

**My Book of Stem Cell Longevity
Formulas and Nutraceutical
AntiAging Combinations**

**Based on scientific research
studies of foods, herbs and
extracts proven to grow stem cells
that extend lifespan**

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A special thank you to Longevity researcher Mr. Doug Skrecky for sharing his hundreds of research studies on longevity with us all.

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Introduction - Basics of Stem Cell Reproduction via Nutraceuticals. A simplified explanation.

Many of us are familiar with the concept of how stem cells are being used to grow new organs for the body. But did you know that stem cell growth can also be accomplished by certain herbal formulations to rebuild bones and extend lifespan? This book will not cover the organ growing stem cell technology, but will instead cover herbal formulas scientifically proven to grow new stem cells in the body and lengthen lifespan. Many of these formulas help contribute to bone growth and loss of bone is one of the major factors of aging. It has been my experience from using a herbal formulation I developed that boosts stem cells that I have much more endurance, more flexible and stronger bones and a stronger immune system from using a stem cell based formula derived from herbs and combined with Carnosine, which I discuss in further detail, along with the formula in Chapter 2 of this book.

What Are Mesenchymal Stem Cells?

Mesenchymal stem cells are found in our bone marrow, circulating blood, and fat cells. These cells repair and replace damaged tissue. Our body depends on these adult stem cells in the bone marrow to repair damage and stay healthy. This vital role they play is one of the greatest health discoveries of modern times. It is a fact that if you don't get enough minerals in your diet, your body starts pulling minerals out of your bones, which is why if you can keep your bones strong and healthy as your age increases, you offset the aging process. Scientific studies have proven that the number of mesenchymal stem cells diminish in bone marrow as a person ages and is one of the causes for aging. Other stem cells are also used to grow new organs. However, we won't discuss this in detail in this book because the purpose of this book is using herbs and their combinations that promote Mesenchymal Stem Cells (bone marrow) for longevity.

The decline of adult stem cells in our body leads to irreversible damage in virtually any body part, causing tissue breakdown, aging and a loss of long term health. Without a resupply of constant adult stem cells, good health is compromised. Let us examine the growing research showing that adult stem cell release rates decline as we age:

◦**35 years - the stem cell release rate drops by 45%**

◦**50 years - the stem cell release rate drops by 50%**

◦**65 years - the stem cell release rate drops by 90%** (At this age we have just 10% of adult stem cells circulating in our blood. This is what makes us vulnerable to infection and osteoporosis)

When we are born we have an adult stem cell circulation of 100%. This is the reason children's bones heal so rapidly when they are broken because their fresh supply of adult stem cells are released into their blood stream to create the physical healing and regeneration. Have you ever noticed how long it takes for a cut or bruise to heal now compared to when you were a teenager?

Taking stem cell formulas is the best way to optimal health levels for the long term. The good news is it is never too late to combat the process of aging . The optimal recharging window starts closing at around age 43, and may take longer to get to optimal levels if you start natural stem cell nutrition therapy if you are older.

How Does an Increase in Mesenchymal Stem Cells Lead to Enhanced Physical Health?

Much scientific interest centers on the cells ability to divide or self-renew forever. This helps generate the necessary cell types needed for tissue and organ repair. A few scientists are even exploring regenerating an entire organ from a few cells.

Mesenchymal stem cells are being used clinically to treat many diseases. These include cancers, autoimmune disease such as multiple sclerosis,

anomalies including sickle cells anemia, lupus and arthritis and immunodeficiencies. They have even successfully been used on pets and animals.

Mesenchymal stem cells are the ones we want to have plenty of if we wish to offset the aging process. In clinical trials mesenchymal stem cells showed success treating patients for Parkinson's disease as well as spinal cord injury. The FDA also just approved a study to treat juvenile diabetes in human patients by Harvard Medical School, using adult stem cells.

