The Decline In Detoxification And Immune Function After 40: Four Essential Supplements To Consider

Weakening Of Your Body's Detoxification and Immune Systems After 40 May Increase Susceptibility to Cancer And Life Threatening Infections

It appears that part of nature's plan to facilitate the decline, decay, and degeneration that begins to express itself at about age 40 is, in part, related to a decline in the function of detoxification enzymes in our liver cells and an inability of our white blood cells to adequately identify and destroy cancer cells, and fight off virulent (powerful) strains of viruses and other germs that can cause life-threatening infections.

In short, the decline in our body's detoxification capacity and immune function that starts to occur around 40 years of age are two important reasons why cancer rates increase as we get older. Its also the reason why someone who is 85 years of age is more likely to face a life-threatening challenge if they contract pneumonia, then would be the case with an 18-year old. We don't need a bunch of researchers running around in long white lab coats to inform us that a younger person has a stronger immune system than an 85-year old person. Hence, we know from everyday life that the 85 year old is more likely to die from an infection such as pneumonia than is an 18-year old. In regards to cancer, 75% of new cancer cases in men and 82% of cancer deaths, occur among those 60 years of age and older. Among women, 63% of new cases of cancer and 78% of cancer deaths occur in those who are 60 years of age and older.

These disturbing age-related trends are, in part, related of faulty detoxification activity, which allows cancer-causing agents (carcinogens) to build up in our system as we age, coupled with the age-related weakening of our immune system, which impairs the ability of our immune cells

(white blood cells) to identify and destroy cancer cells and permits various germs to more easily produce infections in our body. It is well established medically, that drugs such as prednisone, which suppresses the body's immune system, increase cancer risk to a significant degree. It is also well established that individuals with AIDS, who have compromised immune function, are extremely susceptible to the development of certain cancers. There is no doubt, that a healthy immune system and the prevention of cancer go hand-in-hand. In fact, the immune system makes cells called Natural Killer Cells, whose function is to identify and destroy any cancer cells that may form in the body, before they start to run wild.

The good news is that in recent years researchers have discovered that the use of certain nutritional supplements combined with a healthy diet can boost the function of the body's detoxification enzymes and immune system back to a more youthful level in older subjects and in individuals with various degrees of compromised detoxification and/or immune system function. In other words, even though your genetic blue prints carry the program for your detoxification enzymes to slow down and your immune system to weaken after the age of 40, you don't have to just sit back and take it. This section will highlight four daily supplements you may consider taking if you are 40 years of age or older, to prevent or reverse the age-related decline in detoxification and immune function that may otherwise increase risk of certain cancers, accelerate the aging process of your body internally and externally, and increase the risk of life-threatening infections as you age. By adding the combination of these four herbal agents, in conjunction with the use of a high potency multi-vitamin and mineral, you will provide your body with the additional daily nutrient support to help maintain or re-establish more optimal detoxification and immune function and thereby prevent the age-related build up of cancer-causing agents and other impurities in your bloodstream. It may also help to keep your immune

system functioning at a more youthful and effective level regardless of your age. After 40 years of age the four herbal products to consider for these purposes include:

- Milk Thistle
- Indole-3-Carbinol
- Reishi Mushroom Extract
- Astragalus

Let's take a look at the role these four herbal agents play in maintaining optimal detoxification and immune function, when taken in conjunction with a healthy diet and a high potency multi-vitamin and mineral formula.

Nutrition and Detoxification

The liver is the primary site for the detoxification of carcinogens, toxins, end products of metabolism, older circulating hormones, and other food-borne environmental chemicals such as pesticides, herbicides, food colors, and other artificial food additives. Approximately 25% of detoxification occurs within the cells lining the intestines and other cells throughout the body, and 75% occurs in the liver. Therefore, a healthy functioning liver is extremely important to ridding the body of cancer-causing agents and other offensive substances. Almost two quarts of blood pass through the liver every minute, with one of the main functions of the liver being assigned to detoxify carcinogens and other impurities that are circulating in the bloodstream. In a sense, one of the liver's primary jobs is to purify the blood and keep it free from impurities and substances that can cause cancer at various tissues sites within the body. The way that the liver fulfills this duty is through the activity of its detoxification enzymes. As well, any bacteria in the blood get intercepted and destroyed by the Kupffer cells in the liver upon contact. Kupffer cells destroy 99% of the bacteria in the blood that enters the liver before the blood is allowed to re-enter the general circulation. In liver cells, and in other cells in the body that exhibit

