under a microscope, it becomes increasingly more evident that life cannot truly be divorced from microbes - they're literally everywhere, covering every surface on the planet and are thought by some to be the original life-forms. In theory, researchers speculate that our bodies themselves are just a collection of micro-organisms that have evolved over time; some of which evolved into being the cells of the human body, while others evolved to co-habit freely inside of us. Whether the theory is true or not, there is a growing body of evidence to suggest that our friendly microbes play just as important a role in our health and biological functioning as our human cells do, forming a uniquely vital part of every organ and system of the body.

The Microbiome is a Vital Part of Our Immunity

The sheer volume of micro-organisms the body harbors is estimated to outnumber human cells by a factor of 1-15:1, depending on who's microbiome you're looking at and whether they harbor a diverse and thriving biodiversity of healthy bacteria or not. This ecosystem of bacteria that we house is known as the microbiome and its inhabitants are referred to as microbiota. Right from birth, most of us are "inoculated" with our mother's microbiota and from that point onward, our innate immunity begins to establish itself properly with the construction of our own microbiome, as we take our first breath into the world. These organisms ultimately inhabit the entire body in every organ, yet the highest concentrations of friendly probiotic bacteria can be found in the gut, particularly in the colon. Furthermore, our microbiome is crucial for the development of our immune system, literally being required for lymphoid tissues and other immune cells to grow and mature properly.

In total contrast to the idea that most of us were raised to believe - that "bacteria are the enemy" - strengthening the microbial diversity in our guts and shifting the balance back to desirable bacteria (in the right ratios) helps to prevent infection. Moreover, the by-products of our good gut bacteria have been shown to act as anti-bacterial[121] and anti-viral agents that lessen the burden on the immune system. This is not surprising when one understands that the microbiome is a critical part of our innate immunity - one that we can easily boost through consuming more probiotic and prebiotic foods in our diet.

The microbiome is the first barrier of defense, even before the immune system becomes aware that there is a threat. For any pathogen that lands on our skin, that we breathe into our mouth or

nose, that we consume in our food; they have to wade through a literal ocean of bacteria and other organisms at the micro level - organisms that live comfortably in, on and around the mucosal surfaces of all our bodily tissues. Most pathogens are not able to make it past this vast array of probiotic bacteria, usually due to finding the micro-environment inhospitable. However, when they manage to invade or cause significant harm, our bacteria have been shown to both fight back and recruit the cells of our immune system to join the battle in containing an infection. Most of our microbiota have evolved to signal to our immune system (both innate and adaptive) about the presence of a threat[122]. Other strains have evolved to take down foreign invaders, either by 1) working like antibodies and neutralizing their harmfulness, 2) expressing antimicrobial compounds that outright obliterate invading organisms or 3) simply digesting them like macrophages and promoting their excretion from the body. Indeed, dysbiosis or an unhealthy ratio of bacteria in the gut is linked with the onset of chronic illness, constant low-grade inflammation, a rise in overall pathogenic protein expression in the body and a severely hampered immunity.[123]

The microbiome affects our immune system in many more ways:

1. Lowering inflammation and pain during immune responses, such as during infection or allergy.
2. Ensuring adequate levels of healthy fats, vitamins and minerals are produced and stored in the right places for immune cells to access.
3. Working alongside the immune system to scan for threats[124] as well as to digest and dispose of unwanted material.
4. Making sure the pH and environment in various tissues is perfect for them at all times (particularly the gut).
5. Taking up resources (space and nutrients) and outcompeting opportunistic pathogens.
6. Regulating our circadian rhythm and the secretion of vital hormones, which helps keep immunity stable.
7. Regulating hormones that create stress, like cortisol, and therefore enhancing the body's ability to adapt under stressful conditions.[125]
8. Improving wound healing, tissue growth, repair[126] and the stimulation of stem cells[127].
9. Offering a pool of additional mitochondria and other building blocks for enhanced energy production.
10. Helping the body to efficiently process toxins including viral toxins and environmental pollution.

Nutrient Absorption is Impossible Without the Microbiome

Beyond the fact that the microbiome is a huge part of our immunity, we also need our friendly microbiota in order to digest food properly, absorb nutrients and to form a barrier that prevents toxins from passing directly through the gut wall. The acids produced by our digestive organs to break food down are not actually effective enough to process our food into the molecular and atomic units that our bodies can absorb.

Parts of the microbiome take all acids and enzymes our bodily cells produce and convert them into secondary (and sometimes even tertiary) substances that are capable of breaking down the food properly at different stages of digestion. Even after these processes have occurred at the top

of the digestive tract, the entire intestinal passage is loaded with gut bacteria that are the experts when it comes down to extracting the maximum from our food; still working tirelessly to break it down into relevant molecules and producing nutrients that the body uses to sustain itself. Furthermore, the way in which the gut microbiota process nutrients often leaves them in an organic form (with the right charge, shape, size and chemistry) that our cells can easily digest, which would otherwise be lacking in an individual with a gut dysbiosis (an imbalanced microbiome). When nutrients are processed by bacteria first before we absorb them, you can think of the food molecules being like perfect keys that dock into the receptors of our cells. However, when the molecules are not digested enough or not in the right form for proper absorption due to a lack of microbial diversity in the gut; the keys will not fit the lock and in fact, display a tendency to cause gut irritation, cellular damage and inflammation.

Healthy gut bacteria are also in fact the biggest generators of absorbable dietary vitamins. In fermented foods, it has been observed that the bioavailability of B vitamins, vitamin K2 and vitamin C were increased sometimes up to tenfold than that of the initial amount present in the unfermented equivalent of the food.

In this way, microbiota can be seen as additional entities to our functioning as a whole. Without our gut bacteria, our digestive organs would not cope with protein digestion and food would start to putrefy instead of ferment; creating a buildup of toxins that overburden the immune system and affect multiple areas of our health. Most people appear to be lacking crucial bacterial strains in their guts, with a tendency to be depleted in lactobacillus and Bifidobacterium strains respectively. Other bacterial species that we need for optimal health include acetobacter (the vinegar family) and actinobacter (bacteria that break down polyphenols, the medicinal chemicals in plants).

The Human Virome as Part of Our Microbiome

Little do people realize that lurking one floor down from bacteria on the microbial scale of the universe also reside an ecosystem of trillions of viruses. Of these viruses, ±5% are pathogenic, while the remaining 95% are either neutral or *beneficial* for our health. Nearly all herpes viruses are native pathogens to the human virome and our immune systems tend to have a memory for how to appropriately deal with each one from a very early age.

The virome plays an active role in the inner workings of the microbiome, capable of moderating the genetic expressions of our bacteria. When we have a thriving microbiome, we also have a thriving virome, rich in an infinite variety of viruses. Scientists estimate that we have barely begun to scratch the surface of the virome, knowing even less than 1% about how it interacts with the microbiome. This is due to the sheer size and complexity of the virome, with the viruses theorized to outnumber our bacteria by a ratio of 10-20:1.

Pathogenic viruses, including herpes viruses, are known to hijack bacteria - both good and bad - and exploit their behavior to suit their replication needs[128]. Often viruses are the culprits behind why certain bacteria, like E. Coli and Staphylococcus Aureus, become resistant to conventional antibiotics[129].

However, just like in the microbiome, if we have a larger diversity of "probiotic" viruses regulating our microbiota, then we stand a better chance of inhibiting the expression of pathogenic viruses. I would like to mention that most foods which are antiviral (toward pathogenic viruses) tend to act as prebiotics or foods that feed our healthy gut bacteria and allow for them to thrive. Research is limited on the effect of diet on the virome, however we know enough to see that what we eat alters the virome just as much as the microbiome. Even though the impact of probiotic and prebiotic foods on the human virome has not been explored at a great depth; the net result of pathogen suppression, immune enhancement and probiotic diversity would suggest that probiotic and prebiotic foods play a vital role in maintaining the health of our beneficial viral populations, as much as they do our friendly bacterial populations[130].

The Microbiome in the Context of Reversing Shingles

In the case of Shingles, the microbiome is absolutely essential in regulating the pro-inflammatory response of the immune system as well as enabling the steady supply of nutrients required to resolve an infection.

Studies have revealed that probiotics increase the growth and functionality of our immune cells, particularly dendritic cells, T cells and natural killer cells.[131] This is not surprising when considering that probiotic strains of bacteria boost types I interferons[132], AMPK[133], lengthen the lifespans of cells[134], promote repair and regulate inflammation.[135] Probiotics administered during an active viral infection have been shown to help boost the levels of both pro- and anti-inflammatory cytokines in a way that promotes the most effective and balanced resolution of the invasion.[136] In those with HSV, a multi-strain lactobacillus probiotic supplement was shown to work more effectively than the standard prescribed anti-herpes medication, acyclovir, avoiding the onset of any side effects[137].

Pain and pain intensity are symptoms that can also be managed through the use of probiotic bacteria. Some of the main by-products of our gut microbiome include the essential short-chain fatty acids butyrate and acetate, which provide us with a major source of dietary fuel aside from glucose.

Butyrate in particular has been linked to an increase in cellular metabolism, mitochondrial energy output and regulating detrimental inflammation cascade pathways in our cells that are linked to heightened pain, as seen in herpetic neuralgia. We also need butyrate in order to repair the lining of the gut and to ensure our cells continue to produce mucin - the substrate for the mucous membrane that houses the bulk of our gut microbiome and separates the dangerously acidic material in the digestive tract from the sensitive cells of the gut. Butyrate has also been shown to modulate the immune system in the gut by suppressing inflammatory immune responses associated with IFN-y and triggering apoptosis in faulty T cells[138], an effect that is highly desirable in a shingles outbreak.

Furthermore, our gut microbiome is intimately linked to our nervous system and brain by what is known as the 'gut-brain axis.' When the gut microbiome is breeched or the immune system becomes overburdened, it causes the lining of the gut to become permeable. This allows for toxins (and everything else) to float into the bloodstream instead of purely healthy probiotic food

by-products that our cells can absorb. Increased bodily toxicity and inflammation persist in this state, with the brain and nervous system being heavily affected. When fighting any infection too (or suffering from a chronic inflammatory illness), the exaggerated inflammation causes the gut to become more permeable. However, in the person with a strong microbiome enriched with a good diversity of health-promoting bacteria, there is less chance that a breech will be possible or if there is, less will move through with the bacteria helping to mediate the negative side effects of toxicity and signaling for the immune system to get involved to protect, conserve and repair.

Probiotic bacteria are necessary for efficient nerve and gut cell repair, offering essential growth factors[139] [140], as well as preserving the growth and lifespan of stem cells[141] [142] and new neurons. In this way, shingles patients need to preserve their gut microbiome in order to lower inflammation and toxicity, as well as to enhance regeneration and vitality.

Maintaining a wide variety of gut bacteria and reversing gut dysbiosis will be one of the aims of the protocol to ensure that your immune system remains stable at all times and can dispose of herpes zoster properly. This is largely achieved through our diet and lifestyle, both of which have an impact on our immune status and microbiome. Our microbiome as whole responds to our environment as much as we do and therefore good sleep, exercise, stress relief, connection and contact with loved ones, adequate nutrition and minimizing contact with toxins helps it to thrive.

Pharmaceutical medications tend to all have antibiotic effects that wipe out our good gut bacteria and promote dysbiosis (alongside multiple other environmental influences), which is another reason that I am adamant that you avoid using them while treating your shingles - they only delay dealing with the root cause of the issue and create hosts of secondary symptoms to worry about! More information will be discussed about what suppresses the immune system, including the gut microbiome, in the following section.

I would like to make a point here that every time we consume a food (with the exception of probiotic foods), we need to have the right gut bacteria to digest that food in order to reap the benefit. The more diversity in the gut, the more benefit we shall receive from our food. This is also why many people who suddenly start to use natural alternatives to pharmaceuticals (e.g. drinking jasmine and green tea instead of using a painkiller) don't experience much benefit up front, as it takes the body time to grow bacteria that can digest these new and highly nutritious foods. Once a few days have passed, the individual starts to feel just how potent natural dietary interventions are as their bodies can suddenly access the medicinal nutrients. It's important to keep this in mind in order to persevere through the protocol. With just a little bit of time, effort and patience, your body will return back to a state of balance.

2.2 Diet & Lifestyle Factors That Incite Virus Reactivation or Suppress Immunity

Our bodies are in constant communication; not just internally between different bodily systems but also externally with the world around us. While the previous chapter has largely been about internal communication between various components of the body to reveal how Shingles creates disease, as well as how the body is able to protect itself; this section is going to cover the environmental component that affects our state of health and contributes to Shingles reactivation.

Up until now, I have been describing the body in terms of cellular signaling pathways and internal communication proteins, but not really in terms of our genes. Genes are complex sets of protein codes that are used to instruct organs of the cell to express other proteins that have their own unique function, like cytokines, hormones, antioxidants, etc. Mitochondria and the nucleus of the cell, whether human or microbial, are the main hubs for genetic activity and cellular instruction. All of the mechanisms that I have described in the previous chapters are not devoid of genetic activity, but are the out-workings of it and therefore can be seen as another way of describing the impact of Shingles on our genes and overall health.

Our genes are continuously being shaped by the environment in which we are in and in this way, our functioning cannot be seen as separate from what goes on in our environment. The effect of the environment on our genes is a relatively new field of study known as epigenetics. While the field of genetics has been expanding to new heights, it keeps becoming increasingly more clear that our idea of how genes are is entirely outdated and the reality is (thankfully) far less limiting. Two discoveries have completely shaken up the old model; with one being the fact that our genes can change their 3D structure in response to our environment and everything we do, resulting in near-unfathomable combinations of unique protein expressions arising in response to every moment. The second discovery in this regard was the interactivity of the body's microbiome and the fact that the majority of the gene-pool that operates in our body is microbial and not even human. One can't truly look at either of these discoveries separately either as our microbiota (plus their genes and unique epigenetic expressions) are a part of how our own cellular genes are informed and respond to the environment at large. It's not important to understand the specific genetic switches that will occur as a result of environmental interactions - what I'm getting at here is that our genes are entirely malleable and responsive to the environment, including our adopted microbial genes and our inherited nuclear and mitochondrial genes.

In other words, the latest understanding of our biology is that we no longer need to be bound to some kind of genetic script that was handed to us at birth; provided we live in a way that is friendly to our unique biological design. As the following chapter is going highlight, what we eat and expose our bodies to has a big effect on our overall health. Certain environmental events, such as staying up all night, eating too many toxins or being exposed to chronic stressors, can have a severe impact on our immunity and trigger viral reactivation.

It's equally important to understand that not all of these events are capable of triggering shingles reactivation in isolation, but that rather it's about the state of the immune system as a whole and how many factors are placing a burden on it for the state it is in at the current time.

For example, two people may wash their hair in shampoo that has an irritant in it, typically known to provoke an immune reaction in sensitive individuals. This may not have any effect on the one who is healthy, under 50 and still has a solidly functioning immune system that can handle it without causing any fuss. In the second person however, who is perhaps over 70 or any age and taking immune-suppressing medications, it may initiate a shingles (chickenpox) reactivation due to the fact that immune system is less capable of dealing with environmental stresses. Now let's say the first person, who is young, relatively healthy and not on pharmaceutical drugs, undergoes a period of intense stress, such as losing their dream job or losing a very close loved one. Hypothetically this level of stress can temporarily cause them to lose their appetite (low nutrition), reduce their levels of natural light exposure (warping circadian rhythm), sleep too much or too little and cause their entire physiology to become unbalanced. All of these factors together are bound to heighten bodily levels of inflammation, which is enough to suppress a good portion of the immune system and incite a reactivation of any virus that lies dormant in the neurons.

The same logic can be applied in the reverse context; if the immune system of the second person was boosted through diet and appropriate lifestyle interventions that helped to lower immune burden, shingles would not be able to reactivate. However, in order to get (back) to that point of prime immunity, we need to pay attention to limiting adverse environmental stressors, described below, and boosting our immunity, described in the next chapter. The majority of environmental factors that initiate shingles reactivation (as discussed below) are known to either directly enable replication of the virus, or suppress our immune's ability to tackle it; with the latter often being required to empower the former to take place.

2.2.1 Diet

Unhealthy dietary factors are often the cause of shingles reactivation and contribute to underlying immune suppression through creating chronic low-grade inflammation and gut dysbiosis. Luckily, these are also the easiest factors that are in our control!

Foods High in Arginine

Arginine is an amino acid that is required by the body for optimal immunity, cell growth, muscle building, heart health and more. Eating foods high in arginine alone is not connected to shingles reactivation in healthy individuals; however, arginine helps the shingles virus to replicate[143] and that translates to provoking reactivation in those who have suppressed immunity. Those who have suppressed immunity with a latent herpes infection, including either VZV or HSV, are known to experience an outbreak after they consume foods high in arginine - particularly if this consumption occurred in connection with stress. Foods that contain high levels of arginine include coffee, peanuts and other nuts, chocolate, grains, legumes and seeds.

Arginine works closely together with Lysine, which is another amino acid that is essential for immune function and regeneration. Lysine is known to suppress VZV and other herpes virus replication and happens to be one of the strongest inducers of the AMPK pathway. Lysine is the first supplement you ought to buy yourself as a shingles patient and upping dietary lysine is the

first step on the way to recovery! Foods high in lysine include most fruits and vegetables, seafood and live-cultured dairy products.

Refer to the protocol section for detailed information on lysine-based supplementation and anti-herpes dietary interventions.

All-Round Nutritional Deficiency

Just like a vehicle cannot function without proper fuel, the immune system will not be able to function without adequate nutrition. Nutritional deficiencies are commonly seen in the elderly and on those who chronically use pharmaceuticals; however, this is also becoming an increasingly common trend in the majority of people due to outdated concepts of nutrition, increased rates of gut dysbiosis and agricultural depletion of nutrients from the food supply chain due to overuse of soil-microbe destroying pesticides.

Not coincidentally, nutritional deficiencies are linked with worsening the onset of just about every disease by causing immune and mitochondrial dysfunction, with shingles[144] being no exception. Nutritional deficiencies are commonly seen in shingles patients, particularly those who go on to contract post-herpetic neuralgia[145].

In general, adequate nutrition is important for immunity and coming off best after a viral infection.[146] Research has revealed that people who eat only one portion of fruit per week had a threefold increased risk of contracting herpes zoster compared to those who ate fruit regularly[147]. The combined nutrients in fruits, including polyphenols, antioxidants, vitamins, minerals, prebiotic fiber and higher lysine to arginine ratios helped to lower the incidence of viral reactivation.

Calcium Overload and Deficiency

It is critical that our immune cells and our neurons maintain proper levels of calcium in the cells to function.[148] Calcium governs many interactions inside our cells that often involve the movement of nutrients in and out of cells. In the neurons, calcium is required for the firing of synapses and when the neuron becomes toxic due to over-stimulation, an overwhelming influx of calcium is responsible for its destruction and the release of inflammation. This excitotoxicity is also intimately involved with heightened levels of pain and an exaggerated perception of pain. It's important to maintain optimal calcium levels and also to keep these levels regulated with adequate amounts of magnesium, vitamin D3 and K2[149].

In spite of just how vital this nutrient is, calcium deficiency is one of the most common nutritional deficits globally and the main reason that many foods are fortified with extra calcium. However, most are not aware that consuming high levels of dietary calcium inhibits its own absorption[150] and that consuming smaller amounts at regular intervals proved to be efficiently absorbed. As a consequence of the modern Western diet, most people consume too much calcium and end up having cells that are deficient in it. The excess calcium of what is absorbed is known to accumulate outside of cells in the bloodstream, increasing the risk of neuronal toxicity, pain and chronic inflammation. If the immune system is suppressed or cell signaling is faulty

resulting in chronic inflammation, these calcium deposits will harden over time and contribute towards worsening pain as well as multiple diseases including arthritis, atherosclerosis, heart disease, osteoporosis and neurodegenerative disorders.

Calcium needs to be consumed in small frequent amounts with at least double the amount of magnesium in order to remain balanced and for it to stay in the bones. The majority of plant-based foods offer a healthy ratio between these two minerals; whereas animal products tend to be too high in both calcium and phosphorus, which exacerbates bone mineral loss. Exercise is also important to keep calcium inside the bones, as are vitamin D3 and K3. The protocol will cover all of these considerations in order to ensure that pain is kept to a minimum, neuronal health is supported and that the immune system can function optimally.

Sugar

Sugar seems to be a common aggravator of herpes viral reactivation in people with poor immunity. Pure sucrose has been shown to deactivate aspects of our immunity such as lowering the levels of antibodies released and impairing innate immune systems.[151]

One ways in which it impairs innate immunity involves plugging up receptors on the surface of cell[152]. These receptors would otherwise either sense sugars in the membranes of pathogens - especially viruses, as DNA and RNA are constituted of complex sugars - and initiate an appropriate immune response, or they would pick up beneficial dietary sugars (oligosaccharides) which exert immune enhancing effects. Instead of either of these outcomes, sugar competes, generating inflammation and preventing true viral detection. Sugar has also been shown to glycate - essentially crystalizing - proteins it comes into contact with inside the cell, effectively deactivating many important cell signals that guide the immunes activity.[153]

It is also known that excessive sugar feeds unwanted organisms, particularly fungi like candida albicans. These organisms produce toxins which only add to generating inflammation and causing the immune system to dip.

Not to mention, a high sugar diet (and/or a high fat diet) that is simultaneously low in essential trace minerals, vitamins, fiber and other revitalizing nutrients is known to induce increased intestinal permeability on a continuous basis. This increased permeability allows for far more bacteria and other organisms from the gut to pass through, which sets off the immune system by activating multiple receptors on the surface of all cells that come into contact with this organismal debris. The inflammation release as a result causes chronic immune activation, gut dysbiosis, impaired nutrient intake and immune suppression; eliciting a catch 22 cycle in which the gut - the immune defense system on the frontlines - is permanently in breech.[154] Furthermore, the toxic by-products that leak into the gut are known to impair the gut-brain axis via interfering with cell signals in the Vagus nerve[155]. A similar pattern can be observed when one is under stress and the end result is generally impaired digestion, which only adds to worsening the severity of the immune breech.

Other research has confirmed that those who consume a diet high in refined sugars or trans fats had heightened levels of inflammation that resulted in an immune malfunction.[156] Excessive

sugar consumption is linked to increasing bodily pain and furthering the progression of many inflammatory diseases, including diabetes, metabolic syndrome, Alzheimer's Disease and cancer.

Refined sugar is far more problematic when compared to natural sweetening alternatives like honey or stevia leaves (not to be confused with the commercial powder extract). Both of these whole food products are loaded with hundreds of medicinal compounds that help to balance the effect of the sugars present in them. The same can be said of fruits, vegetables and other whole plant carbohydrates, which are loaded with plenty of antioxidants and immune enhancing phytochemicals - assuming they are not genetically altered either directly or indirectly due to environmental pollutants. Any form of refined sugar will be removed from your diet while following the protocol and probiotics will also be administered in order to ensure that the gut strengthens and then remains intact as much as possible throughout the healing process.

Fats

Over the last few decades, fats gained a very bad rap for boosting cholesterol levels in the body. Yet, little do people realize, not all fats are bad for our health and in fact, the majority of fats found in nature are healthy for our bodies. Certain fats form an essential part of establishing a healthy immune and nervous system, including omega-3 fatty acids and the fats produced by our good gut bacteria. The ketogenic diet (a diet based off high fat, high protein and low carb intake) has been shown to have beneficial results for those with heightened or chronic neuropathic pain[157]; largely due to the fact that the nervous system requires more fats to regenerate. However, I do not recommend consuming a ketogenic diet, as it is equally as unbalanced as avoiding fats entirely and can result in nutritional deficiencies from not eating enough fruits and vegetables. Consuming excessive amounts of fat is also known to make the gut more permeable and encourage gut dysbiosis. Once the gut microbiome replenishes itself and shifts out of dysbiosis, it will provide your body with much higher levels of fat in balanced ratios that can only be maintained through feeding our good microbiota; who require plenty of water-soluble fiber, a wide variety of nutrients and a few other factors (sunlight, good sleep, no stress) to sustain themselves happily.

In terms of fending off shingles, excessive fat is not useful, particularly fats that promote a rise in bad 'LDL' cholesterol which the virus can use to replicate with or fats that promote excessive bodily inflammation and immune suppression. Fats become a health hazard when they are volatile, rancid, overly oxidized, heavily polluted with toxins or when types of fat are consumed in the wrong ratios for health (or the right ratios for disease, if you will). Bad fats that drive inflammation, pain and immune suppression typically include:

1. Trans-fatty acids or hydrogenated fats (e.g. palm kernel oil, margarine).
2. GMO non-organic fats sprayed with lots of pesticides (e.g. canola, sunflower oil, soy oil).
3. Heated or overly refined fats as opposed to virgin cold-pressed fats.
4. Fats in plastic that leaches toxic compounds into the fats.
5. Commercially homogenized fats that act as a vector for viruses and promote easy viral penetration into cells (e.g. refined dairy products, processed milk).
6. Consuming more omega-6 fatty acids than omega-3 fatty acids, resulting in impaired immunity.

Increasing bad fats during a shingles outbreak defeats the purpose of the protocol in this book which centers around AMPK regulation. When we activate the AMPK pathway in the body, we are stimulating the fat-burning pathway by encouraging our mitochondria to shift energy metabolism from glucose to fats. Through this way, resources are conserved in cells with as much energy being generated as possible into the immune system. The shingles virus is simultaneously starved of cholesterol, proteins and fats, helping to stop viral replication and to initiate apoptosis and cell repair. After the initial viral outbreak, fats will be required to replenish the body and repair any damage to the nerve endings as well as to stimulate new neuronal growth. There are certain fats I have included up front in the program, such as omega-3 fatty acids that promote cholesterol regulation, enhanced immunity as well as AMPK regulation. More will be discussed on the right fats to consume and when in the following chapter.

Salt

Excessive salt consumption - just like with excessive sugar consumption - deregulates the immune function, increases inflammation, decreases anti-inflammatory cytokines and induces gut dysbiosis.[158] Interestingly, the immune system is directly involved in mediating our response to excessive salt intake, playing a role in increasing blood pressure and in aiding sodium reabsorption in the kidneys.[159] Too much sodium on a daily basis leads to heightened inflammation due to chronic immune activation and lowering the diversity of good probiotic bacteria. Excessive salt intake is not known to directly cause shingles reactivation but due to the way it affects immunity, it contributes indirectly.

The type of salt is also important to consider as many refined table salts have additives that impair the elimination of toxins. Natural salts like himalayan pink salt or sea salt are better than refined salts and contain a broader variety of nutrients, yet they also demand the use of an iodine supplement or boosting the iodine content of your diet. Refer to the next chapter for more information on iodine.

Refined Foods

Just about all refined foods contain components that can cause generalized inflammation in the gut and nervous system - two systems that are very closely linked to one another through the gut-brain axis and the microbiome. These inflammation-provoking components typically create the ideal environment for dysbiosis, promoting the growth of pathogenic bacteria and gut inflammation, which ultimately results in leaky gut, chronic low-grade inflammation, immune malfunction and - in those who are susceptible - chronic shingles reactivation. Indeed, the Western diet has been linked to promoting micronutrient deficiencies, increased inflammation, reduced immunity, increased risk of contracting infections, elevated cancer rates, hyper-allergic individuals and hyper-inflammatory auto-immune diseases.[160]

Flavor enhancers like MSG and artificial sweeteners like aspartame (plus many other additives) also have an affinity for increasing neuropathic pain in the body by acting like excitotoxins; causing our neurons to swell and burst with calcium[161]. In this context, junk food literally causes brain cell loss, overall tissue damage and heightened levels of pain.

All foods that have artificial ingredients in them aught to be avoided until the immune system has re-stabilized. This can take a few months after the initial acute outbreak and some - particularly the elderly - may find that they are unable to tolerate any refined foods even after reversing shingles, while others will want to avoid them purely for the sake of conserving overall immunity, maintaining optimal vitality and leading a happier life overall.

GMO Non-Organic Produce

Epidemiological stats show that those who live near pesticide dumping grounds are at a much higher risk for experiencing recurring shingles episodes, as well as outbreaks of other chronic infections[162]. One of the main ingredients used in many pesticides happen to be the toxic by-products of bacteria that are designed to break down even the least biodegradable items in a compost heap. Bacillus thuringiensis is one such bacteria that is harvested for one of it's toxins, known as Bt toxin. Bt toxins are crystals that cause inflammation in the gut, partially inhibit the function of mucosal cells (which will cause gut dysbiosis in the long run due to a mucous shortage), as well as acting on the gut microbiome to induce bacterial septicemia.[163]

Furthermore, Bt toxins are expressed genetically by the cells of GMO crops amongst other foreign proteins. Scientists are not actually sure what the long term effects of ingesting either pesticide-sprayed or GMO foods are and only poorly conducted studies have truly been carried out to assess the risk of toxicity.[164] It has, however, been observed in many short-term animal studies that bt toxins are able to impair immunity, trigger allergic reactions and even cause organs to swell up in size, as well as placing immense burden on the respiratory and nervous systems[165]. Some speculate that the insertion of toxin genes into GMO foods is likely to alter nutritional composition in an unexpected way and give rise to other unanticipated effects; all of which would result in chronic low-grade inflammation[166].

Other pesticides and agricultural practices have been shown to lower the nutritional content of food by destroying the microbial diversity of the soil. Just like in the gut, the soil house trillions of bacteria that are required to enable plants to absorb nutrients, which we eventually consume. Organic non-GMO foods have no unknown potentially toxic side effects, are rich in nutrients and tend to come from an environment that has a healthy microbiome. In this respect, it is important to eat as much non-GMO organic food as possible to preserve your immunity and vitality. One way to improve the quality of GMO foods is to ferment them properly, ensuring that they contain enhanced nutrition, encourage the right bacteria to grow and protect your gut. Good gut bacteria protect us from toxins[167] and help us to process them swiftly, making probiotic foods and nutrient-dense prebiotic foods more important than ever to consume, particularly if you can't easily source organic food.

Inflammatory Lectins

Lectins are complex proteins found in all organisms, including plants, bacteria, viral protein coatings and human cells. In the immune system, antigen presenting cells have lectin receptors that work to detect lectins which are foreign or threatening[168]. When a viral lectin binds to lectin receptors, it triggers the inflammatory immune response and stimulates the proliferation of T

cells and other immune cells. Dietary lectins can also bind to these receptors, inducing either positive or detrimental effects.