What the Experts have to Say

One of the leading experts in mesenchymal stem cell science is Dr. David A Prentice, Ph.D., who is a professor at Indiana University School of Medicine. In 2003 his detailed paper to the President's Council on Bioethics stated:

“Adult stem cells have significant capabilities for repair, growth, and regeneration of damaged cells as well as tissues in the body. It is akin to a built-in maintenance crew or repair kit that needs only activation and stimulation to accomplish this repair of damage. It is the direct stimulation of adult stem cells within tissue that may be the easiest, safest and most efficient way to stimulate tissue regeneration.”

If we examine the above wording closely we can see that by using herbs as the means to stimulate and activate adult stem cells in the body is probably one of the best ways to help regenerate tissue safely and cost effectively.

Herbal Methods to Stimulate Mesenchymal Stem Cell Growth to Prolong Lifespan

Because bone loss is related to aging, if we can prevent the loss of bone as we age, lifespan is significantly enhanced. The most efficient way of doing this is through natural herbal stem based therapies. There are already

scientific studies confirming that healthy bones extend lifespan.

If we examine people throughout history who used methods to rebuild their bones, we come across the story of Mr. Li Ching-Yuen who allegedly lived to 256 years. He practiced the exercise known as Bagua Zhang (also called Pa-kua chang). Bagua Zhang has been shown to strengthen the tendons/ligaments and bones. Here is a quote from the Bagua Zhang blog:

"strengthens the bones that supports the tendons and the quantity of bone marrow is increased to keep the bone alive"

Source:

<http://bloguazhang.blogspot.com/2013/10/baguazhang-circle-walking-xingyiquans.html>

He also attributed his long life to eating the herb FO TI. According to the English-Chinese Rare Chinese Materia Medica, the soybean-prepared ho-shou-wu is used as a tonic for nourishing the hair and strengthening the bones and muscles.

Source: Zhang Enquin (ed. in chief), **English-Chinese Rare Chinese Materia Medica**, 1990 Publishing House of Shanghai College of Traditional Chinese Medicine, Shanghai.

An internet search for the term: **fo ti + he shou wu polygonum multiflorum root** lists numerous chinese herbalists and practitioners using FO TI for strengthening the bones.

Now, getting back to Bagua Zhang. It is described as the Internal Energy Art of Seeking Stillness Within Movement and is also known by many names. It involves circle walking, or "turning the circle" as part of its movements. Many Chinese exercises that involve circle walking have been proven to create strong, flexible and healthy bones. After performing Bagua Zhang for a number of weeks, people have reported significant reductions in internal stress. There are a few experts alive today who have perfected this art. Mr. Bruce Frantzis is one and has developed a course on this exercise and it can be found at:

<http://www.energyarts.com/bagua-zhang-training>

Watch an excellent video of Bagua Zhang in Practice. You Tube Video
Title: Bagua Sun Style

<http://www.youtube.com/watch?v=wNLw6HukK24>

Recommended Book:

Baguazhang: Emei Baguazhang Theory and Applications (*Chinese Internal Martial Arts*). ISBN: 0940871300. Includes translations from Sun Lu Tang's "The Study of Bagua Fist" (pp. 112-132). Currently 5 star rating on Amazon

Scientific Studies Proving Mesenchymal Stromal Cells Prolong Lifespan

Now let's look at the scientific studies

In a study titled: **Mesenchymal stromal cells prolonged the lifespan in rats**, which was performed at the Institute of Experimental Medicine, Academy of Sciences of the Czech Republic, Prague, Czech Republic, researchers proved that mesenchymal stromal cells do indeed prolong the lifespan of rats. [1]

In a second research study concluded and published in 2011, mice transplanted with mesenchymal stem cells lived longer. ***"Aging female mice were transplanted with mesenchymal stem cells from aged or young male donors. We find that transplantation of young mesenchymal stem cells significantly slows the loss of bone density and, surprisingly, prolongs the life span of old mice"*** [2]