detoxification function (intestinal cells and others), toxins, carcinogens, old hormones, end products of metabolism, prostaglandins, drugs and other chemicals are detoxified via the Phase I and phase II detoxification enzyme systems. As I have alluded to, these detoxification enzymes are highly responsive to dietary and supplementation practices, which enables us to use appropriate strategies to prevent the age-related decline in activity of our detoxification enzymes that has been programmed into our genetic blueprints. Let's examine the relationship between nutrition, supplementation and our body's detoxification activity.

Phase I Detoxification

Phase I detoxification involves a group of enzymes called the mixed function oxidase enzymes (cytochrome P450 system), which comprise 50 to 100 different detoxifying enzymes. Essentially, the Phase I detoxification enzymes convert xenobiotics (toxins) to a less toxic form, making them water-soluble, or is most often the case, converts them into a more active and dangerous substances (e.g., free radicals), which are in turn neutralized through the Phase II detoxification system.

Phase II Detoxification

The Phase II detoxification enzymes act on the active and dangerous metabolites that were generated in the Phase I detoxification system. After being passed along from the Phase I enzymes, these dangerous intermediate compounds are handed over to the Phase II detoxification enzymes, which neutralize these substances and prepare them for elimination from the body. Some Phase II detoxification enzymes can act directly on various toxins (heavy metals, liver toxicants, bacterial and microbial compounds and endotoxins and end products of metabolism) and convert them into compounds that the body can more easily eliminate. However, for the most part, Phase II detoxification mainly function to intercept the highly reactive and dangerous

metabolites, produced via the Phase I detoxification system, neutralizing them and preparing them for elimination through the urine or fecal route. Thus, the Phase I and Phase II detoxification systems work synergistically to rid the body of potentially harmful and toxic substances. This means that both Phase I and Phase II detoxification must be working at peak levels to prevent the build-up of toxins that can initiate cancer in the body, accelerate the aging process, and/or increase immune inflammatory reactions in the bloodstream that aggravate arthritis and various skin conditions, such as psoriasis, eczema, rosacea and even acne to some degree.

Nutrition and Detoxification

For both the Phase I and Phase II detoxification systems, dietary factors and nutritional supplementation have been shown to exert profound influences on their ability to sustain peak performance and help prevent the build up of toxins and carcinogens in the bloodstream.

Dietary factors that are known to enhance Phase I detoxification enzymes include cabbage, cauliflower, turnips, kale, bok choy, broccoli and Brussels sprouts (cruciferous vegetables). These cruciferous vegetables contain a substance called indole-3-carbinol, which stimulates detoxification to a very significant degree. Studies show that individuals who consume higher amount of these vegetables throughout their lifetime have significantly less colon, breast and prostate cancer incidence; an outcome largely attributed to the enhancement of detoxification induced by the indole-3-carbinol component of these vegetables. It is also worth noting that a flavonoid found in oranges and orange juice called limonene, also stimulates the Phase I detoxification enzymes. This is in contrast to grapefruits and grapefruit juice, which contain a flavonoid called narangenin, which slows Phase I detoxification by up to 30%. As such, I suggest that you eat oranges and drink orange juice instead of consuming grapefruits and grapefruit juice.

As well, Niacin (Vitamin B3), Riboflavin (Vitamin B2) and Vitamin C stimulate Phase I detoxification enzymes, and thus the use of high potency multi-vitamin and mineral supplement that contains a B-50 complex and 1,000 mg of vitamin C, is also advantageous in maintaining more optimal detoxification function throughout your lifetime.