In the case of shingles and HSV, dietary lectins that bind to our lectin receptors can actually help to prevent viral adhesion to our immune cells and promote immune tolerance (less inflammation), but only prior to infection and only regarding viral particles that are loosely floating around in the bloodstream[169]. Garlic is one such food that is rich in beneficial dietary lectins which suppress viral infectivity, lower inflammation and promote immune cell function. In spite of this, the reality is that many dietary lectins from plant foods trigger our immune receptors and promote inflammation, whether in the presence of viral activity or not[170], because we are not able to digest them. These lectins are associated with either inducing or promoting the progression of inflammatory diseases, such as IBD and arthritis[171].

From the context of the gut and microbiome, inflammatory lectins are virtually indigestible by human enzymes and require the help of bacteria. Furthermore, the indigestibility of these lectins often causes them to damage the lining of our guts (particularly in those with dysbiosis) and ultimately cause breeches, adding to the inflammation triggered by eating them. During a shingles outbreak or any infection, physiological stress and inflammation tends to cause the gut to become more permeable, allowing for more toxins to filter through to the bloodstream than normal. This naturally aids the success of the virus by placing more of a burden on the immune system, bolstering levels of inflammation and contributing to immunological sabotage.

Indigestible lectins are also able to increase the risk of developing autoimmune conditions. Immune cells produce antibodies toward any foreign lectin that passes into the bloodstream. When these antibodies bind with the lectin, it alerts the immune system and promotes the lectin's degradation and excretion. Unfortunately, the antibodies made for these lectins can also bind with the lectins found on human cells, causing the immune system to neutralize our own tissues too.[172]

Many of the foods that are high in indigestible lectins were traditionally fermented by our ancestors, or (in the case of seeds) left to germinate in order to reduce the lectin content and make these foods far more nutritious for us. The main lectin responsible for an immune meltdown would be gluten, which is actually a name for a collection of more than 28 unique lectin proteins that are all equally indigestible by any of our digestive organs. This is the reason that ancient bread was either sprouted, fermented or both on top of being baked at high temperatures, to degrade these indigestible proteins.

Other lectins that may cause offense include seeds and rinds of plants found in the nightshade family (tomatoes, aubergines), any other non-sprouted seeds and all grains.

It is best to avoid foods that will trigger inflammation until the infection is contained and the immune system is in a more balanced state. The majority of foods that have inflammatory lectins in them also happen to be high in arginine, another reason to avoid them during a shingles flare-up. Refer to the protocol for a list of foods to avoid during this time.

Meat

Many meats are actually very high in lysine and low in arginine, making them seem ideal for an anti-herpes diet. However, studies also revealed that consuming a diet high in animal products - while high in lysine and low in arginine - did not prevent the onset of shingles or make a difference to the outcome; versus consuming high amounts of fruits and taking a lysine supplement which worked very well to control for the infection. While fighting an infection, digestion of proteins can become difficult and this can add to creating inflammation and impaired nutrient absorption - particularly if the person already has digestive complaints.

When the body is under physiological stress, such as during an active infection, digestion is partially inhibited as energy becomes conserved specifically for taking down the invading force and regenerating the body. This is especially true of shingles where debilitating pain adds extra dimensions of anxiety and stress. When digestion is impaired, the body produces lower levels of digestive enzymes and many other functions of digestion become faulty. Furthermore, the dysbiosis and gut permeability increase induced by fighting infection, inflammation and physiological stress also impair digestion, particularly the digestion of complex animal proteins which require a vast array of healthy gut bacteria to process. As seen with inflammatory lectins, pieces of meat that pass into the bloodstream undigested are known to cause heightened levels of inflammation.

Red meat, processed meat[173] (smoked, colored, etc) and meat that comes from animals who were not free range, injected with hormones and antibiotics, and/or GM grain fed are the biggest offenders in terms of contributing to inflammatory diseases[174] [175]. White meat and fish are both associated with little to no risk; with fish generally displaying additional protective benefits due to the omega-3 fatty acids. In spite of little to no risk, a high protein diet has also been linked to states of chronic inflammation and many sources of poultry and fish are contaminated with pollutants such as mercury. This association could also be related to the high fat content in meat, which is almost always consumed in an oxidized state after being cooked.

By contrast, a plant-based diet has been shown to promote a wider array of gut bacteria, which results in enhanced innate immunity, increased nutrition and a better overall defense system.[176] Since it is easier for most people to stave off meat than it is to source meat that will not contribute to creating bodily inflammation or add to an immune burden, I have decided to do away with it in the protocol until after all symptoms have abated.

Allergens

Naturally, any foods that are going to cause you to have an allergic reaction should be avoided as they will only place burden on the immune system and promote prolonged pain. While the gut and immune are extra sensitive during any infection toward foreign proteins, there is a chance that one may be more allergic to foods during a shingles outbreak than at other times. Eating a hypoallergenic diet during an outbreak is one of the best ways to go to speed up the recovery process.

All GMO foods can be regarded as allergenic due to the fact that they tend to contain foreign synthetic proteins in their genetic code that are not easily digestible. Many of the worst GMO food offenders are common allergens, such as peanuts, soy, rice, corn and wheat; and as such, these will be on the list of foods to avoid in the chapters to come.

2.2.2 Lifestyle

The way in which we live says a lot about our state of health and whether our immune systems can handle viral infections with ease or not. Lifestyle factors that have an impact on our immunity are presented below.

A Word On Rehabilitating Your Immunity with Patience

Many of the lifestyle factors below involve the use or abuse of a substance that dramatically alters the way in which the immune system functions, namely alcohol, cigarettes, pharmaceutical drugs and detrimental black market drugs, such as methamphetamines. In reality, all of these substances are addictive (even the pharmaceuticals), deplete our bodily nutrient reserves and suppress the immune system in ways that cause long-term damage and contribute to rapid aging, let alone being absolutely conducive towards shingles or any herpes viral reactivation. Without rehabbing off of pharmaceuticals and street drugs, the protocol outlined later in this book will only help one to control for shingles symptoms, but will never be able to deal with the root cause of the problem, which is immune suppression. Alcoholics and chronic smokers (chain smokers and those who have smoked for more than 20 years) will similarly be unable to properly beat herpes zoster without cutting right down or stopping entirely.

However, one cannot just decide to go "cold turkey" and stop these substances immediately! The withdrawal symptoms can be highly toxic and lead to heightened levels of inflammation that are dangerous, particularly in the person with shingles or any other form of infection-compromised immunity. Please do not attempt to do so in a rush and seek proper assistance from a doctor specializing in functional medicine or a credible naturopath to design a protocol for rehabilitation.

For those who have shingles and need to undergo rehabilitation off an addictive, detrimental substance; the protocol in this book can be applied as a useful tool for dealing with shingles outbreaks as they occur and lessening the severity of symptoms, but will not help abolish viral latency. The virus will only truly disappear after rehab, when the immune system will be able to re-establish itself again and perform efficient viral cleansing.

Immunosuppressant medications

In medicine, the old school of thought was to suppress the immune system - either the inflammatory or anti-inflammatory part - in order to achieve a balance in the body. The research of the last few decades has revealed that suppressing any aspect of the immune system is in fact detrimental and only contributes to the severity of disease in the long-run, in spite of the short-term perceived success of some immune-suppressing drugs. A new paradigm is emerging that

supports the view that both arms of the immune system ought to be promoted for the health of the individual to remain intact.

Unfortunately, the majority of pharmaceutical drugs all interact with our biology in such a way as to stimulate one part of our immunity and suppress others, whether through direct or indirect mechanisms. Connecting factors for enhanced overall immunity, such as nutrition, lifestyle, epigenetics, the mitochondria and the microbiota, are almost entirely ignored by the old school of thought, which still largely governs the pharmaceutical industry today. As a result, pharmaceutical drugs are actually one of the largest underlying contributors to both chronic disease and all-cause mortality, especially in the US. Complications after taking immunosuppressant drugs, (contracting an infection, for example) were between the 4th and 6th most common cause of death in the United States according to a 2009 report[177].

A large variety of pharmaceutical medications are known to suppress the immune system and through multiple unique angles at that. Painkillers, antibiotics, corticosteroids, hormone replacement medications and more are all prone to causing gut inflammation, irritation, dysbiosis[178] and impaired immunity; alongside a list of detrimental side effects that contribute to worsening all forms of disease in general. All of these medications are also generally associated with suppressing immunity; either through direct interactions with the innate and adaptive immune systems or through eradicating our good bacteria. Other pharmaceuticals such as the antidepressant fluoxetine have been shown theoretically to induce nutritional deficiencies by dramatically decreasing the absorption of essential amino acids – especially lysine (through inhibiting leucine), which is central to defeating shingles or any other herpes viral infection![179]

The reason for this is because all pharmaceuticals tend to be concentrates of one chemical in isolation from nature in amounts that are entirely unnatural. When we consume a food, that food carries a very wide variety of compounds in it that all work synergistically together in our bodies and in the right amounts that we have evolved to assimilate. Isolating singular components is not generally a good idea for our biology. Furthermore, synthetically derived components that mimic the natural version tend to be the wrong 3D shape to slot into our cells, which contributes to damaging the cell. If taken on a daily basis, pharmaceuticals can lead to an erosion of the immune system's repair mechanisms; especially in light of the fact that the majority of binders and fillers used in pharmaceutical preparations block the absorption of essential nutrients that enable the immune to function properly. Considering the antibiotic effects of most pharmaceutical drugs, it's hardly surprising that they inhibit the absorption of nutrients from food.

Examples in the context of shingles could include either metformin or cimetidine. Both of these medications are widely prescribed or available over the counter and both have been known to suppress the shingles virus. However, the side effects are far more detrimental in the long-run and often lead to chronic immune suppression or over-activation and chronic disease onset. Metformin is an AMPK activator[180] that has been shown to directly induce nutritional deficiencies[181], gastric side effects, radical drops in blood sugar levels and in some persons, lactic acidosis (which can cause a coma)[182] and micro-bleeds in the brain[183]. The risk for lactic acidosis and micro-bleeds from taking metformin intensifies with old age, organ damage[184], other health conditions and taking it in combination with any other pharmaceutical drug.

Furthermore, metformin blocks the uptake of serotonin into our cells[185], ultimately causing depression by depleting our neurons of our "happy chemical"[186].

Another example of a drug that has shown promising anti-herpes activity but that is not worth the side effects includes cimetidine. Cimetidine can cause mental confusion and heightened blood thinning (an effect that causes bleeding, bruising and poor repair mechanisms), while contributing to the progression of dementia, liver and kidney disease[187]. This drug is also an AMPK inhibitor and therefore, it would help shingles to take over the body in the long-run.[188]

Nutritional supplements are perhaps one exception to this rule, however you have to know exactly what forms and amounts cause the least harm. Since the majority of the elderly and immune-suppressed populations are taking some form of immune suppressing medication and are simultaneously nutritionally deficient in vital nutrients; supplements are required to sort out the imbalance upfront until a healthy baseline has been re-established and you are able to absorb adequate nutrients from your diet to sustain a strong immunity.

Under the supplements section, I have recommended specific forms for each supplement that are known to cause less side effects and be better absorbed. The protocol will also empower you to know what foods act as essential nutritional supplements for everyday health so that you can continue to enhance your immunity and spend the rest of your days aging with grace.

Immunosuppressant Therapies

Just as with immune-suppressing medications, there are many therapies that exist which are known to suppress the immune system and the two often go hand-in-hand. Chemotherapy is one of the most common immune suppressing therapies and has also been previously shown to trigger varicella reactivation in children with leukemia[189].

For shingles patients who develop chronic infections with post-herpetic neuralgia, conventional practitioners may prescribe certain harmful therapies, such as ketamine for pain relief or corticoid therapy to depress the immune response (refer to the section on stress in this chapter). Ketamine has shown promising anti-inflammatory properties and has lowered pain in those with post-herpetic neuralgia[190] [191], partly from causing a dramatic increase in good gut bacteria. However, due to it's nature as an excitotoxin, it tends to cause neurons to burst but creating a sudden rush of calcium into the cell[192].

If you are undergoing any medical therapies with a doctor that suppress your immune system, then it is likely that you will find it difficult to combat shingles properly. However, the protocol in this book will be able to help you better manage your symptoms and improve the immune parameters that are being suppressed by the treatment. I advise that you consult with a naturopath or functional medicine expert who can tailor your treatment plan in a way that supports your immune system.

Alcohol

While many people feel that it is healthy to drink in moderation, there is much evidence to show that alcohol consumption worsens the outcome for those with chronic health problems. In a paper published by the Lancet in 2018[193] entitled *'No level of alcohol consumption improves health'*, the safest level of alcohol consumption was reviewed and the following conclusion was reached:

"*The level of consumption that minimizes an individual's risk is 0 g of ethanol per week, largely driven by the fact that the estimated protective effects for ischemic heart disease and diabetes in women are offset by monotonic associations with cancer.*"

In other words, any alcohol consumption is directly linked to causing cancer. Naturally, as shingles is already associated with the onset of neuronal cancers, alcohol is not going to form part of the solution. Alcohol consumption was not surprisingly found to be associated with an increased risk of shingles reactivation.[194]

In other literature however, it was shown that AMPK activation helps to reverse the progression of alcoholic fatty liver and keep fat production in the body stable. Conversely, alcohol consumption promoted the deactivation of AMPK signaling in the liver, causing fat metabolism to go awry and cholesterol synthesis to increase[195] - two factors known to incite shingles reactivation that are linked to faulty AMPK signaling and mitochondrial dysfunction.

Interestingly, binge drinking excessive amounts of alcohol has been shown to induce excessive AMPK signaling in the heart alongside heightened levels of inflammation and apoptosis[196]. The effects of alcohol appear to be dose-dependent and seem to negatively affect different regions of the body uniquely through destabilizing mitochondrial function.

Smoking

Smoking has a direct deleterious effect on the gut microbiome, blood sugar levels and is known to dramatically chow through bodily reserves of vital nutrients like zinc. Furthermore, smoking tampers with many aspects of innate immunity, such as creating T cell non-responsiveness[197] and contributes to immune suppression. In a large study carried out on more than 12000 Japanese individuals, smoking was shown to be linked to an increased risk of contracting shingles in both men and women over the age of 50.[198] In other epidemiological studies, smoking was also associated with the onset of postherpetic neuralgia and heightened pain experienced during shingles outbreaks.[199]

As the withdrawal from smoking can induce even worse health effects than smoking itself, it is not recommended to stop smoking for this protocol if you already are a smoker. Instead, I recommend cutting down to at least less than 10 per day with the best result being 3 per day. Some people can stop smoking at will without experiencing any negative side effects - if you are one of those people, then you ought to refrain from smoking until your immune system is back online. Additional supplements have been suggested for those who struggle to give up smoking in the protocol.

Substance Abuse

It goes without saying that substance abuse, particularly of methamphetamines and other similarly detrimental street drugs, suppresses the immune system[200] and contributes to an all-cause increase in mortality rates. Chronic infections and many other health problems are commonly experienced by heavy drug abusers. The protocol in this book does not cater to rehabbing those who abuse substances however rehab will be required for those who do and who want to prevent recurring outbreaks of shingles or any other chronic infections the individual may have.

Sedentary Living

Physical activity is central to our biological design as humans, being one of the most fundamental principles for maintaining optimal health, immunity and longevity. It is clear from the science that chronic physical inactivity is linked to the cause of multiple chronic diseases and an increase in all-cause mortality[201]. Many people are not leading very active lifestyles anymore which has detrimental effects on their entire physiology. In times gone by, our grandparents and theirs before them lead very active lifestyles all throughout their lives and on into old age. Nowadays, the trend is that the youth spend far less time outdoors being active and far more time on electronic devices; matching the trend for many elderly individuals in terms of being sedentary. Not surprisingly, the age for chronic disease onset is becoming lower with a link being established between living a sedentary lifestyle from a younger age.[202]

Balanced physical activity on a daily basis keeps our mitochondria functioning at their peak performance and allows for more energy to be generated in the process, which basically translates to improved health on every level as more energy is available to the body as a whole.

In the context of shingles, exercise activates AMPK, burns fat, regulates fat and cholesterol synthesis and lowers immune-suppressing stress hormones in the body; all of which is enough to keep the immune strong and able to prevent shingles from reactivating.

Physical activity was also shown to improve our response to stress, helping the body to bounce back quicker. Participants in a scientific study were asked to undergo a stressful mental task in either sitting or standing positions. All participants experienced the same level of stress whether sitting or standing, however those who were standing recovered much faster from the event than those who were sitting[203].

Sleep and Circadian Rhythm

It is common knowledge that getting enough sleep every night helps to keep one well and many people resort to taking naps to re-energize themselves throughout the day. Scientific observations have only underlined the importance of this commonsense knowledge, revealing that getting good sleep is absolutely essential for not only good health but also for survival as sleep deprivation can be fatal in the long-run. Sleep is the only time that the brain can cleanse itself of toxins, typically alleviating the build-up that accumulates while we are awake throughout the day. The toxins drain via the cerebral spinal fluid in the meninges that surround the brain, before

making its way down the spine and moving the toxins toward an appropriate avenue of excretion. Chronic sleep deprivation, disruption or reduced quality of sleep are all implicated in neurodegenerative disorders, either contributing towards them or being a symptom of them. They also increase stress levels and inflammation in the body as well as suppressing the immune system.

As unexpected as it might seem, the microbiome plays a huge role in regulating our sleep patterns and our sleep patterns also regulate our microbiome. Peptides from the gut microbiome were shown to regulate slow wave sleep, which is the deep sleep we need to fully regenerate, expel toxins from our brains and wake up feeling full of energy.[204] The gut microbiome produces neurotransmitters such as serotonin and melatonin, which are actively involved in regulating our circadian rhythm. Melatonin doesn't just make us feel sleepy but is also a master antioxidant[205], capable of dramatically lowering oxidative stress - partly why we can feel uplifted the morning after a great night's sleep.

Microbiota respond to light (or the absence of it) by modulating our wakefulness, revealing that they have a circadian rhythm of their own which collectively reflects our overall circadian rhythm. The time we go to sleep, the light sources we expose ourselves to and at what times we do so all have impacts on the microbiome which affect our sleep-wake cycle.[206] [207] Sleep deprivation, poor sleep quality or poor sleeping habits can lower immunity by creating dysbiosis in the microbiome. Conversely, dysbiosis and increased bodily inflammation can lead to disrupted sleep.

During an active infection, we feel the need to sleep more to conserve energy and help eliminate toxins. However, when the nerves are infected as seen in herpes viruses, one's quality of sleep can be affected due to heightened levels of brain inflammation and neuronal activity. Studies reveal that through selective dietary interventions, lowering inflammation and reducing pain by blocking pain receptors can improve the quality of sleep while fighting an infection. The protocol includes recommendations for enhancing the quality of disrupted sleep and allowing for deep, restorative sleep to take precedence.

Hygiene

In the context of the microbiome, there is a fine balance between sterilizing oneself continuously to get rid of invading pathogens (whilst wiping out all good bacteria in the skin microbiome); and not washing in order to preserve a healthy microbial diversity that is capable of shielding the body from an invasion[208]. Both too much or too little hygiene can result in suppressed immunity and contribute indirectly to shingles reactivation.

Interestingly, children that grew up with less strict hygienic habits tended to develop a less inflammatory immune profile (with a greater tendency for harboring parasites), while those who had stricter hygiene practices tended to develop a more inflammatory profile. Both will have an impact on the immune system later on in life that will contribute to either an over-reactive (overly inflammatory) or a non-responsive (overly anti-inflammatory) immune system.[209]

In the case of an acute attack of shingles, being strict about hygiene and not touching the cold sores is recommended to prevent easy spread of the virus to other areas of the body.

2.2.3 Environment

The environment around us certainly does far more to shape us and our state of health than we do to shape it. However, through seizing control of certain environmental factors, we can help to decrease the burden on the immune system and conserve energy for elimination and regeneration.

Stress

Stress - whether physical, mental, hormonal, emotional, environmental or anything else you can think of - is the leading underlying cause for shingles reactivation, alongside other herpes viruses too such as HSV-1.

When we are stressed, a number of biochemical changes take place that can impair both immunity and mitochondrial function due to the excessive release of free radicals. The process begins with the brain - once having identified a threat - signaling the release of hormones that eventually cause the production of stress hormones known as glucocorticoids[210], the most famous of which is cortisol. Cortisol and variants of it can bind directly to cell receptors in the mitochondria of all cells in every organ to signal the appropriate response to stress. Mitochondrial DNA is directly responsible for signaling the production of our stress hormones (plus all other steroid hormones) as well as for responding appropriately to external glucocorticoids[211]. Cortisol and other stress hormones have been shown to activate the mitochondrial release of reactive oxygen species (free radicals), inflammation and increased levels of inflammatory cell death. However, corticoids are known to deactivate AMPK[212] and eventually contribute to mitochondrial dysfunction, as well as chronic low-grade inflammation, impaired regeneration and a slow accumulation of cellular damage.

It is interesting to note too that mitochondria are responsible for taking cholesterol and converting it into cortisol and other hormones, like progesterone, estrogen and testosterone. The moment the mitochondria become unbalanced due to stress, cholesterol and fat production tend to increase which favors shingles replication. Once stressed, the virus is able to pass through into many more cells aboard the ever-increasing abundance of cholesterol "rafts," which ferry it into susceptible cells and avoid both autophagy and apoptosis thanks to deactivated AMPK. Furthermore, stress prior to reactivation or chronic stress during chronic herpes infection, both cause immune cells to malfunction (likely due to mitochondrial dysfunction) that would otherwise detect viral reactivation; in turn allowing the virus to successfully begin replicating[213].

Stress is a common feature of life and our bodies are built to deal with short bursts of it; however, chronic stress is linked to the onset of diseases (like recurrent shingles) through mitochondrial dysfunction, consequential immune suppression and chronic inflammation. Inevitably many people encounter stressful situations and fail to manage their stress levels in a constructive way; which becomes increasingly more difficult to manage when there are other factors at play that are causing burden on both the mitochondria and the immune system. A lack

of exercise, sunlight, excessive coffee use[214] and many of the factors highlighted in this chapter that are known to cause immune suppression are also known to lower our ability to tolerate stress.

Naturally, AMPK activation has been shown to stop the excessive cholesterol production and balance the inflammation caused by stress, playing a large role in mediating the stress response. In light of this, many of the dietary guidelines outlined in this book will do a great deal toward lowering the stress response - yet it's up to you to help manage the remaining portion by intervening with your mind. Stress begins in the mind and the nervous system, the exact location of the virus itself. In order to beat this condition, you have to be the master of your mind and persevere through to prevent it from taking charge of your biology. As Shingles is an incredibly painful condition, it can be very difficult for one to manage stress levels by using the mind to intervene on a psychological level. Aside from nutritional interventions, it's important to implement a form of mindfulness, which is essentially bringing mental awareness away from non-constructive stimuli (like pain) and placing it onto constructive stimuli, such as visualizing yourself well, making an effort to see the positives or distracting from the pain with a stress-relieving task that takes your focus off the pain and related stress. Refer to the section on mindfulness in the next chapter.

Radiation

Radiation and all other forms of electromagnetic field interference have an impact on our health that tends to be detrimental. The unseen radio wave frequencies coming off of cellphones, electronic screens, microwaves, cell phone masts, satellites, smart meters, etc have been shown to impair the immune system and decrease the body's ability to regenerate and repair[215]. Many of these frequencies are capable of inducing DNA damage and place particular strain on the nervous system by causing neurons to become over-stimulated, hyper-toxic and eventually to burst.[216] In order to compensate against radiation and EMF, the body utilizes iodine to combat the effects. It has been shown that thyroid function begins to decrease in those who use their cellphones for hours on a daily basis[217] and this is likely due to the way in which radiation uses up the thyroid's resources. As discussed in the following sections, impaired thyroid function specifically contributes to a decline in the immunity of shingles patients and can help to promote reactivation of latent infections.

Furthermore, the light bands used in the screens of many of these devices are based off blue light, whereas our eyes are accustomed to receiving a far larger spectrum of light frequencies. Blue light has been known to interfere with our body's ability to produce melatonin[218] and can thus disrupt sleep or sleep quality.

In this regard, it's important not to spend too much time with electronic devices while recovering from shingles and improving the status of your immunity.

There are however bands of frequency that are conducive to our health and improving the body's healing mechanisms, sunlight being one that everyone knows about. Medical laser devices commonly incorporate EMF in the form of ultrasound (sonar), light and magnets to generate a specific frequency that helps to break down lactic acid build-up in cells and facilitate the removal

of toxic by-products. Research has shown that a hand-held medical laser can also help to reduce pain and induce regeneration in mechanical injuries through mitochondrial stimulation. Forms of prayer are believed to be derived from healing frequencies too and many can anecdotally testify to experiencing beneficial effects from them.

Pollution

Pollution and the quality of our air and water are critical factors when considering our overall state of health and well-being. Our bodies are designed to cope with moderate amounts of pollution and natural pollution (such as volcanic eruptions) has likely been part of the planet's ecosystem long before the dawn of mankind. However, with the rise in man-made pollution since the industrial revolution at the turn of the 19th century, environmental pollution has been steadily accumulating and in turn, creating extra toxicity to deal with for all life on Earth.

Pollution has been shown to contribute toward dysbiosis, increase neurotoxicity[219] and affect the state of our immunity[220] [221]. Heavy metals like mercury have been associated with increased replication of herpes simplex 1 and 2 and a few other viruses due to the way in which they suppress the immune system.[222] Moreover, many of the chemicals used to sterilize our water such as fluoride should be considered as pollutants due to the negative impact they have on our gut bugs, hormones and our overall biology in general.

Plastic bottles and other containers are also not a great idea to consume food or beverages from during this time; or any other time for that matter if you want to maintain optimal health. Plastic contains compounds that mimic the effects of estrogen in the body, plugging up vital estrogen receptors and confusing the body by making it think it has elevated levels of estrogen in the tissues and bloodstream. These xeno-estrogens (foreign estrogens) have been linked to reducing immune function, promoting microbiome dysbiosis, helping a few forms of cancer to thrive and creating severe hormonal disruption. Plastic compounds and xeno-estrogens leach into a medium after mild heating, such as say during transport from the manufacturer to the shops, or in a short car ride when taking a plastic water bottle with in warmer weather.

Shingles is also known to reactivate in response to using certain hair dye, shampoos, soaps and conditioners. The metals and additives in synthetic versions of these products are known to irritate skin in sensitive individuals and provoke an inflammatory immune response, which can easily elicit reactivation in an immune-suppressed individual when combined with another stress or other environmental factors. Natural versions of these products are gentler on the skin, contain little to no chemical pollutants/irritants and better tolerated by the immune system, making them the ideal choice for those with shingles.

In order to maintain a strong immune function, one needs to make sure that they are getting adequate amounts of fresh air and purified water, while lowering the amount of pollutant exposure as much as possible. Molds and their toxins are also important pollutants to minimize in your immediate environment to avoid pollutant-induced immune suppression. It is a good idea to invest in an air purifier if you live in an industrial area. Filtering tap water before it enters the pipes of your home and having additional filters (like a clay water filter) for drinking water are both highly recommended.

Sunlight

While UV exposure has been known to incite shingles episodes, sunlight is an essential part of cultivating optimal immunity due to its role in converting dietary vitamin D2 into vitamin D3.[223] Many people do not get enough sunlight which begins to down-regulate the body's natural production of melanin and the conversion of D2 to vitamin D3. Both of these substances help to protect the skin from UV-radiation's negative effects (increased oxidative stress) and enable the skin to benefit from the positive effects (improved immunity)[224]. As a consequence of lacking melanin and vitamin D3, as well as other radiation protective nutrients such as selenium and iodine; UV exposure can trigger a heightened inflammatory immune response and invoke a shingles episode.

However, sunlight is equally as important in maintaining optimal immunity and therefore it is recommended to get some sun every day. Spending short bursts of time in the sun and working your way up to larger exposures will help to boost the production of vitamin D3 and melanin, boosting your immunity and allowing you to get more sunlight every time (provided you are receiving adequate dietary nutrition).

It is important to note here that sunblock does not seem to protect people from contracting skin cancer.[225] In fact, many chemicals in sunblock have been shown to exacerbate the onset of cancer, worsen skin conditions[226] and lead to neurotoxicity[227]. Contrary to popular opinion, the chemical combination of immune-suppression and blocking UV radiation from sunlight has detrimental effects on the skin's biology, which can contribute to severely hampering the immune response to VZV activation.

Viral Exposure

Naturally, exposing yourself to other people with shingles or chickenpox is like sending a risky invitation to allow an enemy into your home. While shingles is not commonly airborne like chickenpox, it can still be transmitted to other people who are susceptible through close contact with shingles blisters. If you have shingles running latently in your nervous system, re-exposure can incite reactivation of the virus and increase the numbers of infected cells. Exposing yourself to other kinds of infections is also not recommended, as secondary infections can incite further viral shedding via immune suppression and induce chronic shingles infections through time.

In the first phase of an acute shingles attack, accidental pathogen exposure is not so much of a concern due to fatigue-related immobility (and hopefully tons of bed rest!). However, when the initial set of symptoms has subsided, you ought to avoid exposing yourself to those who show signs of illness until your immune is fully functional and able to handle minor dips in response to any opportunistic pathogen exposure.

2.2.4 Other

The below factors have an impact on the risk for shingles reactivation and the state of our immunity.

Physical Injuries, Traumatic Events and Surgery

It is a known fact that herpes zoster reactivates after any physical injuries, traumatic events and even after going in for surgery. In most cases, it would seem that varicella-susceptible people tend to receive a full blown shingles attack roughly within the month following any hurtful occurrences of this nature.[228] It should be mentioned here that the immune system is known to become weak in response to this type of physical stress, giving rise to more inflammation and becoming too burdened to deal with suppressing the varicella zoster virus.

Varicella zoster often expresses at the sites of trauma or injury and can even be misrepresented as something entirely different; like multiple sclerosis, another excruciating condition with similar nerve complications. The pain relief part of the protocol may assist those who are recovering from surgery, however the likelihood of fully reversing shingles while recovering from an operation is slim (especially due to the immune suppressing medications administered post-surgery).