Now I firmly believe that certain herbal combinations can also increase mesenchymal stem cells without the need for transplantation. Let's explore the scientific evidence first before asking the question ***"Why Don't Pharmaceutical Companies Make And Sell Herbal Based Stem Cell Formulas?"***

The 3 best herbal formulas scientifically proven to increase mesenchymal stem cells (or bone marrow) are Ka-Mi-Kae-Kyuk-Tang, Juzen-Taiho-To

(extract TJ-48,]) and Bo-Jung-Bang-Dock-Tang as well as the herbs Epimedium, Astragalus and Dammarane Sapogenin (a concentrated form of ginseng). Let's review the scientific literature:

A research study confirmed that the herbal cocktail called ka-mi-kae-kyuk-tang stimulated mouse bone marrow stem cell. **[3]**

Ka-mi-kae-kyuk-tang is made up of the following:

Phaseolus Angularis (17.2%), Bletilla Striata (8.6%), Zanthoxylum Piperitum (6.9%), Angelica Gigas (6.9%) Benincasa Hispida (17.2%), Tulipa Edulis (8.6%), Asini Gelatinum (8.6%), Astragalus Membranaceus (8.6%), Panax Ginseng (8.6%) and Patrinia Villosa (8.6%).**[3.1]**

And another herbal cocktail formulation called Bo-Jung-Bang-Dock-Tang (also known as BJBDT) significantly increased expression of cytokines interleukin (IL)-3, stem cell factor (SCF). **[4]**

BJBDT is composed of the following ingredients as well as their major constituents:

Dioscorea batatas Decaisne 12 g (high in Allantoin), Panax ginseng C. A Mey. 9 g (high in ginsenoside Rb1), Poria cocos Wolf 9 g, Astragalus membranaceus Bunge 12 g (high in Formononetin), Dolichos lablab Linne 9 g (high in Naringin), Polygonatum sibiricum Delar 9 g (high in Diosgenin), Atractylodes japonica Koidzumi 9 g (high in Atractyloside) and Coiz lacryma-jobi Linne 12 g (high in Friedelin). **[4.1]**

Another formulation proven to increase with mesenchymal stem cell is a mixture of Vitamin D3, Blueberry, Carnosine and Green Tea. **[5]**

In another research study scientists found that the effects of Panax ginseng increased mice embryonic stem cells into cardiac-like cells. **[6]**

And the extract known as Dammarane Sapogenin, which is a highly concentrated extract of ginseng was found to be a potent human stem cell-stimulating factor. **[7]**

When we next examine the single herbs we find that the natural bone

building herb Epimedium promoted bone formation, inhibited adipogenesis of mesenchymal stem cells and reduced bone marrow fat deposition. [8]

And the herb Astragalus demonstrated in scientific experiments to boost stem cell activation as well as extended the lifespan of mice by 33% or more. [9]

Besides this book you are reading, another book that covers all natural stem cell regenerative therapies is called **Stem Cells, Cancer Stem-Like Cells, and Natural Products** by Georg Thieme Verlag KG Stuttgart, Thomas Efferth.

Department of Pharmaceutical Biology, Institute of Pharmacy and Biochemistry, Johannes Gutenberg University, Mainz, Germany.

The book lists numerous scientifically validated stem cell enhancing herbs and combinations such as Curcumin, Pomegrante, Lupeol, Grapholide and more.

The link below gives an excellent review of the book, as well as more information on additional natural stem cell enhancers including resveratrol.
<https://www.thieme-connect.de/ejournals/html/10.1055/s-0031-1298540>

So we can see in conclusion that the right herbs or herbal combinations can promote mesenchymal stem cell growth.

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Yoon Young Kim,¹ Seung-Yup Ku,^{1, 2*} Zev Rosenwaks,³ Hung Ching Liu,³ Sun Kyung Oh,^{1, 2} Shin Yong Moon,^{1, 2} and Young Min Choi¹
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A natural stem cell therapy? How novel findings and biotechnology clarify the ethics of stem cell research.