The Phase II detoxification system is also enhanced by the consumption of cabbage, cauliflower, turnips, kale, bok choy, broccoli, and Brussels sprouts (cruciferous vegetables), as well as soy products and by a number of B-vitamins, antioxidant vitamins, and the mineral molybdenum. Phase II detoxification can also be boosted very significantly with supplementation of the herb, milk thistle, which should be used by those 40 years and older, in my opinion, to help ward off the age-related decline in Phase II detoxification. In Phase II, the reactive intermediates generated from Phase I detoxification enzymes are conjugated with specific chemicals to neutralize them and/or make them easier to eliminate (e.g., make them more water-soluble for easier excretion). There are primarily six conjugation reactions in Phase II detoxification that quench the reactive intermediates created in Phase I detoxification. These include:

- Glutathione conjugation
- Amino acid conjugation
- Methylation
- Sulfation
- Acetylation
- Glucuronidation

Each of these Phase II conjugation reactions can be enhanced by specific nutritional factors as well:

- Glutathione Conjugation – is enhanced by Vitamin C, Vitamin E, selenium, and Vitamin B6. Supplementation with milk thistle also boosts glutathione levels in the liver.
- Amino Acid Conjugation – requires the presence of a number of amino acids, especially glycine
- Methylation – requires the B-vitamins folic acid, Vitamin B12 and choline.
- Sulfation – requires the sulfur-containing amino acids, cysteine, methionine, and the mineral molybdenum.
- Glucuronidation – is enhanced by the presence of Omega-3 fats from fish and the flavonoid found in oranges called limonene. Studies also show that glucuronidation metabolism is slowed down in Gilbert's syndrome (causing decreased bilirubin detoxification with resulting yellow sclera, fatigue and related symptoms), but can be significantly enhanced with supplementation of S-adenosyl methionine (500 mg, twice per day)
- Acetylation – requires the presence of the B-vitamins, pantothenic acid, B2 (riboflavin) and vitamin C.

Nutrition And Supplementation Support To Optimize Detoxification

The following basic nutrition and supplementation practices should be included to optimize the body's detoxification function throughout your lifetime with added help of indole-3-carbinol and milk thistle supplementation after age 40 to help combat the age-related decline in detoxification function that otherwise would occur.

To support liver Phase I and Phase II detoxification consider here are the strategies you may wish to employ:

1. A high potency multiple vitamin and mineral supplement that is enriched with a B-50 complex and antioxidants:
    - Vitamin C: 1,000 mg
    - Vitamin E: 400 I.U.
    - Selenium: 100-200 mcg
    - Molybdenum: 50-75 mcg
    - Beta-carotene: 10,000-20,000 I.U.
2. Daily intake of cruciferous vegetables. After age 40 you should consider taking an immune-detox support supplement, containing indole-3 carbinol (active detoxifier in cruciferous vegetables) and milk thistle (standardized to 80% silymarin content). Milk thistle supports liver glutathione levels and is known to repair and regenerate damaged liver cells, improving detoxification capacity; even in cases where previous liver problems have occurred as in hepatitis-C, alcohol damage, or damage from other toxins, medications, and infections.
3. The use of a daily protein shake, rich in soy and/or whey protein (provided you are not sensitive to these proteins). These proteins support amino acid conjugation reactions in the liver, strengthen the immune system and the intestinal barrier to toxins. Soy isoflavones also enhance the performance of many Phase II liver enzymes, making them more efficient.

Supporting Detoxification Function After 40 With Milk Thistle and Indole-3-Carbinol Supplementation

In addition to consuming cruciferous vegetables, soy products, oranges, orange juice, a whey and/or soy protein shake, and a high potency multi-vitamin and mineral supplement, you may consider, that after the age of 40, supplementing with a combination supplement that includes

milk thistle and indole-3-carbinol to further help counter the age-related decline in detoxification function that is programmed into our genes. Lets look at how supplementation with milk thistle and indole-3-carbinol can super charge the body's detoxification capacity after the age of 40.

Milk Thistle

Milk Thistle has been used medicinally for several thousand years. [1] Medical use of Milk Thistle can be traced back to the well-known 17th century pharmacist Nicholas Culpeper, who cited the use of Milk Thistle as a medicinal agent for opening "obstruction" of the liver and spleen, and recommended it for the treatment of jaundice. The Greeks and the Romans also noted its ability to protect against and repair certain liver conditions. Scientific investigation into the use of liver-related conditions began in the 1960's, with the isolation of silymarin (a combination of flavonolignans) from the ripe seeds. It is essentially the silymarin content of Milk Thistle extract, which has been shown to provide its medicinal effects, especially in regards to the treatment and prevention of various liver conditions and it ability to boost detoxification function.