Older and Younger Age Groups

As the aging process contributes to thymic involution and the slow malfunction of immunity that sets the limit to our lifespans, it's only natural that the elderly would be at an increased risk of contracting infections like shingles[229]. Age-related complications in the elderly also contribute, such as having a reduced capacity to absorb nutrients from food on average, resulting in an increased tendency for nutritional deficiencies.

Infants and very young children who are still developing their immune systems are also at a higher risk of contracting recurrent infections; yet this age group is far more likely to get chickenpox than shingles, unless undergoing intensive immune suppressing therapies (like chemotherapy).

In spite of the elderly and very young being the most vulnerable to shingles, chronic disease has been manifesting at earlier and earlier ages, indicating that general immunity has been dwindling in humanity as a whole. Mounting immune suppression (e.g. increased pharmaceutical use, decreased nutrition) and environmental immune burdens (e.g. increased pollution, chronic stress) are likely to be the main underlying factors.

Times of poverty, war, famine or other similar stressful events can also trigger compromised immunity, which can be carried down genetically for generations if not dealt with. For example, war veterans with severe PTSD are known to be more susceptible to recurrent shingles outbreaks and their children tend to be more susceptible to experiencing chronic stress throughout their lives, which would also predispose them to contracting shingles later on.

Immune-Compromised or Diseased Individuals

Shingles is associated with many diseases in which individuals have a compromised immune system, such as AIDS, other chronic infections, cancer, kidney disease, arthritis[230], liver disease, pneumonia, diabetes, metabolic syndrome, IBS/D, obesity and more. Oftentimes these

individuals are on immune-suppressing medications which only exacerbate the likelihood of shingles reactivation.

The protocol I have outlined in this book will have many beneficial effects for people with these conditions as they all seem to display a similar profile in terms of mitochondrial and immune dysregulation. However, it's important to understand that the protocol is likely to interact with the majority of conventional allopathic therapies for these conditions; interactions that are usually not detrimental but in some cases can cause serious problems. It's also very unlikely that anyone who is on pharmaceutical medications for any of the above conditions will be able to truly reverse the onset of shingles properly, as the meds keep the immune suspended in state of suppression in order to handle the symptoms of an already deleterious immune system (the irony!). If followed perfectly while still on these medications, the protocol is likely to manage shingles symptoms as they arise, depending on the volume of drugs the patient is taking and the degree of immune suppression. I recommend consulting with a naturopath or functional medicine expert to rehab off conventional medical therapies if you want to reverse shingles reactivation entirely.

Imbalanced Thyroid Function

An under-functioning thyroid, also known as hypothyroidism, is associated with an increased risk of getting Shingles[231]. This is due to the way in which an under-functioning thyroid stops making thyroid hormones (T3 and T4) in response to thyroid stimulating hormone or TSH (made in the pituitary gland). This in turn creates low levels of thyroid hormones and high levels of TSH in the body[232]. The thyroid plays a critical role in regulating the nervous system and cholesterol synthesis in the body. High levels of TSH have been shown to inhibit AMPK in the liver and promote the synthesis of cholesterol[233], both of which would incite viral reactivation of shingles in an individual with a compromised immune system.

While there is not enough research yet to show for it, hyperthyroidism or an over-functioning thyroid can be just as detrimental as an under-functioning one in the context of shingles. Other studies have revealed that if levels of thyroid hormones are too high and TSH too low, AMPK can also be deactivated in the hypothalamus and results in an overactive nervous system[234]. When the nervous system is overactive, sleeping issues, stress and pain are all heightened and all contribute to suppressing our immune system through generating chronic low-grade inflammation. Naturally this is another scenario that would help to incite shingles reactivation.

Furthermore, heightened levels of inflammation and chronic low-grade inflammation are known causes for both an over- or under-functioning thyroid gland[235]. This suggests that those with shingles already had an immune system that lacked balance (being overtly inflammatory) and that shingles can also lead to the induction of a malfunctioning thyroid.

Thyroid function also governs calcium homeostasis and many other processes in the body and therefore plays a role in regulating bone mineral density, neuron and cell-to-cell communication, as well as multiple other faucets of our health and well-being from head to toe! The bottom line is that thyroid function is crucial to healing.

In terms of the protocol, we will mainly be focusing on AMPK activation in order to reverse shingles and restore balance to the immune system. AMPK stimulation appears to be required for optimal thyroid function, particularly in the hypothyroidism that is more commonly associated with shingles[236], however some potent AMPK-activating foods are known to block thyroid function. I have included a supplement or two within the protocol to help keep the thyroid stable, alongside a list of foods that should be consumed in moderation for optimal thyroid function. Refer to the next part of the book for more information.

Gender and Hormonal Status

Interestingly, men appear to be conferred a slightly protective advantage against contracting shingles than women, which is currently thought to be due to the mitochondrial profile of men[237]. In general, men are capable of bearing more muscle mass, which would indicate the need for higher levels of active mitochondria and a stronger immune function. Heightened pain is also experienced at increased levels of severity in women than in men. In spite of this difference, women tend to outlive men on average, which is likely due to the difference in hormone levels. Research has revealed that both estrogen and testosterone receptors exist in the cells of the thymus gland with each having differing effects. In experiments concerning mice, testosterone appeared to speed up the process of thymic involution (refer to the thymus section for more); whereas estrogen (not to be confused with xeno-estrogens) appeared not to induce this effect. Further research indicates that testosterone stimulates corticoid (stress hormone) synthesis in the thymus[238], which results in quicker thymic cell impairment in the long-run due to excess oxidative stress and mitochondrial dysfunction.

This hormonal effect on longevity is natural however, with some speculating that it contributes to the successful survival of humans as a species, and makes little difference in the context of treating shingles. Both sex hormones have immune-regulating activities, such as boosting AMPK in unique compartments of the body where required[239] [240] and acting as immune signals during infection. Shingles tends to alter hormone production in the body by hijacking cholesterol and protein synthesis. Having too many or too few hormones on a long-term basis can result in a lesser functioning immune system, which can contribute to aiding shingles reactivation. Interestingly, suppressing sex hormones in the short-term through cholesterol reduction – which can be induced via caloric restriction, sex hormone-independent AMPK activation and/or fasting - has been shown to enhance rejuvenation of the immune system and even aid thymic functionality.[241] [242]

Aside from incorporating these strategies into the protocol, I have recommended a few supplements that happen to boost and regulate hormone levels while simultaneously helping to fight off shingles, but it's not the main focus of this book. However, if you are over the age of 50, you may want to consider getting your hormone levels tested and working with a naturopath or somebody skilled in functional medicine to restore any deficiencies. If opting for hormone replacement therapy to get you going, never opt for synthetic hormone replacements and insist on using bio-identical hormones as these are designed to interact with your internal chemistry. Hormone replacement therapy should never be used on a permanent basis, but only until optimal hormonal status is achieved - which ultimately requires leading a healthy lifestyle and addressing the primary cause of the imbalance.

Pregnancy, Growth & Development

There are other factors that we have no control over that contribute towards the state of our immune systems later on in adulthood and may lend a hand in shaping compromised immunity and the onset of shingles. These factors include the immunity and microbiomes of our mothers[243]; her lifestyle choices, nutrient intake and what she was exposed to during pregnancy, how she gave birth (cesarean vs live birth) and then the environment in which you spent your infancy, what you ate, the quality of breast milk (or formula), and so on. All of these factors have an impact in shaping the microbiome and the immune system during these critical developmental periods in life.

During pregnancy, the mother's microbiome and immune state already play roles in shaping that of the baby[244]. Through the process of birth, the infant becomes readily inoculated with the microbiome within the birth canal and from that point on proceeds to establish stable bacterial populations throughout all bodily tissues. This vital point of contact is required to germinate a healthy microbiome, which is necessary to ensure adequate nutrient absorption and excellent immunity; something that those born through cesareans miss. [245]

In research concerning the virome, it is interesting to note that infant-related viral populations are very erratic until the child reaches about two years of age. In the context of lowering shingles risk, it is important to ensure infants maintain healthy microbiomes which harbor equally healthy viruses in them - particularly during the first two years of development. Probiotics during this critical period could be a good option for mothers who had compromised microbiomes prior to giving birth.

Children who had compromised microbiomes through antibiotic use during phases that are critical for their growth and development are shown to exhibit increased expression of allergies as well as contracting more infections on average. All of these symptoms could be reversed through the use of probiotic foods and dietary interventions that support a healthy ratio of gut bacteria.

PART III
Calling in Nature's Cavalry

3.1 Anti-Shingles Diet

The main focal points of this diet include:

- Increasing the ratio of the amino acid lysine to arginine in order to inhibit shingles viral replication.
- Boosting immune function through rectifying nutritional deficiencies and supporting a healthy microbiome.
- Regulating the AMPK pathway in the mitochondria to promote full recovery, regeneration and longevity.

As previously explained, Shingles requires plenty of arginine to replicate. This mechanism - in combination with a few others - depletes arginine-based nitric oxide synthesis and negatively affects multiple other immune functions. Lysine, arginine's counterpart or balancing force (and to a lesser extent leucine), has been shown to inhibit herpes simplex viruses and shingles. In the majority of foods, amino acids like arginine and lysine are ubiquitous and virtually inseparable, presenting themselves in a ratio. The trick is to increase lysine until you are consuming more of it in general than arginine, but not to avoid arginine entirely. Arginine and lysine compete for absorption in the intestinal tract and in studies concerning rats, it was shown that increasing the lysine to arginine ratio decreased arginine content in the brain and nervous system by as much as 60%. Ultimately, limiting any essential amino acid will promote disease in the long-run and therefore this diet is only to be followed until the shingles has been obliterated. Thereafter, a balanced consumption of both amino acids should be thoroughly enjoyed within the context of a diverse diet.

Some of the foods included in the protocol do have a higher ratio of arginine to lysine; however, due to their potency as antiviral agents, immune enhancing synergy and the fact that they regulate AMPK, they will not pose any risk to your success in toppling shingles - quite the contrary in fact! In the same respect, some foods that are higher in lysine will not be permitted due to the way in which they can promote viral replication indirectly.

On top of the diet, I will be recommending an effective dose of Lysine supplementation (3000mg taken in 1000mg portions three times per day[246]) to kick the ratio up several notches and make 100% sure that all herpes viruses are prevented from replicating. In this regard, making a mistake with the ratio in your diet is not going to detract from your healing, however it's vital that you do not consume any processed foods in this time and that you do your best to maintain the ratio for a minimum of 4 weeks after all symptoms have subsided - which typically takes 10 days on average when combined with lysine supplementation, but may be longer for those with severely compromised immune systems or clinical nutritional deficiencies.

The foods that have the worst arginine to lysine ratios (with arginine being dramatically higher) include chocolate, peanuts, almonds, grains and all other seeds and nuts in general.

The majority of fruits, vegetables, some legumes, fish, turkey, chicken, other poultry meats and dairy products tend to have the best lysine to arginine ratios (being much higher in lysine than arginine).

3.2 Dietary Artillery: Destroy the Virus, Boost the Immune System & Heal the Gut Using Nutrients and Whole Foods

Unlike many pharmaceutical prescriptions, all of the supplements mentioned below are not intended for lifelong use, but rather just as a temporary measure to counteract nutritional deficiencies and get the immune system back online. Once that has happened, a nutritionally-balanced diet and healthy lifestyle should be able to take care of the rest. Any supplement that is used day-in, day-out, will eventually create imbalances in the body, even if they are natural herbal extracts. Our bodies are designed to take in nutrients from food after it has been processed by the bacteria in our guts and not in super-natural doses or in synthetic forms that are foreign to organic life. Research has revealed that many potent herbal supplements which contain plant extracts of only the active ingredients in high doses can eventually cause liver damage in most cases, amongst other side effects.[247]

In light of this, I have recommended natural wholefood solutions wherever possible. The best part is that most wholefoods can be consumed on a daily basis with little to no side effects. Generally we moderate our dietary habits ourselves if we over-consume a food; a phenomenon that is especially so when our gut microbiome is in working order.

3.2.1 Varicella-Fighting Nutrients

Just about all the nutrients mentioned below support the function of immune cells, prevent herpes viral replication or are potent regulators of mitochondrial function.

Amino Acids

L-Lysine Supplement

Lysine has been shown to inhibit both Shingles and Herpes Simplex 1. The mechanisms of action include regulating AMPK (boosting immune and mitochondrial function), while simultaneously lowering the production of fats and oxidation by-products in the cell[248]. Lysine also has an antagonistic relationship with arginine, meaning that they cancel one another out. VZV requires arginine to sequester proteins, transcribe itself into the DNA of our cells as well as to replicate effectively. When lysine is added into the picture, it decreases the cellular levels of arginine and basically starves the virus of raw materials, halting replication in its tracks. To top it all off, lysine is also required for the immune system to proliferate properly (via promoting IL-10 secretion and T cell activity), as well as for optimal immune signaling. Low levels of lysine lower our ability to produce antibodies and inhibit many innate immune mechanisms that are able to overpower herpes viruses with ease[249]. Combined with the fact that Lysine regulates both autophagy and cell death via the AMPK pathway, it's clear that this is one of the most important tools in your arsenal for opposing Shingles and any other herpes virus.[250]

The diet included alongside the protocol contains foods that have a lower amount of arginine to lysine. It's important to note that the diet alone does not make a significant difference to the outcome of HSV-1 patients[251] and that one actually needs to purchase a lysine supplement in order for lysine to inhibit the function of alpha-herpes viruses like VZV. Together the diet and the supplement ensure that the virus is starved of arginine and can then no longer effectively carry out replication.

High Lysine Intake Contraindications

Lysine supplementation has not been tested in pregnant women to see if there are any detrimental effects on fetal growth and therefore I highly recommend that pregnant and breast-feeding mothers stave off this protocol.

In the event of desperation, it is known that pregnant women – especially those who consume a diet mainly consisting of arginine-rich grains – can consume up to 2000mg of lysine during the first two terms of pregnancy and up to 3000mg in the final term[252]. Keeping in mind that these numbers are for dietary lysine intakes, I have suggested that pregnant mothers with shingles or herpes take half the dose while maintaining the diet. As increased intakes of lysine can cause imbalances with other amino acids in the developing fetus[253], it is vital that pregnant mothers with shingles do not supplement with lysine for longer than 4 weeks and that it is understood that doing so may involve risks for the new born to be.

Severely immune compromised children who happen to get shingles or other herpes infections should also only take half the dose.

Over-dosing on Lysine – and I mean radically over-dosing - can cause kidney damage and failure. Please don’t consume more than the recommendations in this book.

L-Leucine

Leucine is another amino acid that will help greatly during Shingles reactivation, having many similar functions in the body to lysine. Like lysine, leucine promotes the secretion of IL-10 which increases the proliferation of T cells. Furthermore, leucine supplementation has been shown to inhibit the replication of HSV-1 in mice[254]; an effect that was accompanied by enhanced NK cell count and increased proliferation of T cells with a working memory primed for taking down the virus. This increase in immune cells simultaneously caused a rise in IFN-y and put a quick stop to all viral activity.

While Leucine does not activate AMPK (and has in fact been shown to inhibit its action), it has a synergistic activity with supplements which do, such as lysine. It was shown that leucine taken with an AMPK activator increased lifespan through SIRT1 up-regulation, AMPK activation and improved energy homeostasis in the mitochondria.[255] Furthermore, leucine is known to dramatically increase the absorption of lysine in the gut, making it a perfect partner in crime for abolishing shingles.[256] Since lysine competes with arginine for absorption, it’s important to consume a diet higher in lysine when increasing your leucine intake in the context of conquering shingles.

Leucine has further benefits from a longevity perspective. Meeting the daily recommended intake of leucine through supplementation may help to combat the aging process by maintaining muscle mass that would otherwise be lost due to sarcopenia (age-related muscle loss)[257] [258], but only in those who do not absorb enough leucine from their diets[259] - of which, digestive issues and nutritional malabsorption are very common amongst the aging population.

Unprocessed high-protein foods like dairy, legumes, nuts, seeds and all forms of meat contain the highest levels of leucine; only a fraction of which are higher in lysine than arginine (refer to the appendices for a list of foods to avoid and consume).

Please note that if you are entirely able to absorb nutrients from your food or have a healthy muscle mass (muscle is not the same as fat!), then taking a leucine supplement is not a requirement and should be avoided. I have recommended that only those above the age of 65 take leucine, those who have digestive issues (irregular stools, abdominal pain after eating, inability to chew food, etc) and/or those who show signs of muscle wasting.

Leucine Supplement Contraindications

Leucine supplementation, as with lysine, should not be carried out for long periods of time as it may cause a decrease in cerebral tryptophan, the precursor to serotonin, as well as deplete the body of other amino acids that are equally as vital.[260]

Fasting also increases blood levels of leucine, which in turn boosts the absorption of both lysine and arginine. While the act of fasting helps to reset the immune system, it should not be done in combination with taking either a leucine or lysine supplement as this can cause the body to create an overwhelming amount of ketones[261]; which can ultimately lead to a state of keto-acidosis – more commonly known as a diabetic coma due to dangerously low blood sugar levels. For this reason, fasting (with the intake of fluids) will only occur in the beginning phase of the protocol in order to kick-start the AMPK pathway and starve the virus of other nutrients it can use to replicate. After that point, caloric restriction (which mimics the effects of fasting) will be implemented carefully in combination with a leucine supplement.

Trace Minerals

Selenium

Selenium is another very important mineral that is required for the immune system to mount an effective attack and keep all pathogenic invasion under control. This trace mineral is essential for multiple areas of our health and well-being, particularly where immunity, hormonal balance, reproduction and neuronal health are concerned. Selenium deficiency is linked to a decreased ability to handle environmental pollution[262], heavy metal toxicity and generalized immune burden. Many elderly individuals are commonly depleted in selenium, however this trend is picking up in the youth nowadays too, as agricultural land is becoming slowly depleted of this vital nutrient. Selenium also stimulates the AMPK pathway, inhibiting COX-2[263] and helping to lower the pain associated with post-herpetic neuralgia.

Zinc

Zinc is an essential trace mineral and without it, many faucets of our immune system's machinery would fall to pieces!

In studies carried out on mice, zinc alone has shown to reverse thymic involution and ameliorate age-related immune dysfunctions[264]. Not surprisingly, zinc nanoparticles were shown to activate AMPK, protect the liver and regulate fat synthesis.[265]

It is interesting to note that many elderly individuals are deficient in zinc, which is required for optimal hearing, taste, vision, smell[266] and immunity. Zinc is required for the optimal functioning of the thyroid, thymus, and all of our immune cells and their signals. Without zinc, we cannot detox from heavy metals effectively nor can the body employ anti-inflammatory immune responses.[267]

Magnesium

One of the best treatments for post-herpetic neuralgia happens to be an intravenous magnesium solution[268]. In patients with post-herpetic neuralgia, 30 minutes of intravenous magnesium sulfate either dramatically minimized or completely reversed their pain. Intravenous magnesium also proved to be nearly as effective as ketamine without any negative side effects[269]. Magnesium deficiency has also been shown to be common, especially in the elderly and linked to other painful conditions like migraines and prolonged pain after injury.[270]

Magnesium is required for NK cell function as well as generalized mitochondrial and immune function in all our cells. In those with herpes viruses, magnesium deficiency resulted in impaired immune function and increased frequency of viral reactivation episodes.[271] Magnesium is also brilliant for regulating our calcium levels, which is a very important factor for proper cellular function in general. The diet prescribed for those with herpes viruses should be rich in magnesium in order to help combat the virus. A supplement is recommended for those who cannot access organic food, who have irregular bowel movements and those who have suppressed immunity such as chronic illness patients, those who are on synthetic medications and the elderly.

As intravenous magnesium therapy is likely to be inaccessible, I have included guidelines for Epsom salt baths in the protocol. Epsom salt is the common name for magnesium sulfate. In patients with post-herpetic neuralgia, magnesium sulfate

Vitamins

Vitamin A

Vitamin A is responsible for powering a specific viral sensor in the cell that up-regulates the production of type I interferons[272], ultimately leading to viral suppression. Furthermore, Vitamin A is required to power many of the anti-inflammatory branches of the immune system. The

friendly microbes that live inside of us help to keep the supply of Vitamin A steady, ferrying it to places it needs to go so that immune cells and other cells can replenish themselves.

Specific forms of dietary vitamin A confer unique properties on the immune system. Beta-carotene and other carotenoids are the best forms for boosting immunity, particularly with regard to NK cell function. There is one specific carotenoid known for its enhanced immune-boosting profile called Astaxanthin. Astaxanthin is usually a dark red oily substance extracted from algae that has been shown to improve the growth and fighting force of many immune cells, including T cells and NK cells. Furthermore, astaxanthin protected cells from DNA damage and was shown to dramatically lower inflammation.[273]

Vitamin C

Vitamin C is considered one of the best natural weapons we have against many forms of disease due to its potent antioxidant and anti-inflammatory ability. Working hand-in-hand with vitamin E, vitamin C works to protect our cells (as well as other protective compounds such as glutathione) from damage. Vitamin C is relied on heavily by the nervous system for protection, particularly in the cells that do not divide which VZV loves to latently infect. In fact, Vitamin C is so critical for our nerves that it is estimated that the nervous system contains as much as double the amount of vitamin C on average compared to other sites of the body. Aside from protection, neurons require vitamin C in order to facilitate the neuronal uptake of DHA, an essential omega-3 fatty acid required for immunity and neuronal health (refer to the omega-3 section under fats in this chapter).

Vitamin C also greatly reduces pain through preventing excitotoxicity. Like the role of calcium overload previously mentioned, the amino acid glutamate can also cause neurons to burst when consumed in excess or the pathways regulating its use are faulty; of which vitamin C is one such regulating factor. When levels of vitamin C are higher on the outside of neurons, it causes the neurons to exchange it for glutamate, thus preventing cell death and helping to dispel any cellular damage due to oxidative stress or inflammation.[274] This effect has been proven in other research with specific regard to post-herpetic neuralgia.

In a 2-week study conducted on those with recurrent shingles, intravenous vitamin C was shown to reduce the likelihood of developing post-herpetic neuralgia as well as lowering the number of infected areas, reducing pain in general and decreasing the number of symptoms commonly present with the condition such as fatigue and impaired focus.[275] Other studies have revealed that vitamin C deficiency is often linked to musculoskeletal pain and that administering high doses of vitamin C to patients with herpetic neuralgia dramatically improved the severity of the pain experienced.[276]

Vitamin D3

Adequate vitamin D3 levels are fundamental to many aspects of our health. Many cells, including immune cells, have vitamin D receptors and vitamin D is an essential component of their functioning. Vitamin D helps to regulate gut permeability, is required for mucin synthesis,

forming a healthy gut microbiome, is needed for optimal bone health and is essential for the immune system when fighting an infection.[277]

This wonder vitamin was shown to have a profound impact on shingles patients who had crippled immunity thanks to kidney dialysis treatment. Those who had adequate levels of vitamin D3 had increased levels of shingles-specific antibodies and better overall immunity.[278] In experimental models examining various cell cultures under a microscope, it was shown that Vitamin D3 gave T cells a boost through lowering any immune suppressing (anti-inflammatory) cytokines, allowing the T cells to swiftly and efficiently eliminate tumors from the growth medium.[279] Naturally this is a regulatory action of this essential vitamin and master hormone, as other studies have shown how it is also capable of dramatically lowering bodily inflammation and aiding swift resolution of pain[280].

T cells that lack vitamin D showed impaired functionality and tend to release inflammatory signals on a continuous basis, creating a rise in overall bodily inflammation and tissue damage. Other studies have confirmed this by revealing how vitamin D3 deficiency is intimately associated with the onset of post-herpetic neuralgia and decreased immunity in shingles patients across the board.[281] Furthermore, lacking this vital nutrient is associated with depression, mental diseases, disrupted sleep and bone mineral loss.

Aside from being critical to immune function, some research has highlighted that the vitamin itself elicits specific antiviral effects in the body. These effects include the up-regulation of innate antiviral compounds such as IL-37 and human beta defensin 2[282], which are known to exhibit anti-herpes effects.[283] Naturally, research has given insight into the fact that most elderly are deficient in D3 and this has been associated with increasing occurrences of shingles episodes as well as to the severity of such outbreaks.[284]

When functioning optimally, the body usually generates its own reserves of vitamin D3 by converting dietary D2 into D3; a process that cannot be achieved without adequate sunlight exposure throughout the day and appropriately low levels of light exposure at night. In spite of this, many people are not making enough D3 and prove to benefit from a supplement. Whether this is due to lack of time spent in the sun, the fact that pollution in cities often blocks out certain qualities of the sunlight or whether people have other nutritional deficiencies or immune complications that impair this process is still under investigation.

Vitamin K2

Vitamin K2 can be considered Vitamin D3's partner in crime when considering its function in the body. Vitamin K2 is essential for allowing calcium, D3 and other minerals to remain inside our bones, making it essential for proper calcium homeostasis, heart, arterial and bone health in the body[285]. The nervous system also benefits largely from vitamin K as it is required for the synthesis of specific fats (sphingolipids) that line our nerves and allow for them to function[286]. As the fatty coating around neurons is often damaged during an infection or under conditions of excessive inflammation, K2 is vital for aiding the repair of the nervous system post shingles. Furthermore, K2 is the best protection we have against excessive bleeding and is a requirement

for the synthesis of all types of clotting factors - the compounds the body uses to form a scab and prevent a wound from bleeding profusely.

In terms of immunity, vitamin K2 serves as a link between hormonal signals and innate immune signals, capable of activating and regulating many pathways involved in immune homeostasis. Of particular interest is vitamin K2's ability to regulate DNA and SIRT1 activation[287], which translates to removing viral genes from cells, boosting the innate immune system's fighting power through stimulating interferon release, regulating the mitochondrial AMPK pathway and other pathways known to prevent tumor growth[288]. On the other hand, K2 can inhibit the ability of T cells to proliferate, promoting a far less inflammatory but also a far less responsive immune profile[289] - an effect that is counter-balanced by the T-cell enhancing effects of D3. Vitamin D3 is as much required to keep the function of K2 balanced, as K2 is required to balance the function of D3.

Vitamin K2 also plays a role in mediating pain both directly as an anti-inflammatory agent[290] and indirectly as a calcium regulator in the body. With an adequate intake of K2, calcification of soft tissue is prevented due to excessive calcium levels circulating around the cell. Naturally, consuming calcium without the appropriate ratios of magnesium, phosphorus and D3 or consuming calcium in excess will blunt this function of K2 - it's all about maintaining the balance. Consuming vitamin E and A in excess is also known to interfere with the action of K2[291]. Nevertheless, the protocol contains all of these vitamins with the aim of tackling any nutritional deficiencies as they are all required for top immunity. After the protocol, consuming a healthy diet that also contains fair portions of fermented vegetables should be sufficient for meeting your K2 needs without disturbing the fine balance of nutrient circulation and interaction in the body.

Other forms of K2 also exist such as K1, the main form found in plant-based food, especially leafy green vegetables. K1 is also essential for health, but in the literature, the majority of health effects are attributed to K2 due to it's better absorption and enhanced interactivity with our biology[292]. Interestingly, one of the greatest sources of K2 comes from fermented foods[293], including sauerkraut and miso, of which the raw ingredients prior to fermentation only contain K1. Further research into the gut microbiome has only just begun to investigate this phenomenon[294] and has started to make associations between our healthy gut bacteria (especially lactobacillus strains[295]) and dietary vitamin K2. As it turns out, gut dysbiosis and a lack of probiotic diversity contributes toward K2 deficiency; while maintaining a healthy gut microbiome allows us to meet our daily requirements, if we consume plenty of fiber- and vitamin K-rich vegetables.

Vitamin E

Vitamin E is an essential vitamin that works closely with Vitamin C to maintain proper antioxidant homeostasis in the body and to conserve the ability of more potent mitochondrial antioxidants in each of our cells, like glutathione, superoxide dismutase and co-enzyme Q10. We need antioxidants to counteract the free radical oxygen species (oxidizing agents or oxidants) produced naturally by our mitochondria. This is one of the main reasons why you will see the words "anti-inflammatory" and "antioxidant" used repeatedly by natural health experts, as many

people have heightened inflammation and an inverted antioxidant to oxidant ratio in their cells. Essentially, antioxidants are required to make sure the slow-burning "fire" in our mitochondria do not burn out of control and cause excessive damage to the rest of the ecosystem in our bodies.

From an immunity standpoint, Vitamin E is necessary to mediate inflammation in the immune system and regulate cell signals. Deficiency of this vital nutrient is not common, however without it, many aspects of innate and adaptive immunity would be impaired. The main results of deficiency include excessive inflammation and promoting a non-tolerant immune system that reacts to everything on over-drive. In the reverse context, it has been documented that ingesting higher amounts of Vitamin E than the daily recommended amount has beneficial effects, specifically in the context of enhancing and regulating immunity.[296] [297]

In trials involving herpes simplex, vitamin E oil in large amounts applied directly to the cold sores every four hours dramatically reduced pain and sped up wound healing. In the presence of high levels of Vitamin E, natural killer cells appear to function more effectively and are able to digest and break down more foreign pathogens on average. In other studies, Vitamin E has been shown to regulate pathways involved in autophagy and apoptosis as well as up-regulating IFN-y in the presence of viruses.[298] For all the above reasons and more, I have included Vitamin E in the protocol; both topically and for internal use.

B Vitamins

All of the B vitamins are important for a proper functioning immune system but more importantly, for maintaining a healthy nervous system. Consistently it has been observed that B vitamins are one of the world's leading nutritional deficiencies and I believe this is to do with the fact that people lack enough probiotic bacteria to manufacture adequate B vitamins for themselves. Unlike Vitamin K2, it is well documented that much of the B vitamins that we can absorb come from either our good gut bacteria or from animal products in which the vitamins have already been produced by the animal's own internal micro flora and fauna.

While all B vitamins are critical for nerve cell and immune function, vitamin B12 consistently comes up in the literature with respect to shingles, pain relief and the nervous system; which is why I have discussed it in more detail below. Other B vitamins crucial for neuronal health, energy homeostasis (mitochondrial function), neurotropic disease prevention and treatment as well as overall health and vitality, include biotin (B7), thiamine (B1) and pyridoxine (B6).[299] Biotin has been shown for instance to activate AMPK and inhibit fatty acid synthesis in mice[300], indicating that it has a prime role in both cholesterol and hormone regulation.