An essay by P. Patel

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Acute Treatment With Herbal Extracts Provides Neuroprotective Benefits in In Vitro and In Vivo Stroke Models, Characterized by Reduced Ischemic Cell Death and Maintenance of Motor and Neurological Functions.

Yuji Kaneko,^{1,*} David J. Eve,^{1,*} SeongJin Yu,^{*} Hideki Shojo,^{*†} Eunkyung Cate Bae,^{*} Dong-Hyuk Park,^{*‡} Bill Roschek, Jr.,[§] Randall S. Alberte,[§] Paul R. Sanberg,^{*} Cyndy D. Sanberg,[¶] Paula C. Bickford,^{*#} and Cesar V. Borlongan^{*}

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Why Don't Pharmaceutical Companies Make And Sell Herbal Based Stem Cell Formulas?

Just as many people are discovering for themselves that for every pharmaceutical prescription there is a herbal formula or food combination that can be almost just as effective, and without harmful side effects. Stem cell herbs and combinations are no exception. The large pharmaceutical conglomerates don't tell people about these natural alternatives because **food combinations and many herbal formulas can't be patented**. So there is no profit in it.

Simply put if they can patent a pharmaceutical pill or drug that has the same beneficial healing effects as herbs they can make billions of dollars. This is especially true with stem cell therapy where I have pointed out numerous herbal formulations that help the body rebuild stem cells and have published these results in my latest book *Foods, Herbs and Pharmaceuticals that Extend Lifespan*.

The Ingredients in the Carnosine Regenerative Restoration Mix

This is a herbal formula designed to enhance Mesenchymal stem cells that we will cover later on in this book. I want to cover it briefly here because it is important. But first I want to re-explore the herb FO TI, discussed earlier. It is also called He Shou Wu. Besides being used to naturally return hair color from grey to the body's original hair color, other people have benefited from its other multiple healing uses.

The Story of How FO TI was Accidentally Discovered

Even though there are many legends surrounding this unique herb, I will list another, of which I have so far come across 3 stories.

He Tien Er (who later became known as Neng Zi) was born impotent and had turned to drinking wine to ease this pain. When he was 58, he returned home drunk one night and became overcome by sleep while outside. When

he awoke, he noticed in the distant field two shoots of climbing plants. They stood about 3 feet apart. He thought this to be strange and thought that this plant was "speaking to him" of the love between a man and woman. This was because the appearance of the plant was twisted upon itself. He then dug out the roots of the plant and then asked the people in the nearby village and wilderness the name of the plant, however, no one was able to tell him. When he dried the root in the sun, a man living nearby approached Tie Ner and stated: "You are impotent, and you are old and childless. This climbing plant did strike you as peculiar did it not? Surely its purpose is to serve you as a divine drug. Why not eat it?"

Tien Er than made a fine powder and drank it with some wine. Several day later, he suddenly felt unburdened and strong. Another benefit was that he could barely control his sexual desire. He was clearly recognizing the principles of human life!

A few years later he married a widow named Cen. He continued to take the herb regularly and increased his dose to 2 qian (about 6.2 grams). After only over 2 years, all of his previous physical complaints vanished and he regained his youthful appearance and had a healthy son.

Over the next 10 years he had several more sons and ascribed his blessings to the herb FO TI. He told others who asked of his health and ability to father well into old age "This was caused by the climbing plant. When a person takes it, they can live to 160 years old or more and strangely it is neither listed in the old Chinese prescriptions or in the materia medicas (The Bencao)."

Tien Er died at the age of 160, leaving behind 19 sons and daughters. His son He Yen, was also taking the herb and lived to 160. He Yen left 30 sons and daughters. Yen's son named He Shou Wu, lived to 130 also while taking this herb, and he fathered 21 children.

Astralaglus

Another one of our ingredients that synergizes with Carnosine is Astralaglus, which we covered earlier, showing it has been scientifically proven to boost mesenchymal stem cell growth.