Silymari (a mixture of flavonolignans consisting chiefly of silibinin, silidianin, and silicristin) has been shown to be the active ingredient in milk thistle that improves liver health and function and boosts the detoxification capabilities of the Phase II detoxification enzymes. Thus, milk thistle extracts should always be standardized to contain 80 percent silymarin content in order to yield enough of its active ingredients to be effective in supporting liver health and Phase II detoxification enzymes.

Extensive investigation into the biological activities of silymarin have uncovered the following mechanisms of action through which milk thistle supplementation has been shown to be an effective anti-aging and therapeutic supplement:

a. Antioxidant Function: Silymarin has been shown to be at least ten times more potent in its antioxidant activity than vitamin E, in the liver, stomach, and intestine.

   Experimental evidence reveals that silymarin protects animals from liver damage upon exposure to diverse toxic chemicals, such as carbon tetrachloride, ethanol, galactosamine and amanita phalloides or its toxins – a very lethal agent from the toadstool mushroom.

b. Increases Liver Glutathione: Silymarin increases liver glutathione content by over 35 percent in healthy human subjects and by over 50 percent in rats. In the liver, glutathione participates in both phase I and phase II detoxification processes, facilitating the detoxification of a wide range of hormones, drugs and chemicals. Glutathione also acts as an intracellular antioxidant that protects cells against dangerous free radicals from various sources. In many liver and immune-related diseases, glutathione liver concentrations are depleted permitting faster advancement of liver damage and disease progression. The ability of Milk Thistle to help restore liver glutathione levels is considered to be a primary means by which silymarin has been shown to be an effective treatment for various liver diseases.

c. Inhibits the formation of inflammatory chemicals called leukotrienes: This effect may help to control swelling and inflammation from various types of mechanical and chemical insults.

d. Stimulates Protein Synthesis: Silibinin stimulates RNA polymerase A (also known as polymerase I) and DNA synthesis, which in turn increase the synthesis of ribosome proteins and thus, stimulates liver cell development. This ultimately increases the regenerative capacity of liver cells and results in the production of new liver cells to replace the damaged old ones. As such, silymarin has been shown to provide and important anti-aging effect on liver function and aid in the repair of liver cells that have been damaged by various microorgamisms, alcohol, medications, and other damaging chemicals.

e. Increased Superoxide Dismutase Concentrations: Silymarin has been shown to increase the concentrations of superoxide dismutase enzyme, which is a very powerful intracellular antioxidant that quenches the superoxide anion (a very aggressive damaging and reactive, free radical oxygen species). This action further helps to protect liver cells from the cumulative effects of free radicals as we age.

Milk thistle is not only an important anti-aging/disease prevention supplement to be taken after 40 years of age, but its effects on the liver are so powerful that it has also been used therapeutically in the treatment of various liver ailments, such as cirrhosis, chronic and acute viral hepatitis, and cases of sluggish liver or minor hepatic insufficiency - a term is used by European physicians and American Naturopaths to describe a myriad of symptoms involving aching beneath the ribs, fatigue, unhealthy skin appearance, general malaise, constipation, allergies, premenstrual syndrome, and/or chemical sensitivities, for which Milk Thistle has been recommended. Milk thistle has also has been shown to help in cases of psoriasis and other skin conditions where toxins in the bloodstream trigger immune inflammatory reactions that have been shown to aggravate these skin conditions.

For anti-aging and disease prevention purposes silymarin has been shown to boost the detoxification capacity of the liver Phase II detoxification enzymes, significantly increase liver concentrations of glutathione, increase solubility of bile and provides additional antioxidant support and other forms of protection and regenerative effects to liver cells. As such, I use milk thistle supplementation daily and I recommend it as a vital supplement to slow or prevent some of the important biological processes of aging and to exert a number of health-promoting effects that are consistent with principles of disease prevention practices. For general anti-aging support after 40, I recommend 300 mg per day of milk thistle, standardized to 80% silymarin content.