In terms of the protocol, I recommend taking an all-round B supplement until your gut microbiome can produce enough to meet your daily nutritional requirements. However, many B supplements contain B vitamins in non-bioavailable forms that promote inflammation and therefore I have also recommended specific supplements for the above mentioned B vitamins (refer to the supplement regimen in the protocol section).

Methylcobalamin (B12)

In a clinical trial, patients suffering from post-herpetic neuralgia were placed on B12 supplementation. Those who took the supplements experienced much lower pain intensity than the control group who didn't take them.[301] B12 has also been shown to exhibit powerful effects on our immune cells, both through restoring impaired NK cell function and beneficially rectifying the ratio of T cells which tend to be a mix of pro-inflammatory and anti-inflammatory cell types.[302]

Also, if you are deficient in B12, you may as well forget about nerve cell repair! In the context of repatriating the nervous system from the damage induced by any herpes viruses, B12 is absolutely essential for recovery. B12 deficiency alone can induce damage in the exact neurons that shingles actively infects, adding to heightened inflammation, disruptions in quality of sleep, impaired detoxification of the nervous system and more.[303] Conversely, B12 can protect neurons from damage induced by traumatic injury, specifically ER-related injury[304], which is something herpes zoster is renowned for.

While B12 is perhaps the most important B to focus on for shingles patients, all of the B vitamins have synergistic effects that help to promote neuronal health.

Phytochemicals

If you ever doubted that "food is thy medicine" then just taking a look at all the phytochemicals present in your food will show you otherwise.

Phytochemicals are all the components of plants that give them their chemical characteristics, including their taste, smell, color and more. These are also the parts of the plant responsible for their health benefits. Phytochemicals exert multiple health effects in the body by acting in place of vital cell signals that are deficient (including hormones, neurotransmitters, anti-inflammatory cytokines, antioxidants and more), enhancing both our ability to deal with physiological stress and our immunity.[305] When you begin to understand how natural medicine works and why, you will see that it was never "alternative medicine" but is in fact the only medicine we are designed for!

Just about all of the phytochemicals discussed in this chapter (either below or under the relevant food item), including apigenin, curcumin, Fisetin, quercetin, resveratrol, ECGC, and capsaicin, all regulate AMPK, thereby inducing full autophagy instead of partial autophagy[306]. These compounds are never found in isolation from foods and are commonly paired with hundreds of other amazing nutrients that science has barely touched on. Nevertheless, I have highlighted the most important ones known to fight off herpes infections and boost immunity, yet I would like for you to keep in mind that this is just the tip of the iceberg.

Resveratrol

Resveratrol is another compound found in plants that has been shown to have an antiviral effect on Herpes Zoster. Dietary sources of resveratrol include the skins and pips of darkly-colored berries and bitter herbal teas like green tea.

When administered within the first 30hours of an active infection, Resveratrol has been shown to dramatically reduce the number of viral proteins found in a cell, effectively slowing down it's replication.[307] Other studies have confirmed these anti-viral effects of resveratrol[308] [309] and reveal that they also extend to inhibiting the replication of many other viruses. These include herpes simplex 1, Epstein-Barr virus, influenza virus, hepatitis C virus and even HIV. In the case of herpes simplex, high doses of resveratrol appear to act either the same or better than the standard run-of-the-mill herpes antiviral - acyclovir - that a general practitioner might prescribe.[310] Naturally, resveratrol activates SIRT1, stabilizes the AMPK pathway, regulates cell death and promotes the elimination of viral DNA/RNA[311]; all of which largely contributes to its antiviral potency.

Furthermore, resveratrol has been shown to enhance the activity of immune cells, especially of the NK cells and T cells required to stave off a herpes infection.[312] As if this wasn't impressive enough, these benefits are just the tip of the iceberg with this amazing compound which has also been shown to exhibit antioxidant, anti-inflammatory, neuro-protective, anticancer, pain relieving and immune-regulating properties.

In the context of shingles, resveratrol acts as a powerful medicine, capable of seizing back control of many pathways inside the cell that VZV attempts to manipulate. One of the greatest benefits of resveratrol is improved pain relief in this respect.[313]

The only downside of consuming too much resveratrol is that it can act as a goitrogen and cause impaired iodine uptake in the thyroid gland. However, resveratrol was also shown to protect against inflammation in the thyroid and promote new cell growth and regeneration.[314] An algae supplement or a trace mineral supplement that has adequate levels of selenium and iodine are required to combat this effect and ensure proper thyroid function, both of which will be forming part of the protocol.

Berberine

Berberine is a plant-derived compound that has very potent anti-HSV activity that increases with the dosage. In trials it was shown to inhibit viral re-activation and keep the virus suppressed in a dormant state. Many similar cellular pathways that berberine regulates are used by both HSV and VZV in order to replicate[315]. Upon further delving into the medicinal properties of this phytochemical, it is revealed that it has omnipotent antimicrobial effects that work potently against a wide array of fungi, bacteria and protozoa.

Aside from lowering inflammation, Berberine activates AMPK and has been shown to dramatically shift the gut microbiome toward a state of balance; which helped to regulate all faucets of metabolism, including the excessive fat and cholesterol production associated with

diabetes or consuming a high-fat diet.[316] Berberine can also protect against atherosclerosis and heart disease by aiding in the repair of damaged arteries[317] as well as helping to regulate blood pressure.

Foods high in berberine include goldenseal, goldthread (aka Coptis), Oregon grape and barberry[318] and other members of the berberidaceae family of plants[319]. Berberine is also available in supplemental form as an extract with great potency and no reported side effects, which is what I recommend for those with shingles.

Curcumin

Perhaps curcumin is one of the most popular polyphenols prescribed by natural medicine experts everywhere in order to lower inflammation and prevent the onset of disease. It is the most active constituent found in the Eastern spice, turmeric, and will no doubt form a fundamental part of your cooking repertoire during this book's protocol (there's no need to stop after however!). In the context of treating shingles, turmeric and curcumin have generalized health effects that contribute towards healing and protection across the board, helping just about every organ system in the body to remain in balance.[320]

The combination of curcumin and carnosol were proven to boost the activity of AMPK in dendritic cells, dramatically boosting their functionality through lowering their reactivity and promoting the resolution of inflammation.[321] Studies have shown that in large doses, curcumin is capable of inhibiting viral binding to DNA sites for multiple strains; however, this effect is only partial with regard to HSV[322] and only truly relevant prior to reactivation. Curcumin can inhibit resistant forms of pathogenic strains of staphylococcus and streptococcus, which are common secondary infections for those with shingles.

Part of its antimicrobial and anti-inflammatory effects can be attributed to the way it protects mucosal surfaces and therefore helps to conserve our microbiome.[323] Naturally curcumin exerts positive influences on gut bacteria that aid their growth and enhance gut fermentation, meaning that curcumin helps us to absorb more nutrients from our diet and ups levels of butyrate in those who have the right ratio of lactobacillus and Bifidobacterium. A potent protector against leaky gut, curcumin reduces intestinal permeability and speeds up gut healing, helping to prevent excessive inflammatory immune activation and a loss of immune tolerance to ordinary foods due to digestive issues.[324] Curcumin contributes to ameliorating the effects of a high fat diet and therefore turmeric is one of the best spices to add to your cooking, particularly when fighting off herpes viruses that take advantage of lipids to replicate.

Further evidence suggests that curcumin can inhibit COX-2 and helps to resolve neuropathic pain, such as seen in diabetics and those with herpetic neuralgia. In mice models of trigeminal nerve neuropathy – an exceedingly painful condition as the trigeminal nerves are largely involved in regulating pain perception and are also a common targets for VZV replication – curcumin was shown to alleviate pain and improve the cognitive decline associated with severe pain and nerve damage[325] as well as help to facilitate neuronal regeneration.

One of the issues with curcumin is its incredibly poor bioavailability. If taken in a fatty substrate in combination with peperine, one of the main compounds found in both black pepper and cayenne pepper, the bioavailability is enhanced; but still lacks effectiveness as a once off dose in a clinical setting. The trick is to ingest small amounts of turmeric frequently in combination with things that increase curcumins absorption, like black pepper and fats. I encourage you to add these ingredients to all your main meals, where possible, to reap the generalized health benefits of this amazing spice.

Fisetin

Fisetin is another anti-inflammatory polyphenol found in many fruits and vegetables that can regulate the AMPK pathway and induce either autophagy or apoptosis in death-resistant (cancerous) cells[326] - cells that share a likeness with VZV-infected neurons. While there is no direct research aimed at fisetin in the context of combating shingles, it has been proven that the compound inhibits several varicella-dependent pathways in the cell, making it a promising anti-VZV phytochemical.

Furthermore, fisetin appears to have a high affinity for binding to cell sites where free radical species like to hang out and while it's there, it mops them up, thereby protecting the cell from oxidative stress, mitochondrial dysfunction and damage. In neurons specifically, fisetin was able to upregulate the mitochondrial production of the master antioxidant glutathione, further adding to its protective ability. This protective effect on the nervous system is enhanced by the way it protects lipid membranes surrounding the nerves from excessive inflammation. Research indicates that fisetin can also enhance memory, cognition, and growth of new neurons as well as helping to lower an over-active immune response in the nervous system.[327]

The Lancet published a paper on fisetin that hailed it as an important phytochemical for the elderly, capable of reversing many age-related cellular imbalances in a "hit-and-run" fashion and therefore increasing lifespan and enhancing longevity outcomes[328]. The term used to describe these effects is 'senolytic' – the break down of cellular senescence or aging. Quercetin is another senolytic compound, however fisetin trumped quercetin with regard to extending lifespan while quercetin proved to be superior to fisetin in terms of antiviral activity.

Lastly, fisetin is rapidly metabolized in the liver in the presence of sulfur compounds and begins to initiate its protective benefit there, aiding in liver protection – another complementary action in the context of shingles treatment.

Found in strawberries, apples, mangoes, kiwis, persimmons, grapes, onions, tomatoes and cucumbers; with strawberries, apples and persimmons containing the highest amounts on average.

Quercetin

Quercetin increases zinc uptake into cells, which is exactly the kind of support the aging immune system needs in order to properly mount an effective counterattack against VZV! As discussed later on, quercetin has impressive antiviral activity against a suite of viruses, including HSV[329],

and has been shown to regulate AMPK. The effects of this compound appreciate with time as it has been proven to accumulate in the mitochondria of all cells that absorb it. Quercetin appears to protect the integrity of other compounds in the cell that support innate immunity such as omega-3 fatty acids and albumin.[330]

In the presence of quercetin, macrophages, T cells, dendritic cells and other immune cells tend to function better without succumbing to excessive inflammation and mitochondrial dysfunction. When the immune function of mice was impaired through severe toxicity, quercetin – in the right doses - ameliorated the effects and maintained optimal immune function. It was also revealed that it protects against detrimental spinal cord injuries and helps to recover lost motor control due to neuronal damage. In middle-aged and older individuals that were considered fit, quercetin was able to reduce the time it took to recover from an upper respiratory tract infection as well as lowering the symptoms of severity[331].

You can find this polyphenol ubiquitously in many herbs, fruits and vegetables, such as capers, onions, asparagus, tomatoes, green peppers, green tea and licorice root. Studies have shown that romaine and red leaf lettuce as well as capers and asparagus contained higher levels of quercetin compared to other foods; however the amounts of quercetin is also known to vary from season to season in the same plants and also depends on a variety of factors.[332] Crops grown organically had drastically increased quercetin levels (up to 79% more) compared to those that were genetically altered or sprayed with chemicals.

It tends to be absorbed better in the presence of sulfur, like fisetin, and therefore onions and other sulfur-rich foods (especially red-colored foods) contain the best varieties for absorption. While onions will not be permitted on the anti-shingles diet, leeks will be. I have also included a sulfur-based supplement that can dramatically lower pain, enhance the absorption of many nutrients, promote the excretion of waste products and help to keep the immune system stable (refer to MSM).

Kaempferol

Kaempferol, like quercetin, can be found in many healthful foods and contributes to protecting our cells from the effects of aging and mitochondrial dysfunction. The list of benefits reported in the literature is extensive, revealing how this compound exerts homeostasis on multiple systems of the body including the brain, heart, metabolic, musculo-skeletal and immune systems. It can lower levels of anxiety, stress, inflammation and pain too.[333]

Compared to many other polyphenols such as quercetin and fisetin, kaempferol showed the strongest antiviral activity against herpes simplex virus in combination with the catechins that are found in abundance in green tea.[334] In the face of an active infection or a leaky gut in which many foreign proteins enter the bloodstream and wreak inflammatory havoc, kaempferol was shown to ameliorate much of the inflammation and help keep the immune system coherent.[335] Of course, this compound has been shown to regulate AMPK, revealing that it induces apoptosis in faulty or infected cells while simultaneously preventing necrosis and DNA damage caused through infection.

Aside from helping to keep the immune system stable, kaempferol is also known as a 'senolytic' compound, contributing to the prevention of osteoporosis by improving bone mineral density and playing a star role in slowing the onset of numerous other age-related conditions, including cancer and neurodegenerative disorders like Alzheimer's disease that are associated with shingles[336]. Kaempferol has been shown to reduce the stress caused to the immune system when the body is exposed to very cold temperatures, something to which the elderly are particularly vulnerable.[337]

This polyphenol can be found in many healthy wholefoods foods including beans, bee pollen, broccoli, cabbage, kale, leeks, capers, cauliflower, chia seeds, chives, cumin, moringa leaves, endive, fennel, gooseberries, brussel sprouts and garlic.[338] Capers and quinces are known to contain very high quantities of kaempferol compared to that of other foods.

3.2.2 Probiotics

Seeing as all disease is connected to some form of microbial Dysbiosis in the gut and that rectifying the gut microbiome appears to ameliorate many faucets of disease; it only makes sense that probiotic foods are, in reality, an essential part of our diet that has been partially forgotten, in spite of the fact that we have been intentionally fermenting our food as a species for at least 10 000 years[339]. There are far too many functions that the gut microbiome is required for that without maintaining its health and biodiversity, we are essentially depriving ourselves of our own well-being!

In the context of shingles and other viral infections, correcting the balance of microbial life in the gut is essential for optimal energy production[340], regeneration, immune regulation, pain relief, stress management, adequate sleep quality, prime neuronal health, and ridding the body of latent viral genes that would otherwise allow for the virus to keep reactivating in cycles. All of these effects arise from microbial by-products, like butyrate, or through the cell signaling interactions that our gut bugs have with our immune and other cells. As butyrate is ESPECIALLY important for preventing viral DNA/RNA from tampering with our own cellular DNA/RNA[341] [342], and that the majority of microbiome profiles pertaining to disease sees a decline in butyrate-producing bacteria; this is one of the main reasons for upping the intake of probiotic (and prebiotic) foods in order to cure shingles once and for all.

Aside from that, probiotic foods come with their own suit of beneficial viruses – the kind that modulate our gut bugs in such a way that confers resistance to antibiotics, pathogenic invasion, heavy metal toxicity and other physiologically stressful stimuli.

The specific bacterial strains that one should focus on for general health include those from the Lactobacillus, Bifidobacterium and Actinobacter families. The latter can be cultivated in the gut through drinking herbal teas or fermented herbal drinks; however the former two require appropriate inoculations from our diet in the form of fermented foods. This is especially true given the modern-day environmental challenges presented to many of us (pharmaceutical use, pollution, EMF, harsh cleaning chemicals, chronic stress, etc), which pose a threat to these specific butyrate-producing strains.

Any form of fermentation releases larger volumes of nutrients from the food in question[343], raising both the amounts and bioavailability of vitamins, minerals, amino acids and more. Simultaneously, any toxins present in the foods are slowly degraded and eventually obliterated after sufficient time has passed. The acids produced by our gut bugs also help to digest and metabolize nutrients from other food sources which may be difficult to digest normally, particularly for those with digestive issues. In this way, fermented foods that contain the right strains of bacteria can greatly aid in nutrient uptake and absorption, which (in theory) is almost enough to tackle shingles alone and is certainly one of the best preventative measures one can adopt against viral infections.

Milk Kefir

Milk in its natural, raw state, is teeming with probiotic life and plenty of nutrients that are designed to stimulate the growth and proliferation of the developing calf's microbiome. We don't have the necessary enzymes to digest milk, which is why so many people are lactose intolerant; however bacteria have an enzyme for just about everything!

Humans have been taking milk and fermenting it for centuries[344], using bacteria to take advantage of the nutrients found in it (which include vitamin A, vitamin D, B vitamins, zinc, calcium, iron, phosphorus and plenty of others). Milk also happens to be ridiculously high in lysine compared to arginine, making it ideal for those with shingles or herpes when fermented. Furthermore, milk contains lactoferrin, which has been shown to inhibit the viral activity of influenza and protect blood cells from infection.[345]

With the invention of pasteurization in the 1800s, many of these nutrients have been degraded in commercial milk and the milk is then further watered down and fortified with synthetic nutrients that do little good for our biology. Moreover, cows are injected with plenty of hormones and antibiotics, which get passed on through milk and add to its bad rapport amongst health enthusiasts. The reputation of milk was further ruined due to the "nutritional racism" that was incited against both fats and cholesterol as soon as word got out that consuming a high fat diet contributed to disease. While this is true, it's not that consuming fat is bad. Many are blissfully unaware that the high fat content in raw milk is part of its beneficial effect, as butter or cream both lead to high levels of butyrate when fermented. Fats also help us to absorb essential fat-soluble nutrients like Vitamin A, E, D and K; especially when coupled with butyrate producing bacteria.

In spite of all the perceived problems pertaining to milk, it is one substrate that can be fermented to produce more than 30 strains of beneficial lactobacillus and bifidobacteria through the use of milk kefir grains! Milk kefir was originally traced back to desert wanderers in the Middle East who would travel for weeks on end with limited rations and no sign of food anywhere. Fermenting the milk from their travel animals with milk kefir grains would keep them healthy and sustained through these times, according to the historical records. In a modern day context, milk kefir has been proven by science to improve multiple parameters of disease through the action of these bacterial strains, regardless of the source of the milk[346] [347]. However, raw milk from free-range, grass-fed cows - that are not subject to hormones, antibiotics or other unnatural interventions - is the best.

I highly recommend purchasing your own milk kefir grains or seeing if anyone else locally is making it as they tend to grow quickly in milk and often create excess. Milk kefir is one of the easiest ferments to pull off as it only takes 1-2 days to get the end product and it contains a far higher abundance of the right bacteria than any other fermented food.

If you can't get milk kefir grains or if you are not permitted to consume animal products in your diet, then opt for a liquid probiotic supplement with as many strains as possible. Remember that you need to consume plenty of fiber-rich fruits and vegetables to sustain the growth of these organisms in the gut or these probiotic interventions will mean very little!

Lacto-Fermented Vegetables

As previously described, lacto-ferments of vegetable origin such as sauerkraut are known to convert Vitamin K1 to K2; a vital immune-enhancing nutrient. Sauerkraut in particular is rich in this nutrient, as well as three main strains of lactobacillus that are vital to our health and well-being. Even more potent than sauerkraut would be kimchi as it is made using varieties of cabbage that contain the right lysine to arginine ratio and many immune-boosting spices such as ginger, turmeric, garlic, and special Asian cultivars of chili peppers (see capsaicin in the following section).

Fermenting cabbage and other vegetables is easy to do, but it can take anywhere from 1 to 3 months before the right result is achieved for optimal health. I recommend starting your own ferments and consuming them in the months that follow this protocol to maintain your health, immunity and regenerative ability. Milk kefir or a decent probiotic supplement in combination with the diet in the protocol will be a sufficient start to repatriating your gut microbiome and taking back your immunity.

Store-Bought Ferments

Store-bought ferments are convenient but are nothing like their freshly fermented counterparts and do very little from the perspective of treating disease; which is why I have not included them in the protocol. They are typically sterilized through heat before they reach the shelves, lacking bacteria and many of the nutrients and enzymes that would otherwise have been there. However, these commercial probiotic foods still contain many of the beneficial organic acids that were produced during the initial fermentation process, meaning that they are capable of "working the soil" in your gut microbiome, so-to-speak. If opting for store-bought ferments, make sure that no additives are used and try to get as many live-culture options as possible.

3.2.3 Foods with Specific Anti-Shingles Properties

The following foods and substances are known to dramatically enhance immune function, digestion and multiple faucets of health and well-being with special regard toward treating shingles.

Reishi Mushrooms

Exotic Eastern mushrooms, like reishi and shiitake, have been used in Chinese traditional medicine for over 2000 years. In spite of a lack of stringent clinical trials, there is plenty of anecdotal evidence to back up their success, safety and efficacy as well as a few studies that test the effectiveness of both mushrooms in combination with other herbal extracts. There are also plenty of studies that have investigated the nature of the phytochemicals that these mushrooms contain which suggest that they are brilliant in the context of treating shingles.

Reishi – aka the "spirit mushroom" or "herb of spiritual potency" – is probably exactly what somebody with herpetic neuralgia needs in their peak time of crisis in order to lower pain and inflammation, and preserve the integrity of the immune system and liver. In test tube and mice models, active compounds of the mushroom were shown to boost macrophage proliferation and function[348], inhibit HSV-1 and -2[349], and induce apoptosis in HSV-infected cells[350]. The immune-stimulating properties of the mushroom don't end with macrophage activity, with it being shown to also enhance the spread of NK cells, T and B cells, and dendritic cells, as well as increasing both pro- and anti- inflammatory cytokines and interferons (particularly IFN-y). Speaking of apoptosis induction, the dominant amino acids found in reishi are lysine and leucine, suggesting that it regulates the AMPK pathway and has an incredibly complementary nutritional profile for the anti-shingles diet.

Other components of this mushroom have been shown to exert protective antioxidant and cholesterol-lowering effects that synergize with this protocol. When studied in combination with a few other Chinese herbs, the pain experienced by patients with shingles subsided within 10 days and never returned as postherpetic neuralgia in any of the test subjects during the year after treatment.[351] In other similar studies concerning HSV-2, the mushroom in combo with herbs reduced the time of viral infection by 50-80%, resolving the symptoms in as little as 2-5 days![352]

Perhaps some of the most impressive active ingredients in these mushrooms belong to their high content of the minerals selenium and germanium[353]; both of which support longevity and strengthen immune function[354]. 1g of reiki mushroom is enough to cover the minimum daily requirement for selenium in order to prevent deficiency.

If you can come by some wild reishi mushrooms, that would be the best. However, most people don't have access to them and therefore it may be easier to find a reishi mushroom extract to supplement with for enhanced immune support during the first two weeks of the protocol.

Mulberry Leaf Extract

If you can get your hands on some mulberry leaf extract, you will not only find yourself holding a rich source of resveratrol, but a potent blend of compounds that have shown to inhibit HSV latent viral genes[355], regulate immune function[356], enhance the viral-clearing capacity of macrophages[357] and aid in the maturation of dendritic cells[358].

This is a useful recommendation for those who suffer from shingles in cycles as there may be more than one herpes virus present in those cases. Mulberry leaf extract can often be found as a

herbal tea or as part of a herbal tea concoction. While I have not majored on it, feel free to add it to your green tea if you can find it.

Mineral Pitch

Mineral pitch – also known as Shilajit – is an all-natural humic substance that is incredibly rich in trace minerals, pro-digestive enzymes, amino acids and other organic acids that greatly enhance nutrient absorption. It is essentially the remains of organic matter that have been transformed through biological and geological processes into a nutrient-dense concentrate after hundreds to millions of years at high altitudes. The end product resembles a black resin, but one can also purchase it in the form of a liquid or powder extract.

Shilajit has been used for thousands of years in Ayurvedic medicine to heal just about every ailment with a reputation for restoring strength and vitality. While there are no studies on its effectiveness at treating shingles specifically, the impact it has on boosting immunity, lowering inflammation, and dramatically improving nutrient uptake is enough to warrant its effectiveness in the context of reversing shingles and multiple diseases. In mice treated with mineral pitch, it was shown that the substance enhanced the fighting force of their immunity and helped to prevent viral infection, without altering the anti-inflammatory arm of the immune system[359]. An increase in B and T cells as well as macrophages and IFN-y could be observed with lower levels of nitric oxide and inflammation – an ideal outcome for the herpes-sufferer.

In test tube studies, Shilajit has been shown to exert profound antiviral effects against both HSV-1, -2, Human Cytomegalovirus and a few other non-herpes viruses. The results indicate that it targets both viral replication and cell attachment, helping to prevent the spread of herpes but not entirely shutting it down. [360] Falling in line with these observations, Shilajit has been shown to improve antioxidant status and reduce cholesterol levels in human subjects[361]; both of which would prevent VZV from replicating as effectively.

Mineral pitch has multiple anti-aging benefits too aside from aiding immunity, digestion and nutrient uptake. Fulvic acid, one of its prime components, has been shown to enhance cognitive function and block the progression of Alzheimer's Disease by inhibiting tau protein plaque formation. Mitochondrial function largely regulates tau protein expression which in turn has a knock-on effect on the formation of amyloid-beta plaques. Seeing as shingles already manipulates neurons to form hybrid amyloid-beta plaques; regulating both mitochondrial function and tau protein is a good precaution to take to prevent varicella-induced dementia and other neurological complications.[362] Moreover, Shilajit can help to combat fatigue[363], muscle wasting[364], frailty, fracture-susceptible bones and osteoporosis in the elderly.

Considering that mineral pitch contains more than 80 trace minerals, including decent amounts of all of the minerals discussed in this chapter for immune support, it is one of the best nutritional supplements to have on hand for fending off any infection and correcting any mineral deficiencies. There has also been a lot of research done on the other individual components of mineral pitch that show just how effective it is at ameliorating the effects of free radicals, boosting energy production in the mitochondria and supplying the cell with the nutrients it needs to bring about mitochondrial homeostasis. Mineral pitch has also been used with success to treat

painful, inflammatory skin afflictions such as psoriasis and dermatitis. In theory, topically applied shilajit should be able to ameliorate some of the pain induced by the shingles rash and aid in the wound repair process, however there have been no specific tests to see if this is the case.

I have nonetheless added it as a potential option for topical pain relief (refer to the appendices section for quick topical pain relief recipes). It should be noted that not all mineral pitch supplements are made equal and some manufacturers typically destroy the nutritional content through processing. Guidelines on selecting a good quality supplement are present in the appendices section.

Digestive Enzymes

The elderly are known to commonly have digestive issues, which contribute to nutritional deficiencies such as impaired vitamin and antioxidant intake; thus indirectly contributing to chronic shingles infectivity. The main digestive organs to have trouble on average in an aged individual would be the pancreas and liver. Digestive enzymes from our diet, digestive organs and inhabiting probiotic fauna and flora are the means by which the body breaks food down into the right sized molecules for proper absorption.

It is a common trend in Germany for holistic doctors to treat shingles patients through the use of digestive enzymes rather than the antivirals that are prescribed by allopathic doctors. This is because the results from clinical trials have revealed that it is at least as effective in treating shingles as the commonly prescribed treatment. Since many digestive enzymes are found in fruits, high fruit intake has been shown to single-handedly combat herpes viral infections and the most commonly shingles-stricken populations (the elderly) tend to battle to absorb nutrients, it makes sense that digestive enzymes are going to form part of the cure. Fruits that are high in digestive enzymes include kiwi, papaya, pineapple and figs; however ALL fruits have them. Amazingly, the above fruits are all super high in lysine and low in arginine (except for kiwi), complementing the anti-herpes diet like the night complements the day!

Many of the other foods mentioned in this chapter will also aid digestive indirectly by lowering stress levels and correcting neuro-hormonal imbalances, which contribute to the efficiency of digestion.

For those who suffer from severe constipation, a digestive enzyme supplement (containing trypsins, pancreatin, papain or bromelaine) combined with a natural laxative is highly recommended to get you going. More details are covered in the appendices section at the back under supplements.

Herpetic Neuralgia Pain Relief

Since each plant contains hundreds of components that all work synergistically together, the sum of the parts tend to produce more beneficial effects than the parts administered in isolation. In the case of a shingles outbreak, there could be a few causes for the pain experienced (although the main ones are covered in part I) and therefore the best results will be achieved through

consuming a blend of whole plant extracts (flowers, leaves, roots) that are capable of covering all scenarios in order to reduce pain and pain perception.

AMPK works to lower inflammation and promotes the immune to shift to a more anti-inflammatory profile. Boosting AMPK signaling in the mitochondria can effectively reverse the chronic pain associated with post-herpetic neuralgia.[365] Since AMPK regulation is a mainstay for this protocol, many of the nutrients discussed in this chapter will help to lower pain. However, the below natural remedies especially stand out for their contributions to tackling post-herpetic neuralgia and the pain given off by the rash itself. Most of the ingredients in this section and a few others from this chapter can be mixed together to form a pain-relieving salve. Refer to the appendices section for immediate topical pain relief recipes.

Capsaicin

As counter-intuitive as it may seem, capsaicin – the active component of cayenne and many other chili peppers - is an ancient remedy for pain relief, in spite of the infamous sting associated with the whole plant! Capsaicin topically applied to herpes cold sores and shingles lesions has been used with great success to lower pain. In fact, it has such a potent effect that the pain receptors it blocks in the body have been nicknamed the 'capsaicin receptors.' Perhaps the only things more potent than capsaicin at blocking pain would be cannabinoids and cloves (discussed later on in this chapter).

Before you rush out and apply chili paste to your rash however, keep in mind that it is only the capsaicin component that you want to use. Trust me (I've tried it), you do not want to try using chilies directly on your skin – it may resolve pain in the end but only after inducing a hardcore reaction first that has the potential to be worse than your actual shingles rash!

Instead, it's best to fight fire with fire by using an ointment that contains at least 0.25% capsaicin, the active pain-blocking ingredient in chilies. To acquire this type of ointment, one typically needs a doctor's prescription; otherwise there are over-the-counter preparations available that fall in the measly range of 0.025-0.075% capsaicin. While both types of formulations are effective at blocking pain in degrees and are convenient to apply, they may still contain other ingredients that will hamper full recovery. Luckily, there is an even cheaper, healthier natural option that does not burn the skin, which would be cayenne pepper, a milder chili pepper that can be utilized as a substitute with even more strength than commercial formulas. Cayenne pepper is made up of about 1.5% capsaicin, making it an exceptionally potent pain-reliever. I recommend making your own salve as directed in the appendix on pain relief, however if you prefer the convenience, you may add cayenne and the other ingredients into an ointment base. Adding cayenne pepper to your cooking in combination with turmeric is also a good idea that I encourage you to do for additional pain relief.