Fucoidan

Wakame seaweed is high in Fucoidan which has been proven to boost mesenchymal stem cell growth. [1]

And as covered earlier, **Blueberry, Green Tea, Vitamin D3, And Carnosine**, have been scientifically proven to increase stem cells. These are just a few of the synergistic ingredients that work together to naturally refill your body with stem cells, helping combat aging and improve your health.

I hope this introduction has shown that for every pharmaceutical discovery/breakthrough, nature already has a remedy that does the same thing, and many times without harsh side effects or major impacts on the environment. This is why it is key that we value, preserve and respect our forests and oceans because without them, we would all have to rely on manufactured artificially produced "alternatives" that would not make these healing combinations available to the poor, but would cause a gross imbalance of nature and machine.

We will go more into using stem cells for anti-aging in Chapter 3. First let's look at scientific studies exploring foods, herbs and Pharmaceuticals that have extended the lives of mice, fruit flies and nemotodes.

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Chapter 1

Introduction



Throughout the last decade there have been vast numbers of published studies showing herbs, pharmaceuticals, foods and compounds that extend life. Some of these studies have been done on humans, but the vast majority on rats, worms and fruit flies. The aim of this book is to put together a complete picture of the food types, herbs and extracts with the amounts to take and seasonal times to take these foods, so that a longevity lifestyle/diet can emerge. This complete picture was made possible by summarizing over 200 in-depth research studies, many of them by leading scientific establishments on foods, extracts herbs and substances that extend lifespan in humans, mice and fruit flies. The picture above left is the nematode worm *C. Elgans*.

This book focuses particular attention on Stem Cell Therapy and using it for Anti-Aging. Chapter 3 includes over 12 pages of what stem cells are and includes Nutraceutical combinations proven to grow new stem cells.

The Stem Cell Rebuilding Synergistic Combinations page includes the ground breaking natural stem cell formula covered in Life Extension magazine and explores synergistic techniques to enhance the effectiveness of the formula to create a simple, yet powerful stem cell anti-aging formula.

Chapter 11 includes a longevity stem cell formula discovered by Thomas E. Ichim that uses ellagic acid to enhance stem cells in the body.

The majority of experiments involving longevity and lifespan usually involve 3 types of animals. *C. Elgans* (nematode worm), Mice (also called rats) and Fruit Flies (not house flies). Other lesser known animals involve hamsters, rabbits and the yeast called *S. cerevisiae*. This is because yeast has a similar metabolism to mammals due to the basic life processes it

undergoes while it ages.

Animals are used because animals have similar cellular structures and metabolisms as mammals, of which include human beings. One class of fruit flies is known as *Drosophila melanogaster*, which you will see throughout this book. Unlike humans, fruit flies have no requirement for essential fatty acids, and usually don't die of cognitive related diseases like us humans, which means some experiments that use lots of sugar on fruit flies, will not make the fruit flies fat, but in fact extend their lifespan, whereas we know excessive sugar in humans causes obesity.