Indole-3-Carbinol

Indole-3-Carbinol has been shown to be one of the major anti-cancer substances found in cruciferous vegetables. Frequent consumption of these vegetables (broccoli, cauliflower, cabbage, Brussels sprouts, turnips, kale and bok choy) is associated with reduced risk of cancer in many human and animal studies. Indole -3-Carbinol is a member of the class of sulfur-containing chemicals called glucosinolates (previously called thioglucosides). It is formed by the action of myrosinase enzyme acting on the parent compound glucosinolates, whenever cruciferous vegetables are crushed (e.g., chewing) or cooked. Indole-3-Carbinol and other glucosinolates (e.g., other indoles and isothiocyanates such as sulforphane) are antioxidants and potent stimulators of Phase I and Phase II detoxification enzymes in the liver and intestinal epithelial cells. In this capacity it helps the body more easily eliminate toxic compounds, including many cancer causing agents (carcinogens). Indole-3-Carbinol also acts as a phytoestrogen (plant-based estrogens) and, in this capacity, can bind to estrogen receptors in the body, reducing the ability of stronger estrogens from over stimulating reproductive tissues such as the breast, cervix, uterus, and in males, the prostate gland. As indole-3-carbinol speeds up the detoxification of carcinogens and protects reproductive tissues from the over stimulation effects

of estrogen to a certain degree, observational and experimental studies indicate that it has an important role in the prevention of reproductive organ cancers including, breast, cervical and prostate cancer. Compelling evidence also suggests that indole-3-carbinol protects against colon cancer. As breast, prostate, and colon cancer have a higher rate of occurrence as we age, it is prudent to boost your body's defenses against these diseases after the age of 40 by supplementing with 50 mg of indole-3-carbinol per day, over and above the frequent consumption of cruciferous vegetables. Indole-3-carbinol also promotes the metabolism of certain estrogens made in the body (estrone) into a safer, less cancer-promoting form (2-OH-estrone), further helping to reduce risk of reproductive organ cancers, according to some recent research on this subject.

Nutrition and Immune Function

As is the case with detoxification, the body's immune system also becomes less effective between the ages of 40-50. The immune system and our detoxification system work hand-in-hand to help our bodies prevent the development of cancer, and to ward off serious infections. One of the ways that nature attempts to get rid of us as we age, then, is via our genetic programming, which promotes more sluggish detoxification and compromised immune function after age 40. Our immune system has been shown to become weaker as a result of the age-related decline in function of the thymus gland and by the cumulative effects of free radicals acting on our immune cells. The thymus gland sits behind the breastbone (sternum) and reaches its maximum weight at about puberty. The thymus gland serves a critical role in maintaining optimal immune function in that it instructs certain immune cells how to effectively identify and kill various germs that may enter the body, as well as how to identify emerging cancer cells and kill them before they can create a real threat to the body. In short, it makes our immune cells

more intelligent and more capable of performing their intended function. In addition, the thymus gland produces T-lymphocytes, a type of white blood cell that is responsible for fighting infections within our tissues, which specifically ward off infections from mold-like bacteria, yeasts (including Candidia Albicans), fungi, parasites, and viruses. The thymus gland also secretes various hormones, which have far reaching effects on the entire immune system, enhancing the overall effectiveness of immune function. Low levels of thymus gland hormones in the blood are associated with decreased immunity and increased susceptibility to infection. Unfortunately, the thymus gland undergoes degeneration as we age with a corresponding drop in blood levels of thymus gland hormones. It is now well appreciated that reduced functioning of the thymus gland and a decline in thymus gland hormones are significant factors that contribute to a weakening of our immune system as we get older, making us more susceptibility to cancer and life-threatening infections.

Optimizing Thymus Gland Function With Vitamin and Mineral Supplements

In recent years studies have shown that the age- related decline in thymus gland function can be modified to a significant degree by supplementing with the levels of certain vitamins and minerals that are present in the high potency multi-vitamin and mineral product I recommend for general wellness and anti-aging. Studies demonstrate that even marginal deficiencies of vitamin A, folic acid, vitamin B12, vitamin B6, zinc or selenium impair the function of the thymus gland. At the same time studies also reveal that supplementation with vitamin A prevents stress-induced shrinkage of the thymus gland (stress has been shown to shrink the thymus gland prematurely), and actually promotes the growth and regeneration of the thymus gland, reversing aging. The National Health and Nutrition Examination Survey revealed that 50% of the adult population

does not ingest the recommended amount (RDA) of vitamin A each day. Studies examining zinc supplementation has also revealed its many positive effects on immune function, including enhancing the release of thymus hormones. Selenium supplementation has also been shown to stimulate white blood cell and thymus function. The National Health and Nutrition Examination Surveys have shown us that more than 30% of the population do not ingest the RDA levels for most B-vitamins, and that the average intake of zinc and selenium each day from food are only 8 mg and 50 mcg, respectively, which are not sufficient to support immune and thymus gland function according to available research. Therefore, the use of a high potency multi-vitamin and mineral supplement is a key step in helping to prevent the age-related decline in thymus gland function. However, supplementation with a high potency multi-vitamin and mineral also helps reverse the age-related decline in many other aspects of immune function as has been revealed by a number of researchers, who have shown that specific antioxidant vitamins and minerals can boost immune function in older human subjects.