Salicylate

Topical Salicylate activates AMPK and alleviates pain when applied topically to a shingles rash.[366] Salicylate is a salt derivative of salicylic acid, which is the active component in aspirin;

however aspirin contains a synthetic analogue that has been shown to induce liver toxicity[367], a side effect that is likely to induce systemic complications with regard to shingles.

Natural versions of salicylic acid can be found in white willow bark and wintergreen leaves. I suggest acquiring some white willow bark and consuming it as a tea when the pain feels too intense or even putting some in your bath water. A salicylate-containing ointment can also be a good idea; however the same understanding as a capsaicin-containing ointment will apply (see capsaicin above).

Manuka Honey

Honey has been known since ancient times to help treat many diseases due to its potent antimicrobial, probiotic and anti-inflammatory effects. All honey has been shown to enhance wound healing in skin, especially with regards to fast tracking recovery of burn wounds and has been traditionally used topically for all sorts of skin conditions. Manuka honey in particular is renowned for its medicinal properties and has been shown to directly inhibit shingles replication in test tube studies.[368] More experiments reveal that honey applied directly to VZV-induced lesions worked effectively at healing them and inhibiting viral activity[369], which is precisely why honey will be included as part of the diet as well as added into topical preparations to help soothe inflammation and speed healing. Bee pollen is also a rich source of kaempferol, further adding to honey's impressive array of benefits.

Most don't realize that honey is a direct probiotic product made from the microbiome of bees and that it contains pollen from every flower the bee has visited; meaning that it is a super potent concoction of hundreds (if not thousands) of medicinal plant molecules that both inhibit pathogenic growth and promote probiotic success. On this note, that also means it's best to source honey collected from an environment that is natural, wild or at least without chemical sprays. Otherwise the quality of the honey's medicinal action will be affected due to a dysbiosis in each bee's microbiome and an accumulation of pollution in the end product. Honey is also often irradiated, which degrades the potency of the viable ingredients it houses.

Honey should be taken internally and applied externally during an active shingles infection due to its anti-inflammatory and immune-enhancing profile. If you have an ointment containing capsaicin or salicylate, honey can be added to that to enhance the pain relieving effects, prevent the formation of scars and speed up wound healing. If not, honey will form the backbone of a salve in combination with bentonite clay, ginger, cayenne pepper, licorice root powder and lemon balm to stifle the pain and progression of shingles lesions.

Lemon Balm (Melissa Officinalis)

Lemon Balm is another herb found in the mint family, all of which seem to have pain alleviating, anti-inflammatory and anti-shingles effects (as discussed under Teas, Herbs & Spices). Melissa Officinalis in particular has been used with great success topically on herpes cold sores, causing them to disappear within approximately 5 days compared to the average 10 days using pharmaceutical ointments or 21 days without using anything. Test tube studies have backed up

these live observations, revealing that even miniscule amounts of lemon balm extract has a potent inhibitory effect on HSV-1, -2 and VZV.[370] [371] [372]

I recommend having both the fresh herb as well as the essential oil on hand at all times throughout the protocol. The essential oil can be added to your salve of choice to enhance the effects and inhibit the spread of the virus in half the time!

Ginger

Ginger is a very potent (and just as delicious!) anti-inflammatory spice that has been used with great success to treat inflammatory symptoms across the full spectrum of various immune malfunctions (diseases). Diabetics, those with arthritis and many other conditions in which patients suffered intractable pain similar to that experienced in shingles, extracts of ginger were shown to have effective pain-inhibiting properties; which have been backed up by further observational studies conducted on mice[373] [374]. The pain-relieving properties of ginger work in the same way as capsaicin by binding to neuronal pain receptors and blocking pain[375]. Ginger helps to greatly preserve mitochondrial function too and has been shown to regulate glucose metabolism, protect neurons from excitotoxicity and damage[376], anti-cancer benefits[377], induce AMPK activation[378], enhance overall immunity and (in the case of ginger oil) inhibit the replication of anti-viral resistant HSV-1[379]. Lastly, components of ginger can prevent viral DNA/RNA from remaining bound in the genes of infected cells, hypothetically able to annihilate the ability of VZV to remain latent.[380]

I recommend adding ginger powder to your topical preparation as well as drinking plenty of ginger tea and adding it to cooking where possible. I have also included a recipe for a simple ginger ale as fermenting ginger unlocks more of its potent immune-boosting polyphenols and adds extra B vitamins to the equation. Furthermore, the probiotic yeast content of live-cultured ginger ferments is another nutritional component that has more lysine than arginine, aiding in viral inhibition.

Bentonite Clay

While there is nothing specific regarding the use of clays in the context of shingles, clay minerals present in bentonite clay have been shown in vitro to bind to herpes simplex virions, lowering their immune-provoking capacity and rendering them inert[381]. Bentonite clay particles in general has been shown to be able to bind to the membrane of many pathogens, rendering them inactive, suffocating them or causing them to die off due to the way in which minerals interact with organisms. Furthermore, clays have been used to pull impurities out of skin, speed wound healing and counteract skin afflictions for centuries.[382] [383]

Using bentonite clay on your shingles lesions will help to extract the viral particles out while simultaneously adding back anti-inflammatory minerals such as magnesium. You can also add bentonite clay to your bath water to help drain your glands, take pressure off the immune system and lower overall pain; however you don't want to do this more than twice a week or without taking a trace mineral supplement, as it may leach other important minerals from the body.

When applying clay topically, it needs to be mixed with a liquid and made into a wet paste. Avoid inhaling the fine dust particles. Once applied, the clay will take its time to dry and in the process, you may feel a pulling or tightening sensation on your skin. When dry, you can rinse it off. Your skin may look a bit more red than usual – that is normal and should subside within 20-60 minutes. Refer to the topical pain relief appendix for recipes regarding the different applications of bentonite clay.

Peppermint

While peppermint is fantastic for internal use in regards to lowering inflammation, pain and anxiety (see 'The Entire Mint Family' under herbs), its topical use in the case of shingles and HSV is far more useful. When applied to the skin, one of the main ingredients in peppermint (menthol) exerts a very soothing, cooling effect to the area. In a case study, a patient with postherpetic neuralgia applied peppermint oil directly to her lesions and experienced pain relief for 4-6hours on average after each application[384].

I have recommended using peppermint oil in a topical preparation or in combination with magnesium salts in an Epsom salt bath.

Cannabinoids

Cannabinoids are highly medicinal compounds that were originally discovered in cannabis (hence the name), however have since been found in a variety of other plants such as the Brazilian plant Copaiba. Aside from their potent inflammation-lowering and anti-carcinogenic effects[385], it has been demonstrated that cannabinoids are capable of blocking multiple pain receptors in the body[386] as well as help to significantly lower anxiety and improve aspects of innate immunity. In animal studies, copaiba oil was shown to enhance metabolism, increase mitochondrial glutathione and energy output[387], as well as lower inflammation associated with the central nervous system and chronic inflammatory disorders[388], such as arthritis[389]. Its neuroprotective effects were potent enough to prevent severe nerve damage in rats that had undergone excitotoxic injury.[390]

I recommend finding some good quality CBD oil to take internally and using copaiba essential oil as a cannabinoid-rich topical agent to help lower pain.

MSM

Methylsulfonylmethane, or MSM for short, is a natural form of sulfur that is found in small quantities in sulfur-rich foods such as cabbages as well as forming a natural part of the Earth's sulfur cycle, a process that plays a central role in cloud formation.

The extract taken in supplemental form has shown fantastic results for lowering the debilitating joint pain associated with arthritis and osteoporosis[391]. In addition to this, MSM has proven capable of lowering stress, anxiety, and generalized pain, as well as boost energy levels, improve blood circulation, inhibit parasites and speed up wound healing.[392]

A closer look reveals that it helps to enhance the anti-inflammatory arm of the immune system, promoting better macrophage and other white blood cell activity. Its pain-blocking effects are attributable to its ability to inhibit COX-2, lower inflammation and mop up cell-damaging free radicals. As MSM appears to regulate many similar pathways that are also controlled by AMPK and sulfur-containing compounds appear to have a natural affinity for regulating AMPK[393], MSM may well have a suppressive effect on VZV replication too and be capable of inducing the kind of cell death required to tackle the virus.

I recommend ingesting sizable amounts of MSM in combination with Vitamin C powder that has been enhanced with bioflavonoids – as directed in the appendix.

Secondary Infections

As Shingles is known for suppressing the immune system and welcoming on board other infections in the process, I have included a few antiviral measures that also tackle secondary bacterial infections. The two most common pathogen strains that like to cohabit with VZV would be resistant staphylococcus and streptococcus species. Both of these strains harbor resistance through making use of biofilms[394] that are difficult for pharmaceutical antibiotics to penetrate and as a result, often lead to both infections running in cycles alongside shingles. Antibiotics typically suppress immune function and lead to a worse outcome; provoking these strains to adapt by forming stronger defense mechanisms that will only cause an allopathic doctor to up their antibiotic game and systematically strip away your immune's ability to mount an effective counterattack.

Luckily, there are plenty of organic compounds that can penetrate bacterial biofilms and demolish members from both of these strains.

Apple Cider Vinegar

Apple cider vinegar (ACV) has been used for at least the last 5000 years as a potent antimicrobial, antifungal and antiviral agent. One of the best parts is that it is both antimicrobial and probiotic, provided it still has some of the raw "mother" culture living in it. Nonetheless, the organic acids present in apple cider vinegar are enough to change the pH of the gut and condition the right environment for the acetobacter family of bacteria. This action gently sweeps out any organisms that are unable to survive in those conditions, preventing their attachment to cell walls, as well as replacing them with good gut bacteria and without encouraging them to become resistant. [395]

In many cases, resistant bacteria move into different physical forms that add to their resistance, such as biofilms or singular bacterial units in the case of staphylococcus aureus. ACV is capable of breaking up biofilms where conventional antibiotic treatment tends to fail. Only a small amount of vinegar in water is required for maximum effectiveness against resistant bacteria like staphylococcus aureus (1:25), E. Coli (1:50) and C. Albicans (1:2)[396].

The fermented liquid has been shown to enhance phagocytosis in immune cells. Phagocytosis is the process where macrophages, dendritic cells and other immune cells consume and break down

microbes such as viral particles and bacteria. This is an essential part of our immunity and is required to fully fend off any infection, as well as clean the body up after.

ACV has a few other contributing components that lower bodily inflammation and protect vital organs from the damages of oxidative stress. Benefits include:

- Lowering bad LDL cholesterol levels
- Protecting liver, kidney and blood cells

Oregano, Rosemary or Thyme Oil

Oregano, thyme and rosemary, aside from making tasty additions to your meals, have a marked antimicrobial effect when it comes to tackling resistant bacteria. Each herb contains numerous compounds that are capable of exerting their antimicrobial effects and in combination with the anti-biofilm activity of apple cider vinegar and adequate immune-nourishing nutrition, each is capable in their own right of preventing a secondary infection. The main active component in this respect that is shared between all of them would be carvacrol and its derivatives.

In studies concerning carvacrol in oregano and rosemary, results revealed that adding these herbs to food neutralized opportunistic pathogens that found their way into the meal[397]. Similar results have been shown in tests conducted on resistant strains of streptococcus, revealing that carvacrol worked better than conventional antibiotic treatment.[398] Thyme essential oil inhibits resistant forms of staphylococcus at 2.5ug/mL[399] and has also been shown to inhibit resistant forms of HSV-1.

Out of the three herbs mentioned, the essential oil of oregano is the most potent. You will only need 1 drop per every 5L of water you take it in, otherwise it can burn you. I recommend diluting a ¼ cup of apple cider vinegar and 1 drop of oregano essential oil in 5L of water and then consuming a glass of that 2-3 times a day. Aside from preventing a secondary infection, the apple cider vinegar will help to lower inflammation, boost immunity and improve probiotic diversity in the gut microbiome. Refer to the protocol for more info.

Other

Many of the other plant-based interventions mentioned in this chapter also confer protective benefits against multiple pathogens including the ones that like to partner with shingles. Here is a list of other compounds that can help in this regard:

- Garlic
- Quercetin
- Kaempferol
- Licorice root
- Green tea
- Mineral Pitch
- Ginger
- Red berries (especially mulberries, cranberries and cherries)
- Vitamin C

- Zinc
- Mulberry Leaf Extract
- Bentonite Clay
- Honey
- Cinnamon
- Wild flowers
- Lemon and other citrus fruits
- Clove

Support for the Aged (or Removed) Thymus Gland

If you are over the age of 60, have had your thymus gland surgically removed or are severely depleted of thyroid-protective nutrients, then the below recommendations can help to restore your immune function back to its original state.

Raw Glandulars

As controversial as it is, the best natural remedy for those who have damaged, aged or even non-existent thymus glands would be consuming either raw or fermented thymus glands or thymus extracts from cows. Aside from being a rich source of all the nutrients the thymus needs, the consumption of thymus extract has shown to stimulate the full suite of thymic hormones, as well as fulfilling the function of any thymic hormone that may be absent. The benefits do not just end there. Supplemental raw thymus has been shown in preliminary studies to regrow an entirely new thymus gland in rats that had theirs removed[400]!

If you had your thymus removed (something that is more common than you might think) or are over the age of 70, you may wish to consider taking a raw bovine thymus extract to improve your immunity. It used to be relatively easy to acquire any raw glandular for medicinal purposes, however these days it may be a bit more difficult. Nevertheless, there are several reputable brands around the world that offer good quality thymus extract that can be used for such a purpose (usually in the form of the main thymus peptide, thymomodulin). The appendices section offers basic guidelines for selecting a quality thymus extract.

Thymic Nutrients

The following nutrients are absolutely critical for maintaining a healthy thymus for as long as possible:

- Carotenes (Vitamin A isoforms)
- Vitamin C
- Vitamin E
- Vitamin B6 (P-5-P)
- Zinc
- Selenium

When immune-compromised individuals supplemented with the above nutrients, thymic function was shown to be improved, the release of thymic hormones increased and overall immunity was significantly enhanced.[401] Naturally, all of the above nutrients are included in this book's protocol and have multiple actions across the entirety of the immune system.

Thyroid Support

The thyroid mainly requires adequate amounts of selenium and iodine to function optimally as well as low stress and bodily inflammation. Both selenium and iodine can be found in abundance in seaweed and algae alongside many other beneficial nutrients like highly-bioavailable forms of Vitamin A and omega-3 fatty acids.

Brown Algae Extract

One of the most potent algae extracts available would be from Ecklonia Cava, usually harvested in the oriental oceans surrounding Japan, Korea and China. Ecklonia Cava extract has been tested and proven to enhance thyroid function in both cases of hyperthyroidism and hypothyroidism[402] through offering a great variety of thyroid-regulating nutrients.

The benefits of this amazing supplement are not limited to supporting the thyroid only however. Investigation into this algae's medicinal profile has shown that it dramatically lowers hypertension, improves our overall cholesterol profile[403], enhances blood flow and cardiac health, lowers anxiety and stress levels, boosts immunity, inhibits pathogens[404], exerts neuroprotective effects[405] and keeps inflammation in check[406] [407]. For these reasons, Ecklonia Cava Extract is a fantastic supplement that should be a part of every anti-aging and immune-boosting protocol out there!

Green Seaweed

In addition to containing thyroid-supportive nutrients, kelp has long been known to possess immune-enhancing properties. This is due to a subset of seaweed-specific phytochemicals known as fucoidans which have been shown to inhibit HSV-1 and -2 and to significantly boost the immune system through boosting NK cell activity and IFN-y production.[408]

If you can't find ecklonia cava extract, which has many similar properties to seaweed, I recommend getting a kelp extract to add to your supplemental regime.

3.2.4 Teas, Herbs & Spices

Spices

Clove

Cloves are made of ±85% of the chemical compound eugenol, which has been used as a main component in anesthetics for decades. Naturally eugenol blocks pain receptors very effectively

and as a result, cloves have been prescribed in herbal medicine as a pain killer for several symptoms such as toothache[409], migraines and painful spasms. Clove also contains other pain-blocking compounds such as salicylic acids, the natural equivalent of the main active ingredient in aspirin. Due to the way in which cloves interact with neurons in the trigeminal nerves – commonly VZV-infected nerves associated with moderating pain perception – it has the potential to lower the intensity of pain experienced in those with postherpetic neuralgia. The use of cloves as a pain killer has been documented as far back as the 13th century.[410]

Eugenol and clove extracts have both proven to act as effective antioxidants and antimicrobial agents, more so than many fruits, vegetables and other spices which have reported to exert protective benefits against shingles. Not surprisingly, clove contains decent amounts of quercetin, kaempferol and ellagitannins, which are health-promoting tannins that are found in green tea and many fruits (see green tea). The polyphenol content of clove has been quoted at being 15 000mg per 100g[411] which is far higher than the vast majority of foods.

Cloves are also capable of stifling the onset of tumors and have been shown to regulate cellular apoptosis in faulty cell lines.[412] While I have selected clove mostly for its pain relieving, apoptosis-regulating and antioxidant benefits, its antimicrobial profile tackles an impressive selection of pathogens, including the ones discussed prior that are known to run in tandem with shingles and herpes viruses. Furthermore it exerts a potent anti-HSV effect that is neuron-specific.

Cloves can be easily infused in tea or added into cooking (works well with rice and other Eastern spices). If you can get your hands on some clove essential oil, adding a drop into a base salve can dramatically lower pain when applied topically to shingles. Do not apply clove oil directly to your skin as it may burn.

Licorice

Licorice maintains a strong anti-shingles profile thanks to two of its active constituents: Glycerrhetinic Acid (GA) and Quercetin. Topical application of licorice root or GA proved to be far more effective at resolving the rash than topical antivirals or steroid drugs commonly prescribed for shingles patients.

Internal use of licorice also has beneficial properties for those with shingles. Quercetin is believed to be one of the strongest antiviral compounds inside licorice[413], shown to induce apoptosis through regulating the AMPK pathway and preventing viral latency. Licorice also acts as an adaptogen, meaning that it regulates inflammation, cortisol and the stress response in the body, which is especially useful when fighting infection[414]. The effect licorice root has on the immune system seems to be suppressive in larger doses, yet regulatory of the pro-inflammatory response in lower doses. In shingles cases, this translates to better overall immune function through increased co-ordination between immune cells.

In spite of its amazing properties with regard to inhibiting VZV replication and lowering bodily stress, licorice root powder contains phyto-estrogens that can eventually cause hormonal imbalances, especially in men. However, for short-term use (3 months or less), licorice has a

balancing effect on feminine hormones and the heightened estrogen content can also be beneficial in the context of treating shingles. Licorice root should not be consumed every single day either. The protocol contains guidelines for when to take licorice as well as how much to take to avoid side effects.

Garlic

Garlic is perhaps the only food I have allowed into the protocol that is higher in arginine than lysine. However, due to its multitude of beneficial effects in the context of demolishing shingles, it ought to be consumed!

Buried within garlic's delightful flavor are compounds[415] that are capable of binding to the mannose sugars present in the protein coat of varicella zoster virions[416] [417], thereby effectively preventing the virus from spreading, particularly to immune cells.[418] [419] By the same mechanisms, garlic can decrease the risk of contracting HSV[420], influenza A and other viruses.[421]

The sulfur-containing compounds in garlic are known to regulate AMPK as well as aiding the mitochondria by enhancing the function of glutathione. Glutathione is also a sulfur-based compound that is required for optimal immune cell function by acting as a master antioxidant and preventing excessive free radical damage from thwarting their efforts. Many elderly and those who have a weak immune system are depleted in this vital antioxidant, adding to the classic shingles immune profile whereby cellular signals are out of balance and inflammation spirals out of control. Consuming more sulfur-based compounds can increase the level of bodily glutathione, however the majority of sulfur-containing foods tend to have a higher amount of arginine than lysine in them. [422]

One of the most potent antiviral compounds in garlic is a substance called Ajoene[423]. Not only does this compound inhibit HSV-1 replication, but it has been shown to regulate both cholesterol synthesis and the AMPK pathway in mice.[424] Ajoene is only released properly in oil extracts of garlic, which is why I recommend immersing whole garlic cloves in olive oil and adding a complementary herb such as oregano, rosemary or thyme. The longer the garlic has been immersed in the oil, the more potent the resulting end product; with the strength of the infusion peaking at 20 months to form a potent aged garlic extract. Of course, this protocol is not going to drag on for longer than 1 month for most. If you have suffered for a long time from chronic shingles in cycles, I highly recommend investing in lots of garlic and building a supply of aged garlic to help keep your immune system stable, particularly during times of stress.

In terms of the immune system, garlic has been shown to lower excessive inflammation by enhancing the anti-inflammatory immune response while simultaneously promoting IFN-y, nitric oxide synthesis and the proliferation of various white blood cells.[425] Other benefits of garlic include antimicrobial, antifungal, cardioprotective, liver support, regulation of bodily fat production, enhanced blood circulation and cancer prevention.[426] As garlic thins the blood, it should not be eaten in combination with taking a blood-thinning medication such as warfarin.

While garlic is terrific as an antiviral medicine, it should still be consumed in moderation that allows for the overall lysine content of your diet to be higher than arginine. In the protocol, I

have included an example anti-herpes soup recipe that includes garlic and shows you how to calculate the overall lysine to arginine ratio of the food you want to prepare.

Herbs

The Entire Mint Family

The entire mint (Lamiaceae) family of plants have many similar compounds in varying amounts that are all effective at inhibiting COX-2 and effectively lowering pain.[427] [428] Many studies have also revealed that herbs from this family also exert protective effects on neurons and help to lower inflammation in the brain and nervous system. Furthermore, many compounds found across the spectrum of mint family plants yield potent antiviral and general antimicrobial properties.

Common (yet potent) herbs from this family include mint, catnip, lavender, rosemary, basil, sage, thyme, lemon balm, oregano, chia and many other herbs.

Throughout the protocol, I urge you to use as many of these botanicals in your cooking as possible as well as providing a specific herbal tea blend that should be ready on tap for instant pain relief.

Lavender

The beautiful leaves and blossoms of this herb have a reputation for being one of the most calming, soothing botanicals known to mankind and for good reasons, it deserves special mention. Lavender essential oil has been shown to block pain receptor activation in a dose dependent manner, as well as being able to protect neurons from overt toxicity[429] - something that is not to be sneezed at. Incredibly high doses of lavender in mice have shown to anaesthetize them to severe pain, such as the pain that they would have experienced while burning themselves on an active hot plate! Lavender also happens to be fantastic for speeding up the regeneration of burn wounds in a way that leaves no scars behind.

Just the smell of lavender essential oil is known to trigger receptors in the nose that take some of the active components directly into the brain and exert calming anti-anxiety effects. Eating lavender flowers can be just as potent as taking anti-anxiety medications but without any unwanted side effects - something I will be prescribing during the protocol to ease tension and help keep pain under control, as well as using lavender in tea and the essential oil in a magnesium bath (refer to the protocol section).

Teas

Green tea

Green tea polyphenols are very potent when it comes down to inducing a state of health and well-being. Studies have shown that green tea enhances NK cell activity as well as increasing the growth and proliferation of macrophages. Green tea's immune stimulating activity is situational

and works masterfully to correct imbalances by either promoting or suppressing cellular signals where appropriate. In this respect, studies looking at the exact effects of green tea and it's active components appear to be contradictory, both activating[430] or deactivating[431] T cells in different contexts – however, the bottom line is that the activity of green tea is always beneficial for the recipient.

Green tea polyphenols regulate the AMPK pathway and have been shown to induce complete autophagy in cells that needed it. Moreover, these effects were observed in neuronal cells specific to shingles. This in combination with its ability to degrade free-floating lipid molecules in skin cells would greatly aid in suppressing the progression of an active shingles infection.[432]

A side benefit of green tea would be its diuretic synergy, helping the recipient to cycle out more bodily fluids and get rid of more infectious particles.[433] Further adding to this synergy would be green tea's ability to prevent attachment of pathogens to cell walls in the urinary tract and other areas of the body, helping to lower the risk of contracting a secondary infection, particularly a urinary tract infection[434]. Green tea also serves to demolish tumors, lower and regulate blood pressure, mimic caloric restriction, burn fat through gene regulation[435] and thermogenesis (internal heat generation) and has been shown to exert protection to just about every organ system in the body, including the nervous system. As a bonus, green tea can theoretically take away bad breath![436]

Green tea should only be had throughout the day due to its caffeine content. In the protocol, it will form the base of a potent anti-shingles tea potion, the recipe for which can be found in the appendix section.

Chamomile tea

Chamomile flowers are one of the most soothing botanicals on the planet with an angelic reputation for lowering stress and acting as an all-you-need sleep tonic. Since fighting any infection - particularly one that takes place in the nervous system - can keep some of us awake or hamper the quality of sleep and seeing that sleep is vital to maintaining optimal immunity; chamomile is a perfect addition to this anti-shingles protocol.

Apigenin, the main active phytochemical found in chamomile, is known to cross the blood brain barrier and bind to a specific receptor in the brain known as the benzodiazepine receptor[437]. This receptor is often the target of hardcore "knock-out" sleeping pills, however the price to one's health for using these highly addictive substances often results in chronic sleep deprivation as the body battles to make its own source of sleep-promoting chemicals of this nature. Yet, in the case of the lovely, calming chamomile flower, only positive side effects are experienced and there is no risk of chemical depletion or dependency whatsoever.[438]

This amazing chamomile compound has further been shown to possess anticancer, anti-convulsant, anxiety-lowering, neuroprotective and pro-digestive effects. It appears that wherever apigenin goes in the body, a significant reduction in inflammation follows, with these effects being most pronounced in the brain, nervous system and gut[439]. Apigenin is capable of inhibiting COX-2 receptors and therefore contributes to pain relief. In the context of shingles, chamomile

tea before bed will help you to sleep peacefully in spite of potential fevers, restlessness and constant activity in the nervous system known to stimulate wakefulness.

Apigenin is also found in basil, oregano, thyme, parsley, celery, onions, teas and fermented beverages.

Milk Thistle

Milk thistle is another herb often drank as a tea that has many beneficial anti-herpes benefits – the main ones of which would be liver support, boosting immunity and neuronal regeneration in the context of shingles. The liver is one of the first organs that gets targeted by the virus once it goes systemic and thus to prevent that outcome, some milk thistle tea will do you a world of good!

In the context of natural and traditional medicine, milk thistle has been documented as a known remedy for liver ailments for more than 2000 years. Evidence supports this, showing that it can protect the liver and pancreas from severe damage induced by environmental toxins and alcohol poisoning. Moreover, the herb has shown to offer digestive aid by helping to regulate bile salts in the body[440], an effect that suggests it confers protection to the gallbladder too. The kidney is another organ that this herb is known to protect from similar hazards, further contributing to its overall protective benefits as kidney problems tend to impact the liver and a few other organs[441].

In many ways, milk thistle extracts have been shown to protect the nervous system too by boosting mitochondrial function, enhancing new neuronal growth[442] and regulating both AMPK[443] and apoptosis in a situation-dependent fashion. Ingesting these extracts can protect the mitochondria directly from damage as well as up-regulate the production of mitochondrial antioxidants such as SOD and glutathione.[444] Some sources show that it can increase glutathione levels by as much as 35% in the liver, which uses a significant amount in everyday functioning. The antioxidant activity and supportive actions of milk thistle are at least ten times more potent than Vitamin E!

From an immunity perspective, milk thistle is brilliant for supporting a weak immune system. Studies reveal that the polyphenols found inside the herb are capable of boosting antiviral interferons as well as stimulating the release of cytokines[445] that enhance T cell proliferation. Other studies have shown how milk thistle extract also inhibits T cell proliferation and interferons, depending on what dose one takes. A lower dose is associated with an anti-inflammatory effect whereas larger doses encourage the pro-inflammatory side of the immune system. The doses of the isolated components found in milk thistle required for stimulating inflammation however are much higher than consuming the herb as a beverage, which is ideal for all-round tissue protection and support. As a bonus, it can also potentially inhibit the activation of Epstein-Barr Virus[446], one of the worst herpes viruses that commonly runs in cycles like (and sometimes in tandem with) shingles. This effect may be due to the way in which this herb has been shown to directly inhibit the activity of viral DNA/RNA in a similar fashion to butyrate[447] and Sirtuins.

So far, all studies done on humans regarding milk thistle have proven to be safe for both men and women; however in rats that were fed very large doses, milk thistle encouraged rapid proliferation of ovarian follicles as well as excessive endometrial growth[448]. For this reason alone, long-term use or over-dosing on milk thistle can be damaging for women, particularly those who have estrogen dominance, endometriosis, heightened testosterone levels or polycystic ovarian syndrome. On the other hand, those who have critically low testosterone levels or who had their ovaries removed can benefit from the regenerative properties this herb has to offer. It is interesting to note that while this herb contains significant amounts of phytoestrogens – which have mixed effects on hormonal profiles in men and women – all the research reveals that milk thistle does not tamper with estradiol; which is one of the main issues regarding the intake of exogenous estrogens, as heightened estradiol is associated with both prostatic and breast cancer. Instead due to its impressive anticancer properties, this is probably one of the safest phytoestrogen-containing foods to consume for tumor prevention.

Honeysuckle & Other Flowers

Many flowers that grow commonly in people's backyards actually contain a wonderful variety of phytochemicals that often ease inflammation and boost immunity. Honeysuckle flowers, for example, have been shown to inhibit the replication of varicella zoster virus as well as prevent their ability to remain latent in the nervous system.[449] Cream colored carnations can offer decent amounts of kaempferol whereas red ones will help to decrease intestinal permeability and enhance the gut microbiome.[450]

Other potent anti-inflammatory flowers include:

- Roses[451]
- Chrysanthemum[452]
- Calendula[453]
- Nasturtiums[454]
- Lavender and chamomile (as discussed in this chapter)
- Flowers from herbs such as dandelion, basil, mint, catnip and more
- Hibiscus[455]
- Daisies[456]
- Rose geranium
- Passionflower[457]

While the protocol itself makes no mention of these flowers, I encourage you to add them (and any other flowers you might enjoy) to salads, teas or eat them whole to increase the nutritional content of your diet.