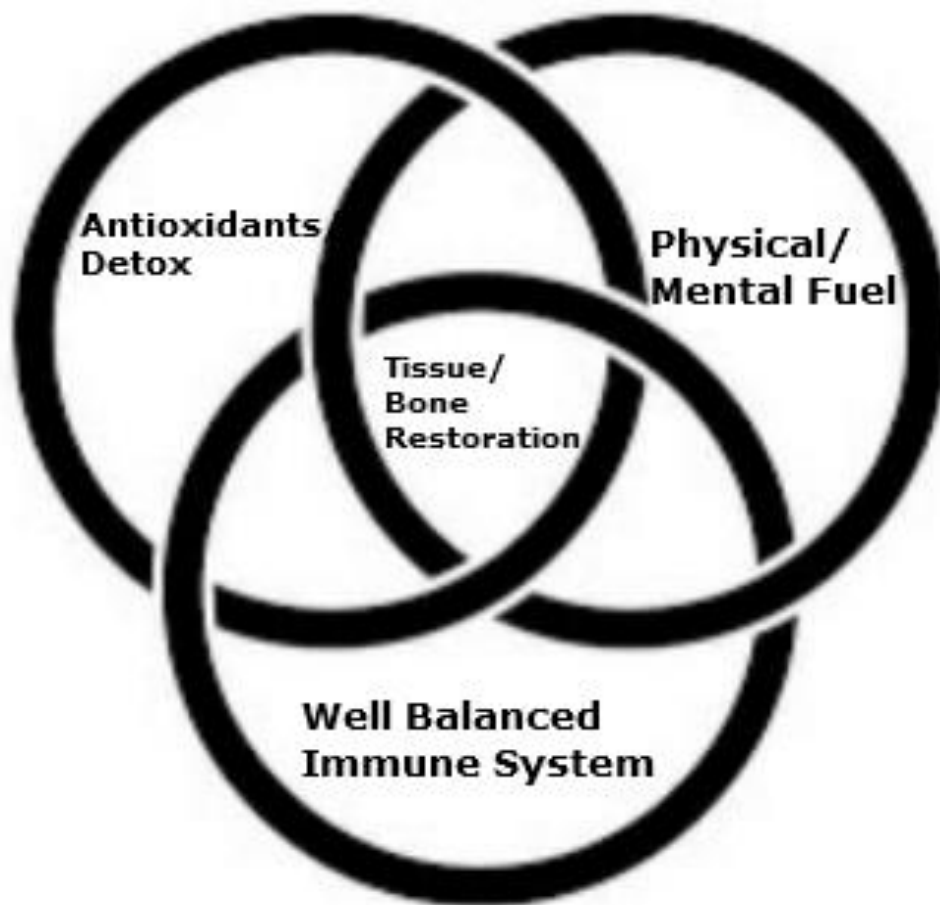
The summary of longevity becomes simple to observe by understanding 3 main categories which contribute to the 4th category, which is the renewal and repair of body tissue and bone.

Antioxidants and Detoxification + Physical and Mental Fuel + Immune System Protection and Balance = The Rebuilding of Muscles and Bones.

Detoxification/Fasting is a major component of keeping the body free of disease and illness. By doing this you remove metals and toxins that have gathered in the tissues during the previous few months. Metal chelation substances are one way to effectively detox. This includes Vitamin C, activated Charcoal and / or Parsley which are some of the best.

My Experiences Detoxing/Fasting

When I detox, I reduce my intake of processed foods during this time and also eat more fresh foods that are in season. I usually like to take lots of spring water when doing a fast. I do this mostly during Feb/March and August/September, the time of year toxins from processed foods gather most in the tissues of the body, and the eating of junk food should be reduced. One interesting discovery after researching these substances over the many years is when you first start taking them, they induce deep, vivid and lucid dreams. This has been an excellent way to gauge which foods are longevity substances and which are not. I have gotten the best results from Carnosine, Melatonin and Blue Cheeses.



Energy

The body requires 2 types of fuel. Energy for the brain and energy for the muscles. The body needs energy more at some times than at other times. I like to take energy boosting herbs just before exercising. Some days that may require more energy than usual. Some well-known energy boosting herbs are FO TI and Rhodiola Rosea.

It is key that these energy boosting herbs are not taken if the body is recovering from flu or illness, or the immune system is undergoing change or re-adjusting. Excessive energetic herbs during this transition only aggravate the immune system, which is why fasting or detoxing with lots of purified water during this time, can help re-stabilize the immune system.