Vitamin Supplements Reverse the Age-Related Decline in Immune Function

Throughout the 1980's and 1990’s, a number of researchers began exploring the potential role for specific vitamins, at supplemented levels, to enhance immune system function and reduce the risk of infections and other immune system – related diseases.

It's well established that certain vitamin deficiencies impair immune system function in animals and are associated with increased incidence of disease. Reversal of impaired immune system function by vitamin supplementation has been well demonstrated in human and animal studies. Vitamin E supplementation has been shown to enhance tissue immune system function in healthy elderly human subjects and rodents. Vitamin C supplementation significantly improves

the respiratory condition of asthmatic patients. A combined supplement of vitamin C and E increases blood levels of important immune system agents (immunoglobulin G and complement 3) in healthy elderly women, enhances production of lymphocytes and white blood cell function, and prevents development of autoimmune disease in animals.

In addition, vitamin E supplementation has been shown to reduce the production of prostaglandin E2. Prostaglandin E2 tends to weaken the immune system by suppressing the production of Interleukin-1 and Interleukin-2, which are important mediators in the immune response of the body. Prostaglandin E2 also suppresses proliferation of lymphocytes, which give rise to disease-fighting antibodies. Vitamin E also protects immune cells from free radical damage, preserving their ability to function at an optimal level.

A reduction in prostaglandin E2 concentrations correlates with enhanced production of Interleukin-2, which is a powerful mediator of immune function. Thus, vitamin E supplementation demonstrates and ability to boost immune system function in the elderly and in people with weakened or compromised immunity.

A number of double-blind studies have shown that elderly people have better immune function and a reduced rate of infection when taking a multiple vitamin and mineral formula. One double-blind study demonstrated that supplementation with 100 mcg of selenium and 20 mg of zinc, with or without additional vitamin C, vitamin E, and beta-carotene, reduced infections in elderly people. Other studies have shown improved outcomes in immune function when individuals were supplemented with either vitamin C, beta-carotene, vitamin A, lycopene or vitamin B12.

The body of evidence suggests that all of these nutrients are required to provide the best possible effects in immune function. An example of this kind of synergy is well illustrated in study appearing in December of 1996 by Dr. Kee-Ching, G. Jeng and fellow researchers who published their study in the American Journal of Clinical Nutrition. They recruited forty healthy male and female volunteers aged 22-55 years old from the staff and students of the Taichung Veteran's General Hospital and Providence University in Taiwan. Subjects were administered vitamin C (1,000 mg per day), or vitamin E (400 mg per day) or vitamin C and vitamin E at the aforementioned dosages, for 28 days. The results of the study clearly showed that the subjects receiving the combination of vitamin C and vitamin E had the most improved parameters in immune system function as measured by blood levels of Interleukin-1B and tumor necrosis factor-alpha. This group also demonstrated the lowest levels of free radical damage as measured by plasma lipid peroxidation concentrations on day 14. This group also had the lowest production of prostaglandin E2 and enhanced tumor necrosis factor-alpha. The conclusion of the researchers of the study is that the combined supplementation with vitamins C and E is more immune system boosting (immunopotentiating) than supplementation with either vitamin alone in healthy adults.

Many believe that a comprehensive approach to vitamin supplementation should be used to help us inoculate ourselves against virulent infectious processes throughout our lifetime. The study by Jeng and fellow researchers underscores the synergistic relationship between vitamin C and vitamin E, as together they are better able to bolster the immune system than either one supplemented individually. This is not an isolated circumstance, as the body of evidence suggests that many nutrients work hand-in hand to optimize function of our immune system and our health status. Hence, the reliance upon a well formulated multiple vitamin and mineral (antioxidant-enriched) supplement should part of an essential plan to optimize immune function

throughout our lifetime and demonstrates an ability to reverse some of the age-related decline in immune function that is typically seen in older individuals, providing a proven anti-aging effect on the immune system.