3.2.5 Dietary Fats & Cooking Oils

As discussed in previous chapters, varicella zoster manipulates the cholesterol and fat-producing pathways in our cells to help itself replicate and to cause imbalances in the immune system. Furthermore, consuming a diet high in fats is known to also incite an imbalance of this nature and contribute to gut Dysbiosis, excessive inflammation and the progression of several diseases.

However, not all fats are known to contribute to disease in this manner and it really depends on the type of fat and the ratio that these fats are consumed in.

There are few of these ratios one can consider with the main ones being:

1. Omega-3 fats to Omega-6 fats
2. Long and very long chain fats to short and medium chain fats
3. Saturated to unsaturated fats

Typically, heavily processed fats are not balanced in the sense that they obscure these natural ratios in the body and lead to generating chronic inflammation. These commercial fats are typically hydrogenated (known as trans-fats, which are excessively saturated), contain very long indigestible molecules (very long chain fats), are typically high in omega-6's and low in omega-3's and loaded with chemicals from the farming process. These are all the factors that you want to avoid when selecting fats to consume for health.

Healthy (less refined) fats, like olive oil, not only have the above ratios in balance, but they contain trace amounts of protective polyphenols, minerals, vitamins and other nutrients that counteract the negative effects of consuming too much fat. Of course, if you really wanted to, you could overdose on healthy fats too and still reach a similar negative health outcome, but it would take a lot more effort to do so and you would probably reach your limit before getting to that point.

Extra Virgin Olive Oil

Cold-pressed extra virgin olive oil should replace all other cooking oil that you might have, especially while following the anti-shingles protocol. This specific form of olive oil is much higher in antioxidants and polyphenols than other commercially available forms[458]. Studies that focus on the health benefits of olive leaf extract – which contains higher amounts of the same nutrients found in extra virgin olive oils – have shown that it and its components directly inhibit HSV-1 replication[459] [460]. Olive polyphenols have also demonstrated pertinent neuro-protective, anti-carcinogenic, and anti-inflammatory benefits with the added contradictory twist of protecting the heart, lowering LDL cholesterol and helping to regulate glucose metabolism in a diabetic context[461].

Olive oil also has a higher steaming point than other cooking oils available, being relatively stable at temperatures up to 180˚C or 356˚F. The steaming point of any given cooking oil refers to its ability to withstand being heated before it becomes totally oxidized, which ultimately results in high levels of free radicals and degradation of the nutrients originally present in the oil. (Refer to 'cooking methods' below for more details on how to avoid nutrient loss in cooking.)

Fish Oil and Omega-3 Fatty Acids

The majority of people consume an inverted ratio of omega-6 fats to omega-3 fats; however, omega-3 fats are far more important for maintaining our health and over-consuming omega-6's creates heightened levels of inflammation. All organic life on the planet uses omega-3 fats to

function and it forms an integral part of all cell membranes, meaning that without it, we will battle to regenerate our bodies and function optimally.

Naturally, the immune system requires decent amounts of omega-3 fatty acids to function optimally and be able to detect viral pathogens, like herpes zoster and other viruses in the same family. Amazingly, research has shown that 2-6 weeks of supplementing on 180-350mg of EPA (Eicosa Pentaenoic Acid, a type of omega-3 oil we need), completely reversed all symptoms of many of the major herpes virus infections, including shingles, herpes simplex 1, cytomegalovirus and Epstein-Barr.[462] Not surprisingly, fish oil which includes EPA as well as omega-3 fatty acid DHA, has proven to activate AMPK signaling in cancer cells and therefore completely regulate apoptosis, causing the faulty cells to be disposed by the immune system.[463]

Other research has confirmed that fish oil improves our innate immune function[464], while toning down the adaptive immune response.[465] Fish oil stimulates the activation of NK cells, helper T cells and macrophages, while lowering the activity of every other immune cell. Essentially this means that omega-3 fatty acids are potent anti-inflammatories, lowering the pro-inflammatory response in the immune system while boosting the body's capacity to regenerate and repair itself. This is a perfect intervention for treating or preventing post-herpetic neuralgia, especially in combination with a few other supplements that can help to boost and regulate the pro-inflammatory immune response, such as mineral pitch.

Plant-Based Omega-3 Fatty Acids

As omega-3's are so vital to life on the planet, many plants have decent amounts of omega-3 fatty acids contained within their structure. Plant-based omega-3 fats are generally found in the form of linolenic acids like alpha-linolenic acid. Upon digestion, these acids get converted into conjugated linolenic acids and eventually become DHA and EPA inside our cells. Research has observed that this conversion process is incredibly inefficient in humans, making it seem as though eating fish, algae or krill should be a mandatory part of all diets in humans across the planet. In spite of this, most animals can make efficient use of plant-based omega-3's, adding to their bodily supply of this vital nutrient. It was recently discovered that in order to make efficient use of linolenic acids, one needs a fully functioning microbiome with a wide diversity of bacteria, especially lacto-bacteria[466] – something that the vast majority of humans lack on the planet at the moment!

The microbiota take alpha linolenic acids and conjugate them, allowing for them to be absorbed before converted into DHA and EPA[467]. I would take this observation as far as saying that without a functional microbiome that conjugates fats for proper absorption, we would battle to absorb the good components of fats in general, not just the omega-3 portions. This alone could be the main reason that dietary fats have gotten a bad rap in the last 70 odd years.

Conjugated linolenic acids have additional health benefits and functions in the body over and above the typical ones ascribed to DHA and EPA; implying that they are equally as important for our overall health and well-being. When present in the bloodstream after absorption, they are capable of passing the blood brain barrier and act as important signals in the brain for regulating

inflammation. Furthermore, studies reveal that they have selective anti-cancerous benefits specific to the central nervous system.[468]

In any event, omega-3's, irrespective of the source, are vital and should be consumed from as many avenues as possible. Chia seeds are perhaps the greatest source of plant-based omega-3's one can find, with flaxseeds coming in close at second place. The problem with these seeds for those on shingles is that they contain extraordinary amounts of arginine and relatively little lysine.

During the acute phase, I recommend only using a fish oil or if you are opposed to eating animal products, a krill oil supplement can also work. After the main symptoms of the acute infection have subsided (rash, pain, fever and fatigue), I encourage you to eat chia seeds in combination with lactobacillus-containing probiotic foods to enhance omega-3 absorption. Pre-fermenting the chia seeds can further aid this process, as well as unlocking the other phytochemicals that chia seeds contain; namely quercetin and kaempferol[469]. This will ensure your immune system remains strong during the recovery phase and may confer additional anti-aging benefits, such as improving bone mineral density and protecting multiple organs such as the liver[470], heart, gut, eyes and blood vessels. In addition to the omega-3 content, chia seeds form a mucilaginous gel around them when soaked, which helps to service the mucous lining of the gut and helps to provide a more hospitable home to all the bacteria that live there.

3.2.6 Cooking Methods

Cooking can degrade both the lysine and the arginine content in foods, making it important to consume a decent portion of raw lysine-rich foods every day, such as fruits.

The best methods for cooking while on this protocol include boiling, steaming and poaching in order to conserve the lysine content of the food. Cooking at lower temperatures in the absence of yeast and other sugars is also recommended.[471]

3.3 Mindfulness, Deep Breathing and the Internal Art of Pain Management

"Have you ever had a dream, Neo, that you were so sure was real? What if you were unable to wake from that dream? How would you know the difference between the dream world and the real world?"

-Morpheus, The Matrix Movie, Directed by the Wachowski Siblings, 1999

The above quote comes to mind when considering that our brains cannot truly tell the difference between the images we see in our dreams and the ones we see before us every day; the images decoded by our minds from sensory information received by our eyes that we consider our reality. This phenomenon was first documented in experiments where muscle contractions would occur in sleeping participants in response to whatever was going on inside their dreams. Yet it doesn't take a carefully constructed science experiment to verify this fact as true – one only need observe the way our thoughts have an impact on our emotional state and vice versa.

What we think and visualize in our mind's eye has a profound impact on how our body responds to any given situation. This applies to everything in life, including the healing process and our perception of pain. In this regard, cultivating a mindfulness of what we think and dream about is one way we can freely augment the status of our health and well-being. Becoming the master of your mind is one of the best interventions for tackling any chronic condition and for taking your health back into your own hands – a feat that has proven time and again to lower pain in chronic pain sufferers[472].

A common problem with receiving a diagnosis is the inherent fear that there is nothing we can do to change it and that we may be somehow "stuck." If this book has shown you anything, it's that you are not the victim of your biology and there is a lot you can do to take back control. Fearful thoughts and ideas are not conducive to healing as they instruct your biology through your brain and nervous system to upregulate stress chemicals like cortisol. This is the only difference between being unprepared and getting a shock over something; and being mentally prepared for an outcome and not stressed whatsoever.

In the context of pain relief and healing from shingles, stress and fear only set one back, allowing the immune system to act up with heightened levels of inflammation and pain-inducing cell signals (refer to the section in PART II on stress). So, the question is: if your mind cannot tell the difference between what it perceives when your eyes are closed and when they are open, then what can you do to set yourself forward? Naturally, you can do your best to visualize yourself as well, healthy, and strong; i.e. you can actively trick your mind into accepting that you are already cured! Einstein was certainly right when he said *"Logic will get you from A to Z; imagination will get you everywhere."* – your imagination is the limit in this regard.

However, for some of us, this is far easier said than done, particularly when experiencing the intense pain that shingles is renowned for creating. As much as one would like to simply not panic and override biological impulses with the mind, this relationship can run both ways and naturally, herpetic neuralgia is a scenario where the body often overrules the mind. In these

cases, there are two other techniques that you can use to enhance the effectiveness of mindfulness: deep breathing and gentle exercise.

3.3.1 Take a Deep Breath and Let It All Go

When you inhale deeply with the intention to fill your abdomen and torso completely to the brim with air, followed by exhaling just as completely, you start to relax your nervous system and regulate your heart beat. Just merely relaxing your body in this way helps to lower pain perception and intensity, as revealed in studies conducted on individuals who suffer from chronic pain.[473] [474]

In order to benefit from deep breathing, you need to take at least three deep breaths in and out. It works best if you breathe air in through your nose, expand your tummy and feel the air work its way to the bottom of your lung, before exhaling slowly through pursed lips. When attempting this, try your best to imagine that with every inhalation, you are well (drawing in the essence of health and vitality), and with every exhalation, that you are expelling the virus, the pain and anything else that you may feel contributes to imbalances in your biology. Some people find it useful to visualize this in the form of breathing in light and exhaling or expelling out darkness.

This mindfulness technique can be used at any moment and helps greatly to distract from pain, calm the mind, as well as lower the intensity of the experience. If you find it hard to focus on visualizing while experiencing the pain, then I recommend breathing deeply in the same fashion while placing your focus on a part of your body that is not experiencing pain until you can visualize your well-being – even if that part happens to be your little toe!

3.3.2 Release Tension and Alleviate Pain through Movement

Deep breathing and mindfulness can be further enhanced through mindful movement[475]. Gentle exercise alone has already been shown to relax the body and lower both stress and pain perception. Combining it with the deep breathing technique described above can help to distract your mind from the pain while simultaneously adding an extra, physical layer to what you can already visualize in your mind with regards to conquering shingles.

Both deep breathing and gentle mindful exercises help to increase oxygen levels in the body, which has additional health-promoting effects that hinge upon improved mitochondrial function. In similar interventions to the one described in this chapter, those who suffered chronic pain due to inflammatory diseases were shown to experience heightened cognition, lower anxiety levels, less stiffness in the joints and a vastly improved mood.

I have gone ahead and prepared a mindfulness movement module in the appendices section that shows you step by step what to do with pictures. However, for those of you who would prefer to do your own exercises, feel free to attempt variations on the exercises I have recommended. The main thing is to gently stretch as many of your muscles and joints from head to toe as possible, moving systematically up your body one step at a time, while breathing deeply and mindfully visualizing yourself healed. These exercises only need be carried out for 20 minutes or so every day to reap the benefit.

3.4 Anti-Shingles Lifestyle Interventions

The below interventions will aid in boosting overall health and vitality as well as confer unique anti-shingles benefits.

3.4.1 Caloric Restriction and Fasting

Both fasting and caloric restriction[476] (which mimics the effects of fasting) are known to induce AMPK activation and regulate the AMPK pathway. This is due to the eventual loss of ATP in the mitochondria[477] which rise to an increase in cyclic AMP. This in turn boosts the amount of energy available to us through a series of long complicated chemical steps in which different energy-production pathways begin to come alive. Fasting has been shown to reset the entire immune system after a period of 72 hours, even in cancer patients who especially battle with regulating AMPK in their bodies as well as having a severely suppressed immune function.

The majority of benefits exhibited from fasting and caloric restriction can essentially be seen as AMPK activation, however there are a few extra benefits too:

- Emptying your system of food frees up more energy for other processes, such as fighting infection or regenerating.
- Lower intake of food or fasting increases brain factors (like brain-derived neurotropic factor) that improve cognition and may help in preventing neurodegenerative diseases.
- Animal studies reveal that both fasting and diets that mimic its effects are associated with increased longevity, in some cases as much as 2-3 fold![478]
- Lowering calorie intake and activating AMPK switches on the fat burning pathway, which tends to regulate hormones and cellular signaling in the body.

In this respect, caloric restriction and fasting can be seen as ultimate tools that we have at our disposal in order to maintain our state of health and well-being.

There are two aspects of fasting that can be seen as potential risks, the first being excessive AMPK activation and the second being malnourishment. Neither of these outcomes are what one should be aiming for when trying to fast for health. Fasting should only ever be implemented as a short-term strategy to help clear the body of toxins and reboot the immune system. Excessive activation of AMPK combined with a lack of nourishment can force the body to produce a lot of chemical compounds known as ketones. Ketones serve as an alternative energy source to glucose and other dietary energy sources like fats and proteins. In late-stage diabetes and other conditions in which nutrients are severely restricted from being absorbed and bodily supplies of antioxidants are limited, the excess ketones create a massive inflammatory cytokine storm that induces a diabetic coma and/or heart complications - which can eventually result in death, typically from a heart attack.

In light of the fact that we are actively going about initiating AMPK activation and regulation through the protocol, fasting upfront is not the best strategy for combating shingles – yet if you had nothing on hand to use in order to combat the disease, then fasting for three days would be

your best bet. Instead of fasting, the protocol incorporates caloric restriction principles carried out in a safe and effective way that falls in line with our body's natural protective mechanisms.

If you suffer from shingles in chronic cycles, then I highly recommend doing a short fast once a month to boost your immunity and help to clear out any leftover viral residues.

3.4.2 Good Sleep Hygiene

The quality of sleep we receive is intimately linked to our state of health and regenerative capacity. We need sleep in order to eliminate toxins from the central nervous system and getting interrupted, little or no sleep can cause increased levels of inflammation, pain, anxiety, depression and more.

Sleep hygiene refers to our habits that promote a good night's sleep. As sleep is governed by hormones, the nervous system, our gut microbiota and the day-night cycle, these are the factors that we have to work with to ensure we wake up feeling refreshed. Aside from drinking chamomile tea before going to bed, here are a few other things you can do to ensure you make the most of your beauty sleep:

- Getting into bed an hour before you want to be asleep.
- Dimming the lights during this time and not engaging with electronic devices.
- Refraining from eating a meal or drinking lots of fluids right before bed time.
- Getting to sleep at night before 11PM.
- Getting at least 7-9 hours of sleep. Elderly individuals over the age of 65 should get at least 6hours; although between 7-9hrs is the best but not always achievable.
- Trying your best to relax in the hour before sleeping.
- Consuming probiotic foods during the day.

3.4.3 Spending Time Outdoors

Spending time outdoors, in nature, and especially getting little doses of sunlight are all beneficial behaviors for our overall well-being. Aside from needing sunlight and fresh air to function at our best, the body tends to relax completely when experiencing both in nature. In this way, spending time outdoors can help to lower pain perception, enhance mood and alleviate anxiety.

When you do go outside, do your best to spend time near plants – particularly trees which let off mass amounts of oxygen and other unseen molecules that are good for our health. Holistic doctors in Japan and in other areas of the world have begun prescribing their patients with "forest bathing," based off the profound results this behavior has on our biology. Studies have shown that spending time in forests (highly recommended for those with shingles) can improve immune function by enhancing NK cell function, lowering cortisol production and reducing the excitability of the nervous system induced by the stress response.[479] We were clearly designed to participate in nature!

PART IV
The Part Where You Win

4.1 Phase One: What To Do In The Midst of a Shingles Attack (7 Day Plan)

Phase one refers to the initial phase of the virus in which an acute attack of shingles begins. The rash, heightened pain, fevers, and fatigue are the most common symptoms during this period and can typically last for 10 days with treatment – however, for most of you, this phase is likely to last between 5-7 days. The moment the rash and all obvious signs of infection have subsided; phase one is over and you may move on to phase two.

During phase one, the protocol is going to mimic the effects of fasting through caloric restriction. Plenty of bed rest, medicinal concoctions and fluids will be had during this time and you will only be allowed to consume foods that have a higher lysine than arginine content.

Phase one will have a stricter dietary and supplemental regimen than phase two, where you can begin to introduce certain foods back into your diet. Please refer to Appendix 2 to take note of the foods you need to stop consuming from here on out until the end of this protocol. It's important to note the following:

- All foods ought to be pre-soaked and cleaned in a bowl filled with water that has a cap of apple cider vinegar added to it. This will help to encourage the right microbiome on the surface of your food!
- Olive-oil infused garlic cloves need to form part of all your main meals in both phase one and two, being worked into the overall lysine to arginine ratio of the meal.
- Grains, legumes, cruciferous vegetables and nightshades (potato and tomato) are prohibited even if the lysine content outweighs the arginine content.
- All refined foods are off limits during the entire protocol.
- All sugar should be replaced with honey.
- Himalayan pink salt should replace ordinary salt.
- Any cooking done during this time ought to be carried out with the use of olive oil instead of any other cooking oil.
- Coffee is not permitted; however, the morning smoothie will likely give you plenty of the energy that you need to recover.
- Shampoo, conditioner, soap, toothpaste, dish washing and laundry detergents (plus any other cleaning agents you can think of) should be replaced with all-natural alternatives to prevent a shingles flair-up upon exposure.

The following schedule will become your daily routine until phase one is over.

In between all the interventions outlined in this schedule, do your best to spend as much time resting in bed as possible. If you have to work, you should take this phase off work, excusing yourself for at least 5-7 days.

Omit licorice root powder from the smoothie recipe on day 7 or once a week. On day 3 and day 7 of phase one, please run yourself an Epsom salt bath as directed in appendix 1. Refer to appendix 5 for information on mindful deep breathing.

Daily Schedule for Phase One			
Time	**Food/Drink**	**Supplement**	**Therapy**
Morning			
	Ginger Brew	Quercetin	Apply Topical Salve
		Ecklonia Cava Extract	Mindful Deep Breathing
		Berberine**	
		Reishi Mushroom**	
		Mulberry Leaf Extract**	
(1hour later)			
	Breakfast Smoothie	L-Lysine	
		Omega-3 Oil	
		B Vitamins	
		L-Leucine**	
		Zinc, Magnesium, Selenium**	
		Thymus Extract**	
Mid-Morning			
	Oregano Water		20minutes Sun Bathing
	Vitamin C + MSM		Mindful Deep Breathing
Lunch Time			
	Mango or Papaya	L-Lysine	
	Ginger Brew	Omega-3 Oil**	
		Berberine**	
		Mulberry Leaf Extract**	
Mid-Afternoon			
	Oregano Water		Apply Topical Salve
	Vitamin C + MSM		Mindful Deep Breathing
			20minutes Sun Bathing
Dinner Time			
	Lysine-Heavy Soup	Digestive Enzymes** (Take while dinner cools; 20mins before)	
	Ginger Brew	L-Lysine	
		Omega-3 Oil	
		L-Leucine**	
1hr Before Bed			
	Chamomile Tea	Vitamin D3	Avoid Electronic Devices
		Vitamin K2	Mindful Deep Breathing

**Refer to Appendix 4 to see if you are required to take this supplement and/or extra supplemental dose.

4.2 Phase Two: Conquer Your Shingles in as little as 21 Days!

In phase two, the rash will have disappeared, with fevers and other symptoms only occurring every now and then. The main symptoms that still commonly manifest at this phase are low energy levels and sensitivity in the nervous system, expressing as pain or heightened pain perception. During this phase, the protocol will start to ramp up in order to fully expel the virus from your system and ensure that your vitality returns. If at any point the rash returns, please revert immediately to phase one's protocol and return to phase two after you're sure the rash has subsided fully.

Phase two is not different from phase one in terms of the items you ought to avoid (please refer to phase one for details); however, certain foods will be phased back in on a weekly basis with certain supplements being phased out. Mindful movement will also be employed during this phase to help loosen your joints and muscles after so much bed rest and to aid in regeneration and lowering pain intensity.

4.2.1 Phase Two – Week 1

During week 1, the smoothie recipe is going to include some berry-chia puree as directed in the recipe for phase two. Furthermore, you will be permitted to consume any and all fruits, regardless of the arginine to lysine ratio, including berries, pomegranates and citrus fruits. Please refrain from consuming vegetables high in arginine, as well as all grains, legumes, cruciferous vegetables and nightshades. Stick to only consuming soups for your main meal during this week. The majority of supplements and therapies will otherwise remain the same for this week.

Omit licorice root powder from the smoothie recipe on day 7 or once a week. Take a break from quercetin on the 3rd and 7th day of the week.
On the 7th day, please take an Epsom salt bath (refer to appendix 1). Refer to appendix 5 for instructions on mindful movement and breathing.

Daily Schedule for Phase Two – Week 1			
Time	**Food/Drink**	**Supplement**	**Therapy**
Morning			
	Ginger Brew	Quercetin	Mindful Deep Breathing
		Ecklonia Cava Extract	
		Berberine**	
		Reishi Mushroom**	
		Mulberry Leaf Extract**	
(1hour later)	Breakfast Smoothie	L-Lysine	Mindful Movement
		Omega-3 Oil	
		B Vitamins	
		L-Leucine**	

Daily Schedule for Phase Two – Week 1			
Time	**Food/Drink**	**Supplement**	**Therapy**
		Zinc, Magnesium, Selenium**	
		Thymus Extract**	
Mid-Morning			
	Oregano Water		20minutes Sun Bathing
	Vitamin C + MSM		Mindful Deep Breathing
Lunch Time			
	Fruit salad with mango or papaya, berries, pomegranate, apple or pear and avocado	L-Lysine	
	Ginger Brew	Omega-3 Oil**	
		Berberine**	
		Mulberry Leaf Extract**	
Mid-Afternoon			
	Oregano Water		Mindful Movement
	Vitamin C + MSM		20minutes Sun Bathing
Dinner Time			
	Lysine-Heavy Soup	Digestive Enzymes** (Take while dinner cools; 20mins before)	
	Ginger Brew	L-Lysine	
		Omega-3 Oil	
		L-Leucine**	
1hr Before Bed			
	Chamomile Tea	Vitamin D3	Avoid Electronic Devices
		Vitamin K2	Mindful Deep Breathing

**Refer to Appendix 4 to see if you are required to take this supplement and/or extra supplemental dose.

4.2.2 Phase Two – Week 2

As with week 1, adhere to the smoothie for phase 2 with the added berry-chia puree. On top of being permitted to consume all fruits, you may add back cruciferous vegetables that are higher in arginine than lysine. Legumes that are higher in lysine may be added back to your diet if left to soak overnight before cooking, such as chickpeas and mung beans. Nightshades can also be braved during this week, provided they are peeled, de-seeded and WELL-cooked. Additional methods of cooking may now also be employed, such as steaming, boiling veggies, baking in the oven at temperatures not over 180˚C (356˚F) and light stir frying.

Omit licorice root powder from the smoothie recipe on day 7 or once a week. Take a break from quercetin on the 3rd and 7th day of the week. Refer to appendix 5 for instructions on mindful movement and breathing.

Daily Schedule for Phase Two – Week 2			
Time	**Food/Drink**	**Supplement**	**Therapy**
Morning			
	Ginger Brew	Quercetin	Mindful Deep Breathing
		Ecklonia Cava Extract	
		Berberine**	
		Reishi Mushroom**	
		Mulberry Leaf Extract**	
(1hour later)	Breakfast Smoothie	L-Lysine	Mindful Movement
		Omega-3 Oil	
		Zinc, Magnesium, Selenium**	
		Thymus Extract**	
Mid-Morning			
	Oregano Water		20minutes Sun Bathing
	Vitamin C + MSM		Mindful Deep Breathing
Lunch Time			
	Fruit salad with mango or papaya, berries, pomegranate, apple or pear and avocado	L-Lysine	
	Ginger Brew	Omega-3 Oil**	
		Berberine**	
		Mulberry Leaf Extract**	
Mid-Afternoon			
	Oregano Water		Mindful Movement
	Vitamin C + MSM		20minutes Sun Bathing

Daily Schedule for Phase Two – Week 2			
Time	**Food/Drink**	**Supplement**	**Therapy**
Dinner Time			
	Lysine-Heavy Meal	Digestive Enzymes** (Take while dinner cools; 20mins before)	
	Ginger Brew	L-Lysine	
		Omega-3 Oil	
1hr Before Bed			
	Chamomile Tea	Vitamin D3	Avoid Electronic Devices
		Vitamin K2	Mindful Deep Breathing

**Refer to Appendix 4 to see if you are required to take this supplement and/or extra supplemental dose.

4.2.3 Phase Two – Week 3

In week 3, you will be able to add back all vegetables and legumes that are higher in arginine; however, grains, seeds and nuts will only be permitted after the protocol.

Only take quercetin on the 1st, 3rd and 5th days of this week. If supplementing on berberine, reishi, or mulberry leaf extract, only take on the 2nd and 5th day. Omit licorice root powder from the smoothie recipe this week. Refer to appendix 5 for instructions on mindful movement and breathing.

Daily Schedule for Phase Two – Week 3			
Time	**Food/Drink**	**Supplement**	**Therapy**
Morning			
	Ginger Brew	Quercetin	Mindful Deep Breathing
		Ecklonia Cava Extract	
		Berberine**	
		Reishi Mushroom**	
		Mulberry Leaf Extract**	
(1hour later)	Breakfast Smoothie	L-Lysine	Mindful Movement
		Omega-3 Oil	
		Zinc, Magnesium, Selenium**	
		Thymus Extract**	
Mid-Morning			
	Oregano Water		20minutes Sun Bathing
	Vitamin C + MSM		Mindful Deep Breathing
Lunch Time			
	Fruit salad with mango or papaya, berries, pomegranate, apple or pear and avocado	L-Lysine	
	Ginger Brew	Omega-3 Oil**	
		Berberine**	
		Mulberry Leaf Extract**	
Mid-Afternoon			
	Oregano Water		Mindful Movement
	Vitamin C + MSM		20minutes Sun Bathing
Dinner Time			
	Lysine-Heavy Meal	Digestive Enzymes** (Take while dinner cools; 20mins before)	

Daily Schedule for Phase Two – Week 3			
Time	**Food/Drink**	**Supplement**	**Therapy**
	Ginger Brew	L-Lysine	
		Omega-3 Oil	
1hr Before Bed			
	Chamomile Tea	Vitamin D3	Avoid Electronic Devices
		Vitamin K2	Mindful Deep Breathing

**Refer to Appendix 4 to see if you are required to take this supplement and/or extra supplemental dose.

4.2.4 Week 4 and Beyond

After this point, you should be symptom free and can resume life as per usual; however, I recommend avoiding highly refined foods, chemical cleaning products, almonds, peanuts and chocolate for at least a month after to make triple sure you don't incite the virus. It is also a good idea to consume grains in conjunction with fermented foods to aid digestion and nutrient absorption during this time.

Consuming plenty of fresh fruit, water and fermented foods, as well as getting some sun, doing gentle daily exercises and practicing good sleep hygiene are all practical suggestions to keep your health in tip top shape too!

4.3 Conclusion

Just as all things have a beginning, so too do they have an end. Inevitably this ending will lead you on to a new beginning, whereby the whole process of life can begin over again. Yet this time it begins with an enhanced sense of perspective and a renewed sense of self. Where once stood a victim, now stands a hero and a master; the only difference being the intention to heal and the time it took to get there. From the moment you picked up this book, your journey toward overcoming shingles had already begun, simply because you made the choice to take your health back into your own hands. The moment one does that – the moment one commits to an outcome in one's mind – the body cannot help but follow in suit; giving life to a new realm of possibilities that were never able to express through your biology before.

In many instances, the things we fear are only truly fearsome because we cannot see what lies beyond them. A virus are a prime example of this – something so incredibly small that we cannot see it, something that seems to intelligently manipulate our genes without having any true life to it and something that we have been taught is a problem for which there is no real solution. Fear locks down our perception, causing us to hone in on one tiny object amidst the ocean of what is truly going on in reality. In this case, the elephant in the room is the fact that there are trillions of other viruses in the universe and 95% of them are either beneficial or benign. In my humble opinion, this proves that we truly known nothing about the world in which we live in!

Our bodies are not separate from our environments and our biology is a product of our actions on a moment-by-moment basis. Through the process of understanding how your body ultimately works in connection with your mind and that you are not separate from nature (within or without), you have now graduated to being the master of your own health. Having endured shingles, I commend you as the survivor of your story and hope you walk away resting safely in the knowledge that this book has imparted unto you.

Appendices

Appendix 1: Immediate Pain Relief

Topical Ointment for Pain Relief

The below salve is an incredibly potent, pain-obliterating formula, designed for applying to your shingles cold sores.

In the protocol, you will be instructed to apply this to all your cold sores and any other areas that feel extra sensitive (for example, facial nerves or tender spots on either side of the spine) twice a day – once in the morning and in the evening. However, if any of your cold sores are hurting or itching at any other time, you can apply some of this immediately. Wait at least 10 minutes with it on before rinsing it off.