Reishi Mushroom Extract And Astragalus: Why You May Wish To Add Them After 40

Reishi Mushroom Extract

Reishi mushrooms (Ling Zhi or Ganoderma lucidum) have been used for thousands of years by herbal practitioners in China and Japan. It is listed as a super herb in China's pharmacopoeia, primarily due to its ability to modulate immune function and for its anti-cancer and liver-protective properties. Reishi mushrooms contain unique polysaccharides, which have been shown to exert positive effects on the immune system. Other active constituents include the ganoderminc acids, classified as triterpenoids, which are compounds with a structure similar to steroid hormones..

Studies demonstrate that reishi mushroom extract boost the cancer cell killing capacity of certain immune cells, including macrophage cells and T-cells. It also increases the ability of immune cells to identify and kill many microorganisms and significantly enhances the release of cytokines that act as signaling agents to boost immune system efficiency. Specifically, reishi mushroom extract has been shown to increase cytokine synthesis and release of interferon, interleukin-1, beta, tumor necrosis factor-alpha and interleukin-6, from human monocytes-macrophages and T lymphocyte. All of these effects are important in preventing the age-related decline in immune function that occurs after the age of 40. Other investigations have revealed the degree to which reishi mushroom extract can stimulate and preserve immune function as it has

been shown to reestablish normal levels of white blood cells following gamma-ray irradiation (radiation therapy). These findings have led to its use as a cancer treatment, support supplement by many practitioners in Asia.

You may wish to take reishi mushroom extract with astragalus, as part of a combination product for immune support after the age of 40. Supplementation with reishi mushroom extract, astragalus and antioxidants have been shown to reverse many of these age–related changes to the immune system, which help our bodies reduce cancer risk and susceptibility to more virulent infections as we age. To ensure that sufficient amounts of immune-strengthening agents are present in a reishi mushroom extract supplement you should only use reishi mushroom supplements that are a standardized grade yielding at least 10% polysaccharide and 4% triterpene content.

Astragalus

The root of the Astragalus membranaceous has been used for many hundreds of years in traditional Chinese medicine. Like reishi mushroom extract, it can be taken over long periods to support immune system activity. Its key active ingredients include the astragalosides (saponins), flavonoids, and polysaccharides. Research reveals that astragalus can modulate immune function in many ways, which include:

- Enhanced ability of natural killer cells to kill cancer cells and microorganisms
- Increased ability of macrophage cells to kill various microorganisms
- Increases proliferation of splenocytes
- Direct anti-viral properties

In human studies astragalus supplementation has been shown to increase serum levels of various proteins that are an important part of our immune defense, called immunoglobulins. Specifically astragalus has been shown to increase the level of the following immunoglobulins in the body: IgM, IgE, and nasal secretions of IgA and IgG; all of which enhance immune function at various levels. In this regard astragalus has been shown to reduce the incidence of the common cold when used as a daily preventive measure**.** Astragalus has also been used to improve the responsiveness of lymphocytes in normal subjects and cancer patients. It can also enhance natural killer cell activity in normal subjects and patients with Lupus. It has been shown to improve (up-regulate) the immune system in patients with AIDS and in cancer patients. Like reishi mushroom extract, astragalus is a herb with outstanding immune system strengthening properties that is safe to take on daily basis. The combination of reishi mushroom extract and astragalus can boost immune function and reverse certain aspects of the age-related decline in immune function that vitamin and mineral supplementation alone cannot achieve.

Thus, after the age of 40, in addition to a high potency multi-vitamin and mineral supplement, I it may be advisable to supplement with an immune and detoxifying booster supplement that contains milk thistle, indole-3-carbinol, reishi mushroom extract and astragalus at dosages at or near the following daily levels:

Amount per two capsules:

- Milk Thistle: 300 mg (standardized to 80% silymarin content)
- Indole-3-carbinol: 50 mg (standardized to 97% indole-3-carbinol content)
- Astragalus: 200 mg (2:1 extract)

- Reishi Mushroom Extract: 60 mg (standardized to 10% polysaccharide and 4% triterpene content)

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