Ingredients

- 1 cup Honey
- 1 dropper full of Vitamin E Oil (1000 IU);
  or the contents of 1 astaxanthin gel cap
- 3 tbls Cayenne Pepper
- 3 tbls Licorice Root Powder
- 12 drops Lemon Balm Oil
- 3 drops Ginger Oil
- 1 tbls Bentonite clay
- 9 drops peppermint, lavender or 3 drops copaiba oil
- 1 crushed zinc tablet or 1 serving of mineral pitch (refer to appendix 3 for forms and doses)

Method

1. Blend the powdered ingredients together first.
2. Add a spoon of honey at a time to the powdered ingredients and combine until the powder is fully incorporated into some of the honey, mixing thoroughly to get rid of all lumps. The moment this is achieved, add the rest of the honey (and mineral pitch, if applicable) and blend well.
3. Mix in all the oils and store in a glass jar with a tight-sealing lid.

MSM and Vitamin C for Aching Joints

Any time your joints begin to feel unbearable, feel free to take a dose of MSM with Vitamin C powder dissolved in a glass of water. Refer to Appendix 3 for dosages.

Cannabinoids for Pain and Stress Relief

If you are experiencing intense anxiety due to extreme pain, I can highly recommend getting a good quality CBD oil supplement. A liquid oil supplement will work better than anything in a capsule. Any time you feel overwhelmed, just squirt 8 drops under your tongue and let it sit there for as long as you can before swallowing. It should begin to relax you within 10-20 minutes.

If you can't get your hands on some CBD oil, then get a bottle of copaiba essential oil (DoTerra and other well-known brands stock it). To take it, dilute 1 drop in a tablespoon of olive oil and keep suspended under your tongue, as directed with the CBD oil.

If you find that these doses are ineffective, feel free to increase the amount but do so in small increments (a few extra drops of CBD oil at a time or 1 drop of copaiba oil at a time). There are few reported side effects of using cannabinoids medicinally in the absence of THC (the psycho-active compound in cannabis), however in higher amounts, cannabinoids could increase your heart rate. I recommend upping the amount of olive oil if upping the dose of copaiba oil to avoid burning your skin.

What to Do for Muscle Cramps or Discomfort

Many of the supplements and dietary interventions in the protocol are designed to take away pain and discomfort. Yet, if you are experiencing muscle cramps, discomfort or similar symptoms associated with running a fever, here are two things you can do for immediate relief.

1. Magnesium Spray or Arnica Gel

Either of these can usually be found at your local pharmacy and both are known to effectively alleviate muscle pain and cramping when applied to the tender area. The arnica gel has the added effect of cooling and soothing the area, which can be very useful for those with shingles.

2. Epsom Salt Bath

If your muscles and joints are aching and you found the above measures to be ineffective, then I can highly recommend having an Epsom salt bath. The addition of bicarbonate of soda helps to alkalize the body, while the essential oils will soothe the lesions and nerves. Aside from soothing the pain, this bath will also help to drain your glands and may cause you to sweat out more viral debris.

Ingredients

- 1 cup Epsom salts
- ½ cup bicarbonate of soda
- 9 drops peppermint oil
- 3 drops lavender oil

Method

1. Add all the ingredients to your bath water when hot and stir them in until all the salt is dissolved.
2. Wait until the bath water is cool enough before getting in as if it is too hot, it can cause your heart to beat very fast and shock your system.
3. Soak for a minimum of 20 minutes. While soaking, it is advisable to keep a glass of water on hand and to drink it through the time, otherwise bathing in salt may cause one to get a bit dehydrated.

When getting out an Epsom salt bath, do so very slowly and make sure to breathe in the process to avoid getting dizzy. Some people are more sensitive than others in this regard. If you feel a little dizzy, don't panic – go lay down in bed until the dizziness subsides and keep yourself hydrated. The effect should wear off in 10 minutes or so. The reason this could happen is due to the salt content, but also as a result of detoxing. It helps to remind yourself that your body is working hard to eliminate the virus.

Appendix 2: Anti-Shingles Diet Food Lists

Foods to Avoid

The following foods are much higher in arginine than lysine[480] [481] [482]and ought to be either outright avoided or included in meals in a way that does not create a higher amount of arginine than lysine overall. Refer to Appendix 3 for an example recipe that shows you step-by-step how to calculate the lysine to arginine ratio in your food.

Please note that any food you wish to consume that is not presented in the below lists can easily be looked up online for its lysine to arginine ratio. As a general rule of thumb, all nuts, seeds, legumes, and grains[483] ought to be avoided alongside the following:

- Coffee
- Soy
- Corn
- Wheat
- Sugar
- Refined salt
- Processed foods
- Alcohol
- Unfermented dairy
- All non-free range/ grain-fed/ antibiotic or hormone-injected/ reconstituted ('glued') meat
- Hydrogenated or Trans-fats
- GMO non-organic food (where possible)
- Foods contained in plastic (where possible)

Foods to Avoid - High in Arginine				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Nuts				
Almonds	70 nuts	2730	580	0.21
Brazil nuts	100g	2250	470	0.21
Cashews	40 nuts	1990	740	0.37
Chestnuts	160g	470	246	0.52
Coconut	100g	470	148	0.31
Hazelnuts	100g	3510	690	0.20
Pecans	100g	2030	810	0.40
Peanuts	100g	3240	1090	0.34
Walnuts	27 whole	2250	490	0.22
Pistachios	128g	2790	1640	0.59
Macadamia Nuts	134g	1200	434	0.36
Seeds				
Linseeds	100g	2030	810	0.40
Sesame seeds	100g	2590	580	0.22

Foods to Avoid - High in Arginine				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Sunflower seeds	100g	1190	540	0.45
Chia Seeds	28g	555	257	0.46
Legumes				
Green peas	5/8 cup	420	220	0.52
Lentils	100g	2100	1740	0.83
Carob	100g	710	340	0.48
Lima Beans (cooked)	170g	775	765	0.99
Grains				
Buckwheat	100g	1200	460	0.38
Millet	100g	410	260	0.63
Oatmeal	1/3 cup	130	70	0.54
Brown rice	2/3 cup	120	100	0.83
Wheat germ	180g	1790	1330	0.74
Meat				
Bacon	12 slices	2100	2000	0.95
Snails	85g	2100	1250	0.60
Seafood				
Crustaceans	100g	1330	1260	0.95
Oysters	5-8 medium	310	280	0.90
Shrimp	85g	1510	1500	0.99
Crab	85g	1360	1350	0.99
Other				
Eggs	2 large	840	820	0.98
Chocolate	100g	4500	2000	0.44
Bread (wholemeal)	4 slices	510	290	0.57
Vegetables				
Okra	100g	84	82	0.98
Broccoli	88g	128	124	0.97
Carrots	110g	48	44	0.92
Peppers (sweet)	100g	42	38	0.91
Radish	45g	18	16	0.89
Watercress	104g	200	172	0.86
Swiss Chard	36g	42	36	0.86
Eggplant	82g	50	42	0.84
Cabbage	70g	48	40	0.83
Brussel Sprouts	88g	178	130	0.73
Onion	100g	6	4	0.67
Mushrooms	70g	72	48	0.67

Foods to Avoid - High in Arginine				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Corn grits	242g	114	68	0.60
Corn (puffed)	28.4g	112	65	0.58
Winter Squash	205g	1590	902	0.57
Plantain	148g	160	89	0.56
Yams	200g	191	89	0.47
Pumpkin seeds + squash	140g	5570	2530	0.45
Garlic	3g	19	8	0.42
Rutabaga	140g	207	55	0.27
Fruit				
Strawberries	149g	39	37	0.95
Dates	83g	55	50	0.91
Grapefruit	1cup	143	32	0.22
Tangerine	116g	37	27	0.73
Orange	180g	85	62	0.73
Cucumber	104g	36	22	0.61
Elderberries	145g	68	38	0.56
Blackberries	145g	49	17	0.35
Blueberries	145g	49	17	0.35
Grapes	160g	78	24	0.31
Pomegranate[484]	100g	-	-	0.20
Kiwi	1cup	266	200	0.75
Grape juice	153g	119	25	0.21
Tangerine juice	247g	84	17	0.21
Orange juice	248g	117	22	0.19

Foods to Consume

The following foods are higher in lysine than arginine and can be consumed throughout the protocol. The foods highlighted in bold have the best lysine to arginine ratio and ought to be consumed more frequently.

However, please avoid consuming all meat unless you can source exceptional quality (refer to the 'foods to avoid' list for more details). Legumes will also not be permitted until the end of phase two (refer to PART IV to check what foods will be permitted on a week-by-week basis). Remember to refrain from consuming processed foods even if they have a higher lysine to arginine ratio, such as cheddar cheese.

Foods to Consume - High in Lysine				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Meat				
Beef Steak (flank)	454g	5500	7270	1.32
Beef Steak (T-bone)	454g	4810	6330	1.32
Beef Steak (sirloin)	454g	5230	6880	1.32
Beef Ribs	454g	4600	6050	1.32
Chicken	100g	1930	2700	1.40
Turkey	100g	1700	2450	1.44
Wild pheasant	371g	5240	7470	1.43
Organ Meat				
Chicken Liver	32g	352	35	1.24
Ox liver	100g	1590	1950	1.23
Turkey Liver	102g	1250	1540	1.23
Duck Liver	44g	505	624	1.24
Seafood				
Prawns	100g	1360	2130	1.57
Halibut	**100g**	**140**	**2220**	**15.86**
Salmon	100g	1530	2350	1.54
Sardines	7 medium	1190	1850	1.55
Tuna	5/8 cup	1530	2530	1.65
Swordfish	85g	1000	1550	1.55
Haddock	85g	961	1480	1.54
Smelt	85g	897	1380	1.54
Snapper	85g	1040	1600	1.54
Pollock	85g	989	1520	1.54
Eel	85g	938	1440	1.54
Catfish	85g	925	1420	1.54
Anchovy	20g	346	531	1.54

Foods to Consume - High in Lysine				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Whitefish	85g	971	1490	1.54
Cod	85g	906	1390	1.53
Flat Fish	85g	959	1470	1.53
Mackerel	85g	946	1450	1.53
Carp	85g	907	1390	1.53
Pike	85g	979	1500	1.53
Herring	85g	914	1400	1.53
Bass	85g	902	1380	1.53
Perch	85g	948	1450	1.53
Bluefish	85g	1020	1560	1.53
Caviar	16g	254	293	1.15
Other				
Yeast	100g	1940	3510	1.81
Dairy				
Whole milk (raw)	**100g**	**130**	**280**	**2.15**
Human Milk	246g	105	168	1.6
Plain Yoghurt	**227g**	**237**	**706**	**2.98**
Goat Milk	**244g**	**291**	**708**	**2.43**
Ricotta Cheese	**246g**	**1550**	**3290**	**2.12**
Cheese (cheddar)	**100g**	**850**	**1700**	**2**
Legumes				
Mung beans	100g	1320	1930	1.46
Red beans	1/2 cup	340	420	1.24
Chickpeas	100g	1930	2700	1.40
Vegetables				
Collards	**186g**	**72**	**140**	**1.94**
Turnips	130g	31	47	1.52
Potato	150g	140	190	1.36
Celery	120g	24	43	1.33
Summer squash	130g	65	85	1.31
Lettuce (romaine)	56g	50	58	1.16
Lettuce (iceberg)	75g	52	60	1.15
Cauliflower	100g	96	108	1.13
Seaweed	10g	6.5	8.2	1.26
Beetroot (raw)	100g	42	58	1.38
Beetroot (cooked)	100g	44	60	1.36
Fruit				

Foods to Consume - High in Lysine				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Quince	**100g**	**0**	**0.0001563**	**N/A**[485] [486]
Papaya	**454g**	**30**	**76**	**2.53**
Beets	**136g**	**30**	**72**	**2.40**
Mango	**300g**	**39**	**85**	**2.17**
Apricot	**114g**	**48**	**103**	**2.15**
Apple	**150g**	**8**	**17**	**2.13**
Pear (dried)	**175g**	**56**	**116**	**2.07**
Applesauce (unsweetened)	**244g**	**12**	**24**	**2**
Crabapple	**110**	**14**	**28**	**2**
Loquat	**16g**	**1**	**2**	**2**
Apple (dried)	**64g**	**19**	**37**	**1.95**
Fig (dried)	189g	131	228	1.74
Fig	65g	11	19	1.73
Avocado	272g	119	189	1.59
Tomato	123g	27	41	1.52
Tomato juice	243g	36	54	1.50
Tomato paste	262g	200	282	1.41
Pineapple	155g	28	39	1.39
Persimmon	200g	42	55	1.31
Peach (dried)	130g	120	151	1.26
Peach	115g	16	20	1.25
Plum	5.5g	74	90	1.22
Guava	112g	19	21	1.11
Cherries	1cup	25	44	1.76

Foods to Consume

The following foods have a more or less equal lysine to arginine ratio and therefore should be consumed in moderation or in conjunction with foods that contain higher amounts of lysine in them. Adding these foods to recipes will neither add nor subtract from the overall ratio.

Refrain from consuming legumes until the end of phase two (refer to PART IV for more info).

Foods to Consume in Moderation - Equal Lys:Arg Ratio				
Food	**Portion Size**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
Green beans	3/4 cup	80	80	1
Spinach	55g	90	98	1.09
Kale	67g	123	132	1.07
Egg white	33g	195	206	1.06
Watermelon	160g	94	99	1.05
Chinese cabbage	70g	59	62	1.05
Sweet potato	130g	100	105	1.05
Banana	175g	54	55	1.02
Asparagus	134g	192	194	1.01
Beet Greens	38g	20	20	1
Endive	50g	32	32	1
Leeks	124g	97	97	1
Pumpkin	245g	96	96	1

Appendix 3: Carefully Calculated Recipes for Success

The Silver Bullet Breakfast Smoothie

This is the silver bullet that will boost your immune system, heal your gut, lower inflammation and stop varicella zoster right in its tracks! Minor alterations to this recipe will occur throughout the protocol depending on what phase you are in. Please refer to PART IV for more explicit direction.

Ingredients

- 200ml Milk Kefir;
  or 200ml Live-Cultured Yoghurt mixed with 1 tbls liquid probiotic;
  or 200ml apple puree with 2 tbls liquid probiotic
- 3 tbls Quince Puree for phase one;
- 1 tbls Quince puree and 2 tbls grape-chia puree for phase two
- 1 tbls Honey
- ½ tsp Ginger Powder
- ½ tsp Licorice Root Powder*
- ¼ tsp Cayenne Pepper
- ¼ tsp Turmeric
- Single serving of Mineral Pitch (refer to Appendix 4: Supplement Regimen for dosage)

Method

1. Add all ingredients except milk kefir to a glass and mix well.
2. Pour the milk kefir into the glass until full and stir until fully blended.
3. Enjoy!

***NOTE:** *Those who suffer from hypertension or who have been diagnosed with a heart condition should not consume licorice root as it can increase your heart rate. If this description matches you, omit it from this recipe. You may still apply it topically without experiencing this side effect.*

Quince Puree – Your Daily Dose of Quercetin and Kaempferol

Delicious and highly medicinal, quinces are an incredibly rich source of prebiotic fiber, quercetin and kaempferol – all of which will enhance your immune function, increase the absorption of zinc and boost the potency of all other healing plant chemicals!

Ingredients

- 6-8 Quinces
- 1-2 tbls Honey
- 1 tsp Ginger Powder
- ¼ cup Water

Method

1. Peel and cut the quinces into 8 pieces. Remove the pips and any bad parts from the fruit. Save the pips and peels.
2. Add the pips and peels to a pot with the water and simmer for 5-10 minutes until the water begins to swell and resembles a thick gel.
3. Taking the pot off the heat, do your best to remove the pips and peels before adding the remainder of the quince flesh, ginger and honey.
4. Simmer for another 10 minutes until the flesh of the fruit is soft and easy to chew. You may want to add another 2-4 tbls of water.
5. Let cool before blending the contents of the pot in your blender until completely smooth.
6. Transfer to a glass jar and store in the fridge. Will keep for a week or so.

Apple Puree – The Vegan Alternative to Milk Kefir

Apples are a good source of gut healing compounds and prebiotic fiber. You can also substitute the apples for pears, apricots, loquats or kumquats, depending on your personal preference.

Ingredients

- 8-10 Apples (or pears; or the equivalent in mass for apricots, kumquats or loquats)
- 1-2 tbls Honey
- 2-3 tbls Water
- 1 tsp Cinnamon (optional)

Method

1. Cut the apples into medium-sized cubes, removing the cores while doing so.
2. Add all ingredients to a pot and simmer for 5-10mins until the apples are soft and the skins have a distinct sheen to them (this is a sign the pectin is being released).
3. Let cool before pureeing in the blender.
4. Transfer to a jar and keep in the fridge for up to a week.

If you want to, feel free to add 1tbls of liquid probiotic to your puree. It will ferment at a slow rate in the fridge and add additional value to your diet during this time; however, you will still need to keep adding probiotics to your daily breakfast smoothie, as directed above.

Fermented Berry-Chia Puree – Upping the Ante with Resveratrol and Conjugated Omega-3's

During phase two, we will begin to up the ante with additional omega-3's and resveratrol to ensure that the virus is completely obliterated and to give your immune system a chance to grow some wings!

Ingredients

- 500g Black Seeded Grapes
- 500g Mixed Berries with their seeds (preferably mulberries, strawberries, blueberries, blackberries and elderberries)
- ½ cup Chia Seeds
- 2 tbls + 4 tbls Honey
- 2 tbls Milk Kefir or Liquid Probiotics
- 1-2 tbls Water

Method

1. Place all berries and grapes into a pot with 2 tbls honey and water.
2. Bring to a slow simmer until the skins of all the fruit is soft and easy to break; stirring occasionally to prevent burning and to speed the process up by breaking open already softened pieces.
3. Let the puree cool in the pot before pouring it into a blender. Blend until all the skins and pulp are well combined before adding the milk kefir and chia seeds. Blend again until all chia seeds are evenly dispersed throughout the mixture. The end result should resemble a thick berry-flavored gel.
4. Transfer the mixture to jars, seal loosely with a lid and leave out of the fridge overnight in order to ferment slightly. For this to work the best, try to find a spot that is not too cold or too hot but that rests somewhere between 75 to 83˚F (24 to 28˚C). If the ambient room temperature is very low, stand a vessel containing boiling hot water next to your berry-chia jar and put both in an insulated place such as a cupboard or a large container that can be closed. If the ambient temperature is too hot, watch your jar as the contents may bubble up and over the sides! The chia-berry pulp may separate from some liquid in the jar – this is completely normal.
5. Store the jar in the fridge and use as directed in the protocol.
6. When the mixture separates (which may occur during fermentation or only after you've already had it in the fridge for a while), pour it into a pot on the stove and add the remaining 4 tbls honey. Simmer for 1-2 minutes until the honey is combined and transfer it back to your jar when cooled. This should help it to remain combined. Alternatively, you can just stir it up before you want to use it each time.

As times passes, the color of the chia seeds may turn a red-orange or brown hue. This is a sign that the fermentation is working and is nothing to worry about.

Fermented Herbal Tea Blend for Conquering Shingles

I recommend making a large amount of this herbal brew and then helping yourself to it as much as possible throughout the day. The longer the tea sits out, the better it will get due to the fermentation process. The addition of honey and whole ginger root will allow for the natural yeasts on the skin of the ginger to feed and grow, unlocking the potency of all the ingredients contained within the herbs as well as adding in some extra B vitamins. Furthermore, the longer it ferments, the tastier it will become!

The following recipe will make enough for 3L of tea.

Ingredients

- 4 tsp loose Green Tea leaves or the contents of 4 tea bags (discard the bag part)
- 4 tsp loose Milk Thistle
- 1 cup fresh Ginger Root, roughly chopped
- 5 Cloves
- 1 big fistful of any combo of Wild Flowers (e.g. lavender, honeysuckle, rose petals, dandelion flowers, jasmine, daisies, etc. – refer to the wildflowers section in PART III)
- 1 cup Honey
- 3L Warm Water

Method

1. Take half the ginger and add it to a pot on the stove with 500ml of the hot water. Let simmer for 10-20minutes, until the flavor of the ginger has been released.
2. Take off the heat and dissolve the honey into the ginger infusion.
3. Add the tea leaves, cloves, flowers, remaining ginger and diluted honey ginger solution (with all the ginger pieces) to a 3L vessel (preferably glass).
4. Pour the remaining warm water over slowly (let it cool if too hot as you do not want to crack the glass!) and let steep for at least 2-4 hours.
5. Leave all the ingredients in the solution and pour yourself a cup through a tea strainer, as required. It should begin to bubble after 1-2 days. If the room temperature is too cold, place a vessel of hot water next to your tea vessel, replacing it 1-3 times a day (depending on the climate).

I recommend prepping a second 3L jar and leaving that to ferment properly while you are enjoying the contents of the first one. In this way, you will have a continuous supply of extra-herby ginger ale.

Chamomile Tea – Your Before Bedtime Drink

Steep 1tsp loose chamomile flowers with 1-2 lavender flowers in a mug of hot water with some honey (to taste) for at least 10mins or until cool. I highly recommend ingesting the flowers once getting to the bottom of your mug; however you may also use a tea strainer and dispose of them if you would prefer.

Preventing Secondary Infections with Apple Cider Vinegar and Oregano Essential Oil

In order to make sure that shingles does not reappear with the help of a pathogenic friend, such as staphylococcus aureus, I recommend taking a combination of apple cider vinegar and oregano essential oil diluted in lots of water.

Ingredients

- ¼ cup Apple Cider Vinegar
- 1 drop Oregano Essential Oil
- 5L Water

Method

1. Add the vinegar and essential oil to a 5L water bottle.
2. Shake well each time before pouring yourself a glass.

While not as nice as some of the other drinks in this protocol, it is important that you ingest at least 2 glasses of this per day as directed in the protocol.

Olive-Oil Infused Garlic Cloves

Garlic is an important food for fighting any viral infection, provided you are careful about the arginine content in the context of shingles (refer to the mock recipe over the page). Particularly important is that the antiviral compounds present in garlic can only be truly released in oil and therefore you will be required to make an olive oil-garlic infusion as directed below.

Ingredients

- 500g Whole Garlic Cloves (Egyptian pink garlic, Turkish garlic and other heirloom varieties are the best)
- 2-3 Sprigs of Rosemary
- ½ cup olive oil + extra as required

Method

1. Peel and separate out all the cloves.
2. Layer about two rounds of garlic in the bottom of a 1L or 1 pound sized glass jar.
3. Insert the sprigs of rosemary in between the garlic cloves, standing them upright and against the sides of the glass jar.
4. Add another layer or two of garlic cloves until the rosemary can stand on its own. Carefully add some of the olive oil until it reaches just below the level of the garlic, making sure there are no air bubbles. This is best achieved through patience.
5. Continue layering garlic cloves in between adding olive oil until you reach the top of the jar.
6. Store in a dark, cool place outside of the fridge, making sure that the lid is screwed on tightly.

Once this infusion is left to sit, a few things will begin to happen. Garlic juices will start to exit the cloves and a low-key fermentation process will start to take place. As a result, you may see that the jar begins to bubble when you open it to take out a helping of garlic. For this reason, I recommend opening it over a plate or bowl and collecting any excess olive oil that may spill over the sides – feel free to add this into your cooking! After a while, the garlic infusion will become stable and this will not occur.

Example Anti-Herpes Soup Recipe with Step-By-Step Calculations

The following recipe is not a requirement for combating shingles but more of an example of how to get the lysine to arginine ratio right in your own cooking. You will be restricted to only consuming soups during the first phase, because it's much easier to absorb nutrients from soup than from other foods; however in phase two, you can start to cook other types of meals (as directed), provided you adhere to the correct ratios and other dietary guidelines. In this respect, the below recipe can help save you the effort, particularly if you are on your own.

How to calculate the Lysine to Arginine Ratio

1. Write down all the ingredients in the recipe and get the average weight of the amounts you want to use per ingredient. Herbs and spices can be left out with the exception of garlic.
2. Write down the amounts of lysine and arginine for each ingredient. In order to do this, refer to appendix 2 to get approximate amounts of each amino acid for the weight or portion size of the ingredient you are considering. Take the arginine amount and divide it by the weight shown in appendix 2 for the item and then multiply by the weight of the amount you want to use in your recipe. This will give you the amount of arginine roughly for the portion you want to consume.

   For example, the food list in Appendix 2 shows that 3g of garlic contains 19mg of arginine and 8mg lysine; however, 1 clove of garlic weights approximately 5g.
   19mg arginine in garlic ÷ 3g garlic's total weight = 6.33…3mg of arginine in 1g garlic.

   To get the amount for 5g, multiply this amount by 5.
   6.33…3mg arginine in 1g garlic × 5 = 31.66…6mg arginine in 5g garlic.

   Repeat this step for the lysine content. Then proceed to continue until you have established the lysine and arginine contents of the foods you wish to cook with.

3. Tally up the full amount of arginine in the recipe as well as the full amount of lysine.
4. Take the total amount of lysine in your recipe and divide it by the total amount of arginine to get the ratio. If the ratio falls below 1, you need to either exclude a food or two that is higher in arginine or add in more foods that are higher in lysine.

   For example, in the below recipe, the total amount of arginine (excluding meat) came to 676mg and the total amount of lysine came to 681mg.
   681mg lysine ÷ 676mg arginine = 1.01 (and you're good to go!)

The garlic included in the recipe below is something you should include in all your meals and will likely be the main arginine offender. The below recipe also contained a red onion, which could be removed to up the amount of lysine. Alternatively, you could add other vegetables that are higher in lysine, such as cauliflower, collards, potatoes, squash or beetroot. Please check the

specific phase you are in first though, as each week contains dietary restrictions that are important to adhere to.

Ingredients (Makes Enough for 4-5 servings)	**Amount**	**Arginine (mg)**	**Lysine (mg)**	**Ratio**
• Olive Oil	2-3 tbls	-	-	-
• Fresh Oregano, Rosemary or Thyme	½ cup	-	-	-
• Turmeric	½ tsp	-	-	-
• Cayenne Pepper	½ tsp	-	-	-
• Apple Cider Vinegar	1 tbls	-	-	-
• 3 Cloves of Olive Oil-Infused Garlic	15g	95	40	0.42
• 1 Medium Red Onion	100g	6	4	0.67
• 1 large leek; or 2 medium leeks	200g	157	157	1
• 1 Medium Turnip	65g	17	24	1.52
• 1 Whole Chicken (incl. bones)**; OR 1 portion of beef/lamb knuckles**	1.5kg 450g	28950 4810	40500 6330	1.40 1.32
• 3-4 Large Stalks of Celery	220g	44	79	1.33
• 2 Large Orange Sweet Potatoes; or 4-5 Skinny/Small Sweet Potatoes	400g	308	323	1.05
• 3 Medium Spinach Leaves	30g	49	54	1.09
		Total Arginine	**Total Lysine**	**Final Ratio**
Recipe Ratio without Meat		676	681	1.01
" with Chicken**		29626	41181	1.39
" with Beef/Lamb**		5486	7011	1.28

**Please note that meat may only be included if you can source good quality. Refer to Appendix 2 for more information.

Method

1. In a large pot, place the olive oil, cayenne pepper, turmeric and the fresh herb of your choice (I recommend oregano or rosemary for the meatless or red meat options; and rosemary or thyme for the chicken option).
2. Chop the onion, leek, and turnip (the turnip should be chopped into small cubes) and lightly fry all three ingredients with everything else in the pot on a medium heat. Stir the vegetables into the herbs, oil and spices, adding another tablespoon or two of olive oil, if required.
3. If you have good quality meat, add it in at this point, cooking it quickly on both sides to seal it.

4. Pour boiling water over everything in the pot until it is roughly a quarter full, add the apple cider vinegar and whole garlic cloves, and then let that simmer while prepping the other vegetables. Make sure to stir up any residue herbs and spices that may be stuck to the bottom to prevent any burning.
5. Chop the celery stalks (leaves and all), the sweet potato and spinach, adding them to the pot in that order.
6. Top up with some more water until everything is covered; place a lid on the pot and leave to cook for an hour.
7. If you cooked with meat, remove the meat and carve it into bite-sized pieces before adding it back. If you have trouble chewing your food, please do not add the meat back in but rather save it aside for another meal or for somebody else to enjoy. The essence of it will still be retained in the soup.
8. Consume once cool enough to enjoy.

Appendix 4: Supplement Regimen

Amino Acids

L-Lysine

Lysine will be supplemented throughout the entire protocol from beginning to end, until all symptoms have subsided for at least 3 weeks.

Form: L-Lysine tablets
Amount per serving: 1000mg
Servings per Day: 3
Time of Day: Morning, Lunch time, Early Evening
Take with Food: Yes

L-Leucine

This supplement is only necessary for those who are over the age of 65 years, who battle to absorb nutrients from their food, those who are prone to muscle wasting and/or those who keep getting shingles in chronic cycles. This will only play a part of phase one (the first 7 days or less) in order to tackle the acute onset of shingles and give you a very big lysine boost.

Form: L-Leucine
Amount per serving: 400-500mg
Servings per Day: 2
Time of Day: Morning, Early evening
Take with Food: Yes

Anti-Shingles Nutraceuticals

Omega-3 Fish or Krill Oil

An important supplement for both phase one and two, however the dose will decrease in phase two.

Form: Omega-3 Oil, either from fish, algae or krill, in either liquid or soft gel cap form
Amount per serving: 500mg
Servings per Day: 2; 3 for those over the age of 65
Time of Day: Morning, lunch time, early evening
Take with Food: Not necessary

Quercetin

Quercetin can be supplemented throughout the entire protocol. In phase two, one should take a break from it for two days of the week.

Form: Quercetin
Amount per serving: 200-400mg
Servings per Day: 1
Time of Day: Morning
Take with Food: 20mins before food

Optional Supplements for Improved Immune Support

The following supplements are not required for the protocol, but will greatly enhance immunity. I can recommend any of the below supplements for those who are suffering from other chronic conditions that cause a severely suppressed immune profile, such as cancer patients.

Please take care to first consult with a natural health expert or doctor that specializes in functional medicine first before attempting this protocol to make sure it is not contraindicated in your case.

Berberine

This is an ideal anti-VZV supplement for those who battle to lose weight, who have high cholesterol levels or who have suffered liver damage. Those with diabetes, hypertension and cardiac issues will also benefit. If taking a direct extract of pure berberine, take a break from it for at least one day a week. Can be used all the way throughout the protocol.

Form: Goldenseal tincture, goldthread extract, Oregon grape extract, barberry extract, berberine extract capsules
Amount per serving: As directed on the package insert
Servings per Day: 2
Time of Day: Morning, lunch time
Take with Food: Yes

Reishi Mushroom Extract

Reishi mushrooms are often used by those who have a low white blood cell count in order to improve the status of their immunity. For those who lack a thymus gland, are over the age of 65, who suffer from leukemia or some other bone marrow disease, then reishi mushrooms may be of great benefit. If you fall into any of these categories, feel free to use it throughout the entire protocol as directed.

Form: Dried mushroom
Amount per serving: 3g

Servings per Day: 1
Time of Day: Morning
Take with Food: Not Necessary

Mulberry Leaf Extract

Mulberry leaf extract is a rich source of resveratrol and can be found as a concentrated extract or in the form of loose-leaf tea. If you can find the tea variety, feel free to add 2tsps to the herbal tea brew recipe (see Appendix 2). If using the extract, make sure to take a break once a week. This supplement can be otherwise taken continuously throughout the protocol.

Form: Mulberry Leaf Extract
Amount per serving: As directed on the package insert
Servings per Day: 1-2
Time of Day: Any
Take with Food: Not Necessary

Minerals

I highly recommend ordering a quality mineral pitch (shilajit) supplement from Pure Himalayan Shilajit or Lotus Blooming Herbs in order to get your daily dose of trace minerals. However, you may also take individual zinc, magnesium and selenium supplements instead if you would prefer.

Mineral Pitch

If taking a mineral pitch supplement, please refrain from supplementing with digestive enzymes, as it already contains a few. Do not take this supplement in combination with pharmaceuticals and if you are below the age of 65, please take a break for one day a week. Mineral Pitch can otherwise be used throughout the entire protocol.

Form: Himalayan Shilajit in either resin or powder form
Amount per serving: As directed on the package insert
Servings per Day: 1
Time of Day: Morning
Take with Food: Not Necessary (forms part of the smoothie recipe in Appendix 2)

Selecting Quality Mineral Pitch

1. Mineral Pitch should be collected from mountains at elevations at least above 10 000 ft (e.g. Himalayas). The harsh conditions preserve the nutrients better. Furthermore, the substance does not tend to form at low altitudes.
2. “Raw” mineral pitch contains impurities and should undergo purification. To ensure quality, avoid suppliers who do not test their product to maintain safety.
3. In order to reap maximum benefit, opt for a mineral pitch that was not subject to excessive heating during processing.
4. Avoid Indian suppliers who have a reputation for overheating their product during processing.

5. Order from an established brand and avoid non-descript suppliers who may be selling a counterfeit product.

OR

Zinc

Take a break from Zinc supplements once a week.

Form: Zinc picolinate tablets
Amount per serving: 22mg
Servings per Day: 1
Time of Day: Morning
Take with Food: Not necessary

Magnesium

Form: Magnesium threonate, magnesium malate, magnesium citrate
Amount per serving: 500mg
Servings per Day: 1
Time of Day: Any
Take with Food: Not Necessary

Selenium

Selenium ought to be had apart from vitamin C, which has been factored into the protocol already (refer to PART IV). Non-organic forms of selenium are known to cause toxicity over prolonged periods of time.

Form: Selenomethionine or yeast-derived selenium
Amount per serving: 50-200mcg
Servings per Day: 1
Time of Day: Any
Take with Food: Not Necessary

Vitamins

Vitamin C

Vitamin C should be consumed in conjunction with MSM powder for block-buster results!

Form: Vitamin C Powder with bioflavonoids (avoid calcium fizz additives, if possible)
Amount per serving: 1000mg
Servings per Day: 2
Time of Day: Mid-morning, mid-afternoon

Take with Food: Not necessary

Vitamin A (Astaxanthin)

Chain smokers should avoid taking astaxanthin if they are going to supplement with ecklonia cava extract, which already has decent levels of vitamin A.

For those over the age of 65, those who have contracted shingles ophthalmicus, individuals with asthma, severe allergies or liver disease, or those who have terrible eyesight, feel free to take double the dose of astaxanthin. Smokers who fall into this category can take 1 dose of astaxanthin, but ought to take breaks at least twice a week.

Form: Astaxanthin soft gel caps
Amount per serving: 4-5mg
Servings per Day: 1
Time of Day: Morning
Take with Food: Not necessary

Vitamin D3

Form: Vitamin D3 soft gel caps
Amount per serving: 400IU
Servings per Day: 2
Time of Day: Evening; 1hour before bed.
Take with Food: Not necessary

Vitamin K2

Avoid taking Vitamin K supplements if on blood-thinning medications.

Form: megaquinone-7 (may include megaquinone-4 and other megaquinones as well)
Amount per serving: 150-500mcg; of which at least 27mcg should be megaquinone-7
Servings per Day: 1
Time of Day: Take with vitamin D3
Take with Food: Yes

B Vitamins

I only recommend taking B vitamins in the first phase to correct any potential nutritional deficiencies, unless you are over the age of 65. When the microbiome is brought back into balance, B vitamins are manufactured in the gut in perfect portions for health. Continuously supplementing on B vitamins may detract from your bacteria's ability to do it naturally.

Form: All-in-One Vitamin B Complex (refer to the individual supplements for the correct forms and dosages)
Amount per serving: N/A

Servings per Day: 1
Time of Day: Morning
Take with Food: Yes

OR

Vitamin B12

In phase one, 1000mcg of B12 is recommended to prevent a shingles-induced deficiency. After that point, one should stop supplementation and ingest lacto-fermented vegetables daily, or if over the age of 65, drop down to 100mcg to maintain adequate B12 status.

Form: Methylcobalamin or adenosylcobalamin, tablets or sublingual drops
Amount per serving: 100-1000mcg
Servings per Day: 1
Time of Day: Any time except in the evening
Take with Food: Not Necessary

Vitamin B7

Form: Biotin
Amount per serving: 1-3mg
Servings per Day: 1
Time of Day: Any
Take with Food: Yes

Vitamin B6

Form: Pyridoxal-5-phosphate
Amount per serving: 50mg
Servings per Day: 1
Time of Day: Morning
Take with Food: Yes

Vitamin B1

Thiamine (vitamin B1) is the number one B vitamin deficiency in neurodegenerative and psychiatric diseases. In elderly individuals suffering from dementia or Alzheimer's, or in individuals who have schizophrenia and similar conditions, the dose may be dramatically increased from 200mg to 3-8g per day.

Form: Thiamin hydrochloride
Amount per serving: 200mg
Servings per Day: 1
Time of Day: Any
Take with Food: Yes

Thyroid Support

Many of the above supplements work together to support the thyroid, however none of them contain adequate levels of iodine – the main reason that you should opt for taking ecklonia cava, particularly because iodated salt is out of the question for this protocol. If you can't get ecklonia cava, buy a kelp extract and add 1tsp to your breakfast smoothie.

Ecklonia Cava Extract

Form: Ecklonia Cava Extract Tablets
Amount per serving: N/A
Servings per Day: 2
Time of Day: Morning
Take with Food: Not necessary

Thymus Support

All antioxidants help to support the thymus gland. However, if your thymus is aged or non-existent, you should try to source a good quality bovine thymus extract.

Raw Thymus Extract

Thymus extract is often referred to as Thymomodulin and constitutes of the active polypeptides that help to improve thymic function and even regenerate thymus tissue. Thymomodulin is the safer route to take, however crude extracts are just as effective when a good quality product is applied.

Form: Thymomodulin
Amount per serving: 120mg pure extract (with a molecular weight less than 10 000) or 750mg crude extract
Servings per Day: 1
Time of Day: Any
Take with Food: Not Necessary

Selecting a Quality Thymus Extract

1. Ask the supplier for the molecular weight of the extract and if the product contains thymomodulin. Needs to contain a molecular weight fraction of less than 10 000.
2. Avoid non-established brands or vendors that lack the scientific evidence to vouch for their quality.

For Crude Extracts

1. Opt for Bovine extracts and not from any other animal.
2. Ensure the animal was grass-fed, free range and not injected with anti-biotics or hormones. The less stress the animal was subject to, the better.

3. It's important that the supplier vets their product for common bovine diseases, such as mad cow disease (Bovine Spongiform Encephalopathy). You may want to see the test results.
4. The bovine extract should come from young specimens (typically between 2 and 6 years) and not older cows with aged thymus glands.

Digestive Support

Digestive support is only for those who have severe digestive issues, particularly stomach or bile acid deficiencies. Those over the age of 65 with digestive troubles or who suffer from gastric diseases ought to invest in digestive enzymes or opt for using mineral pitch instead of mineral supplements.

Consuming fruits that are high in digestive enzymes is also a core part of the protocol to enhance nutritional absorption and lower inflammation. Such fruits include mangoes, papayas, pineapples and kiwis.

Digestive Enzymes

Digestive enzyme supplements tend to contain multiple types of enzymes that come from the three main classes of these enzymes. The main ones to focus on include pancreatin (pancreatic acid extract), trypsin (a stomach acid derivative) and bromelain (the main enzyme in pineapple).

A digestive enzyme supplement (barring mineral pitch) should only be used in phase one and only if absolutely necessary. The majority of the dietary interventions in this protocol will help to correct enzyme deficiencies; which usually pertain to lacking good gut bacteria, eating low amounts of fruits and fiber, not getting enough bitter foods in the diet, having a leaky gut or being in a chronic state of stress.

Form: Pancreatin, trypsin, bromelaine; in capsule form
Amount per serving: As directed on the package insert
Servings per Day: As directed on the package insert
Time of Day: As directed on the package insert
Take with Food: Typically just before food

Constipation

The best natural remedy for constipation – even in the presence of low digestive enzymes which greatly hamper bowel movements – would be a combo of magnesium and vitamin C. In this respect, the supplements you are on for this protocol will likely clear up any constipation you may have.

Appendix 5: Beginner Guide to Deep Breathing & Mindful Movement

Deep Breathing Technique

Here is a short, basic deep breathing technique that you can use at any time you feel overwhelmed.

1. Close your eyes, take a deep breath in through your nose and imagine that you are taking in light and everything that you need to heal. Feel your lungs expand to their fullest capacity and push your belly out while doing so.

2. Hold all the air in for 9 seconds, counting your heart beat to ascertain when the 9 seconds is up. While doing so, visualize that your body is pain free and that you are strong and healthy. Try to feel what it's like to stand in the full wake of vitality!

3. Exhale the pent up air slowly through your mouth while pursing your lips, allowing for your belly to tuck itself back in place. Imagine that darkness is leaving your body along with all signs and symptoms of disease.

4. Repeat steps 1-3 at least five times or until you feel completely at ease.

Mindful Movement Exercises

The following series of exercises will help to oxygenate your body, lower stress levels and aid the healing process. Feel free to add in any extra stretches or exercises that are not too strenuous.

Exercise 1: Deep Breathing Exercise

1. Stand with your legs at shoulder distance apart.

2. Inhale while lifting your arms slowly to the level of your chest, expanding your belly and filling your lungs with air as you do so (figure 1)

3. Exhale while letting your arms back down slowly.

4. Repeat 3 times. (figure 2).

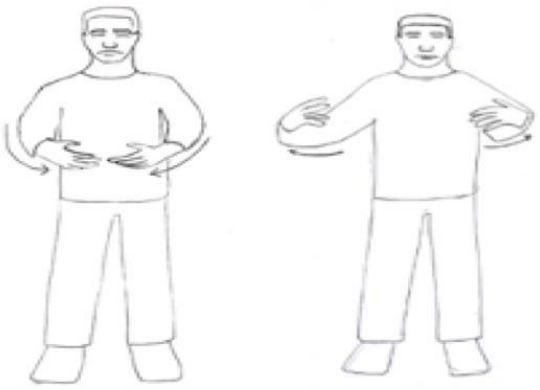


Figure 1

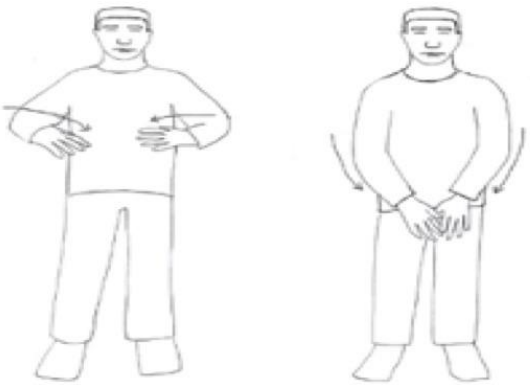


Figure 2

Exercise 2: Gentle Arm Swinging

1. Stand with your legs at shoulder distance apart.

2. Relax your body completely while swinging your arms to one side and then to the other, rotating and lifting your back foot up on its toes in tandem with your swing.

3. Repeat this movement 8 times (figure 3).

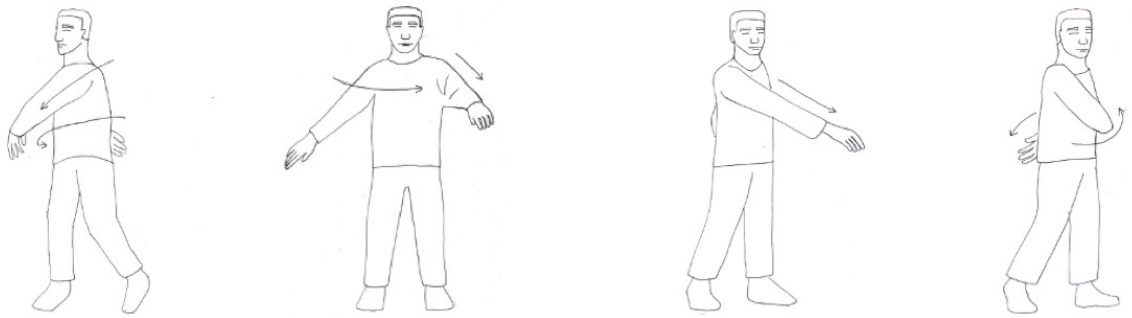


Figure 3

Exercise 3: Touch the Sky

1. Stand with your legs at a shoulder distance apart (figure 4).

2. Inhale as you lift your hands, allowing them to join and lock together before reaching the level of your chest (figure 5).

3. Exhale while slowly pushing your interlocked hands down toward your feet, stopping once your arms have extended fully (figure 6).

4. With your hands still interlocked by your abdomen, inhale and slowly push them out while moving your arms up until they are above your head. Feel your arms and back gently pull and stretch (figure 7).

5. Exhale while pulling your hands and arms apart in opposing directions, drawing them slowly back down in an arch until they are back where they started (figure 8).

6. Repeat this movement 3 times.

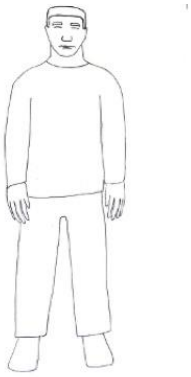


Figure 4

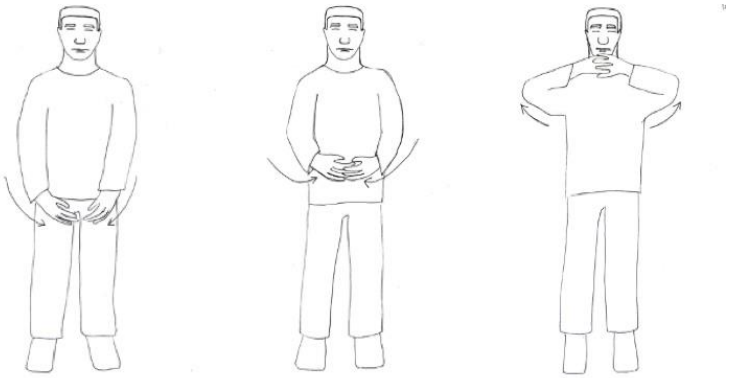


Figure 5

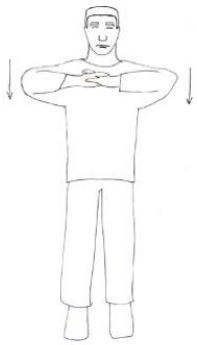


Figure 6

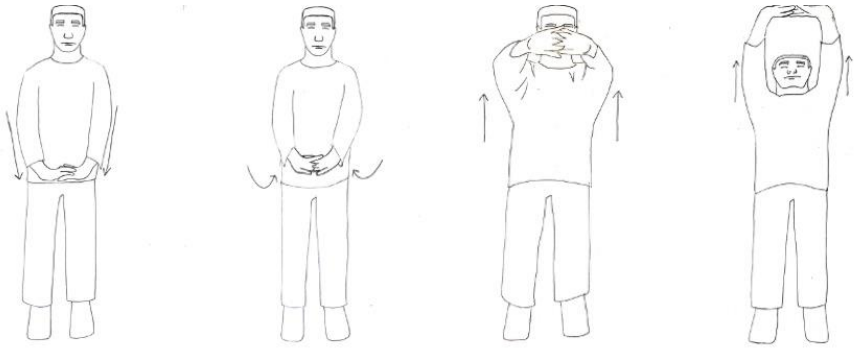


Figure 7

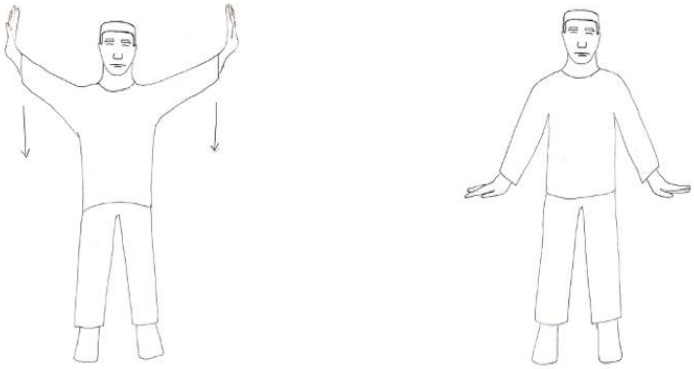


Figure 8

Exercise 4: Shooting the Arrow

Before attempting this exercise, take some time to quickly stretch your hamstrings.

1. Stand with your legs about a meter apart (figure 9).

2. Inhale while bring your hands up to chest level with your palms facing inward (figure 10).

3. Exhale while forming one hand into a fist and extending two fingers out on the other hand (figure 11); before slowly pulling them apart until your arms are fully extended (figure 12).

4. Turn to face the hand with two extended fingers while doing so and place your attention into your fingertips – just as though you were shooting an arrow (figure 13)!

5. Inhale when your arms have fully extended (figure 14), opening both palms and turning back toward a center position (figure 14), letting your arms drop back down toward your abdomen (figure 15).

6. Repeat steps 2 to 4 but for the other side of your body (figure 16).

7. Do this movement on both sides 8 times.

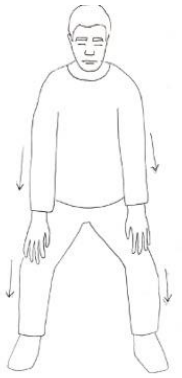


Figure 9

Figure 10

Figure 11

Figure 12

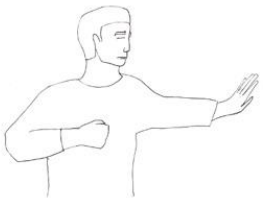
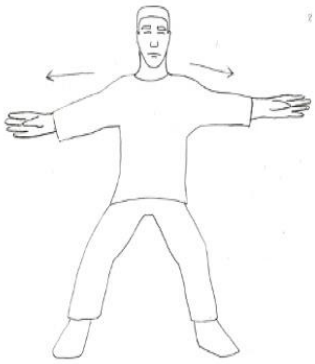


Figure 13



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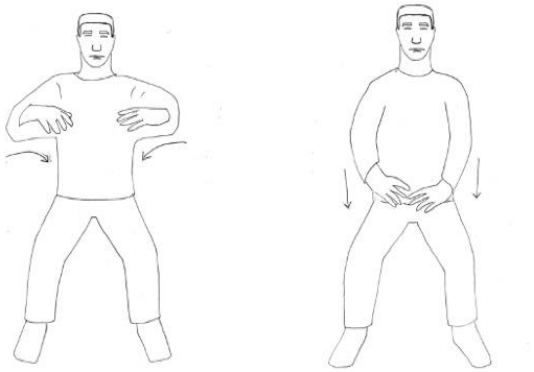

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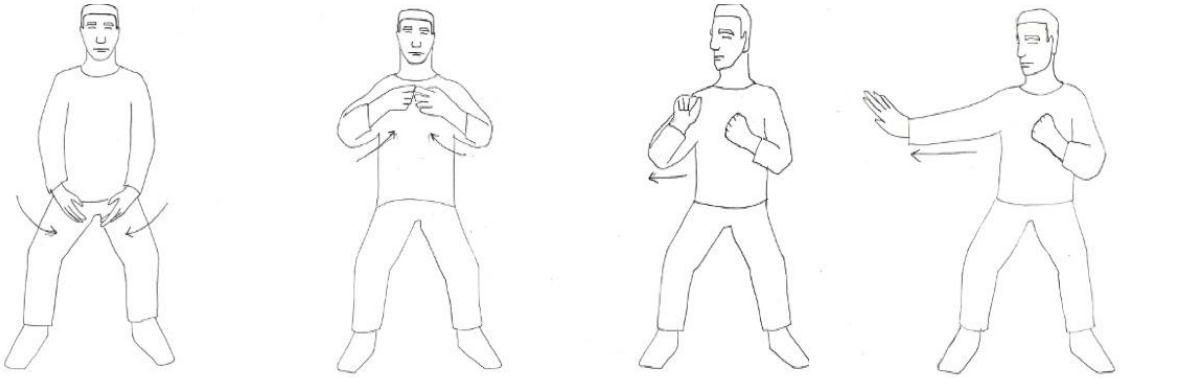


Figure 16

Exercise 5: The Sun-Bathing Bird Stretch

1. Stand with your legs at shoulder distance apart (figure 17).

2. Inhale while raising your hands and arms up in an arch until your hands reach chest level and are facing inward (figure 18).

3. Exhale while rotating one hand so that it faces outward (figure 19).

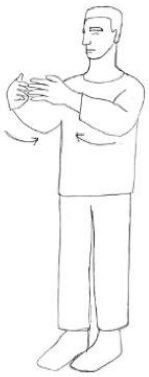
4. Inhale while lifting the hand that is facing outward above your head and lowering the other hand down till it reaches your side (figure 20).

5. Exhale while slowly drawing down your raised arm, forming a half circle in the air as you do so (figure 21).

6. Repeat for the other side.

7. Do this movement 8 times for each side.

Figure 17



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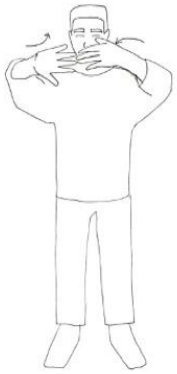


Figure 19

Figure 20

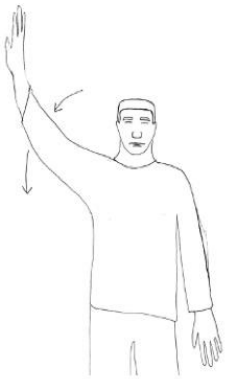


Figure 21

Exercise 6: The Neck Stretch

1. Stand with your legs at a shoulder length apart (figure 22).

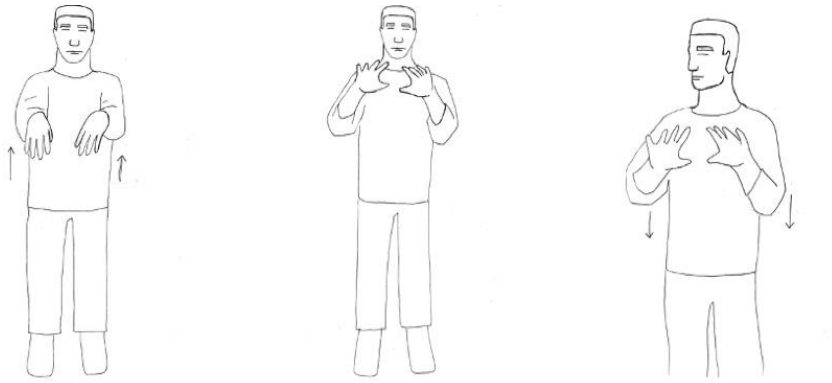
2. Inhale while raising your hands up to chest level (palms facing down) while slowly moving your neck to the one side, stretching the muscles gently there (figure 23).

3. Exhale while lowering your arms back down to the starting position and moving your neck back to the center (figure 24).

4. Repeat for the other side.

5. Repeat this exercise 8 times on both sides.

Figure 22



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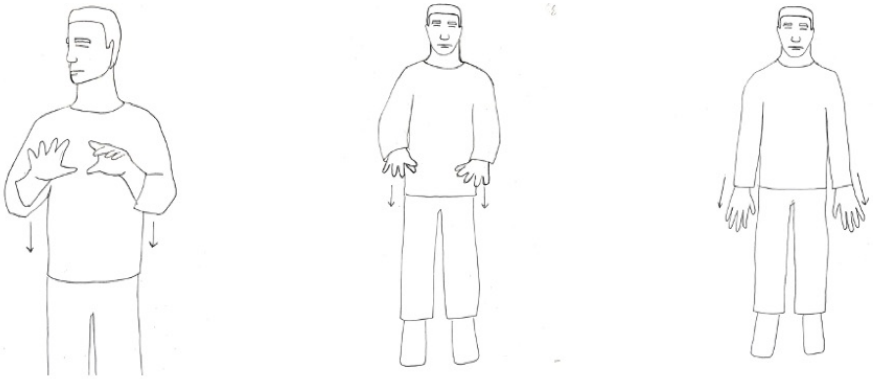

Figure 24

Exercise 7: The Windmill

1. Stand with your legs about a meter apart (figure 25).

2. Place your hands on your thighs and inhale while lowering your torso down to the one side, using your head to guide the motion. Carry the motion through by swerving to the other side, forming a circle in the air with the crown of your head (figure 26).

3. Exhale while moving back in the same fashion, swerving down and around till you reach the side you began at (figure 27).

4. Repeat this movement 3 times per side.

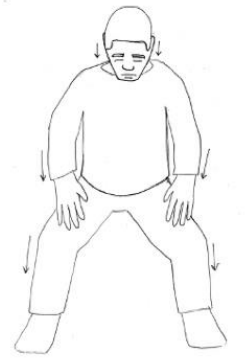

Figure 25

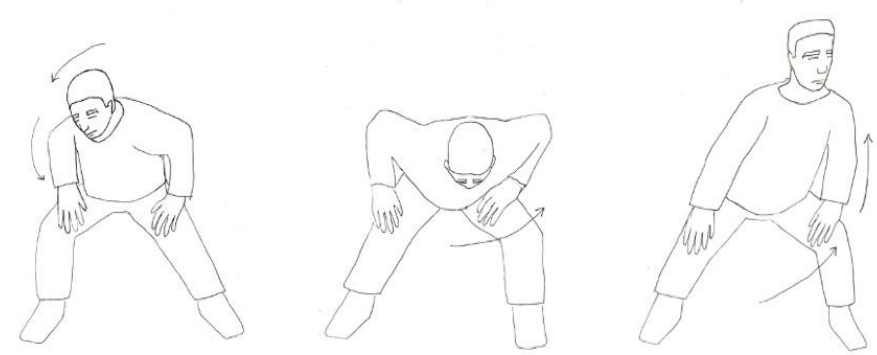

Figure 26

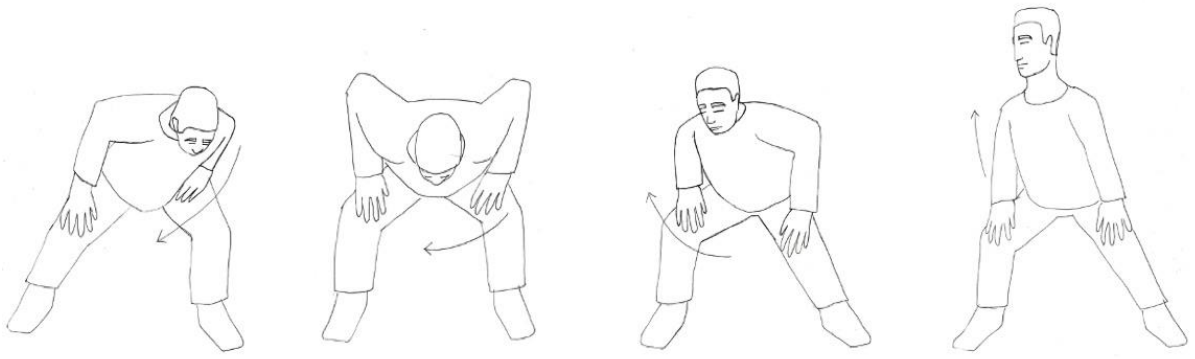

Figure 27

Exercise 8: The Tip Toe Swing

1. Standing with your feet at shoulders length apart, start to swing your arms gently backward and forward.

2. Each time your arms swing forward, stand on your toes (figure 28) and each time they swing back, move back onto your heels (figure 29).

3. Repeat this motion slowly 3 times before picking up the speed and repeating it an extra 8 times.

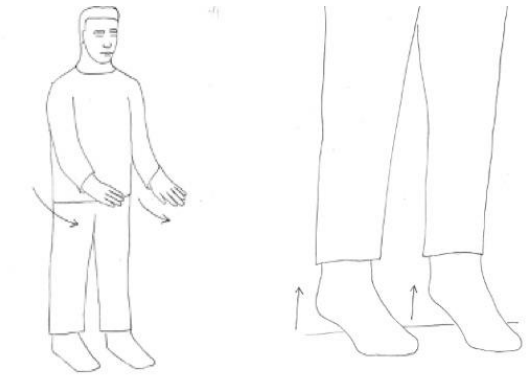

Figure 28

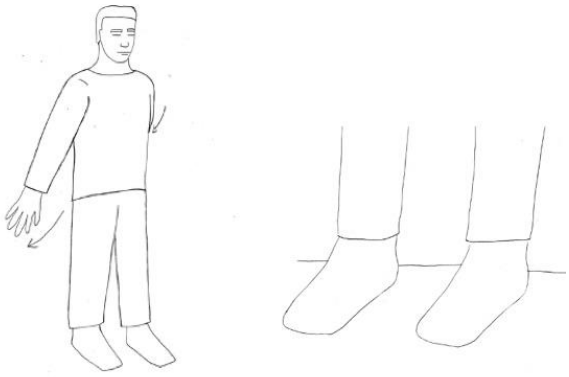

Figure 29

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