The fastest way to ward off flu or a cold is via a straight fast. In most cases the fast should last for no longer than 24 to 72 hours and should consist of lots of spring or other purified water, relaxation and mental healing imagery. I have got best results with eating these detox and immune boosting foods 1.5 hours apart from each other: apples, parsley, and/or grapefruit with a little bit of cod liver oil. Longevity foods and substances should always be taken in moderation. Much like excess anything contributes to health problems. Even excessive amounts of fish oil have been shown to reduce lifespan. [1]

One of the best ways to keep the body healthy via anti-aging foods is to rotate the foods eaten. Just as the body can build resistance to antibiotics, anti-aging foods also lose their effectiveness if overeaten, eventually impacting the immune system. That is why eating foods in season is one of the best ways to prevent disease. I personally take herbal anti-aging combinations which have synergy and buffering characteristics every couple of days and sometimes more during times of higher physical activity. The best way is to just listen intuitively to your body to get the best results. Taking more of the longevity foods just as they are coming into season is one powerful way to keep the immune system strong, and this book lists seasonal foods for both north America and Australia, which can be found towards the end of this book.

An effective anti-aging herbal combination contains herbs and extracts that synergize with each other, helping to rebuild muscle and tissue rapidly overnight, while detoxifying the cells at the same time. You can literally feel the cellular rejuvenation working as you sleep and the next morning you wake up feeling refreshed and energized, rather than drained and tired.

We will first start out the first section of this book with the extracts, herbs and combinations scientifically proven to extend life the longest. 95% of the studies mentioned in this book all include scientific references to the Universities and other Institutions that did the study, so you can research further the study in more detail. Hyperlinks are also included with the published references for your convenience. Where possible, synergists of

the longevity extracts are included, which improve bioavailability and reduce the amount necessary for beneficial effects and the percentage of how long the lifespan was extended. It is the scope and purpose of this book to list how much longer than normal the subject lived, and list the foods, herbs, extracts or substances used. In many cases the published paper will list the exact amounts used, temperature and dates and other finer intricate details, which we include as a reference at the end of each chapter.

Let's first explore Tetrahydrocurcumin.

Tetrahydrocurcumin

Tetrahydrocurcumin is used as a preservation agent in skin care products. Tetrahydrocurcumin is a greater antioxidant than that of vitamin E.

Researchers in Japan explored the potential role of green tea polyphenols combined with tetrahydrocurcumin, which increased the life spans of animals. The result was a 125.9% extended lifespan in tetrahydrocurcumin treated mice and 72.6% in polyphenols animal models. In another study tetrahydrocurcumin and green tea polyphenols, when given to mice, had an 11.7% longer average life span. [2] In a study titled: Combination of curcumin and green tea catechins prevents dimethylhydrazine-induced colon carcinogenesis (done by Xu G, Ren G, Xu X, Yuan H, Wang Z, Kang L, Yu W, Tian K.) in China, they showed that when Curcumin is combined with catechins (catechins are high in Green Tea) it produces a synergistic colon cancer-preventative effect.

Tetrahydrocurcumin is derived from Turmeric. Research has proven that Turmeric becomes synergistically active when catechins (from green tea) are added. [3] If you are allergic to ginger, you may also be allergic to turmeric. One of the best ways to use turmeric is to reduce inflammation, especially after intense exercise. It combines well with the pineapple enzyme bromelain, making a powerful workout recovery combo. Turmeric works well also when used on the exterior of the body. When combined with olive oil, it stops dandruff and heals the scalp. Turmeric and Aloe are

used to re-build and re-moisturize the skin. When turmeric is combined with resveratrol, it has been shown to be a powerful cancer destroyer as well as a potent life extension combination. Turmeric interacts with medications that slow blood clotting, which may increase the chances of bruising and bleeding. It is best to avoid taking Turmeric with Willow Bark. Turmeric also mixes well with coconut juice.

Getting back to Tetrahydrocurcumin, this substance derived from Turmeric is also added to skin care products and functions as an antioxidant which protects the lipids in moisturizers from going rancid and has more antioxidant stability than vitamin E. [4]

British researchers reported that broccoli, turmeric, green tea and pomegranate help reduce the risk of developing prostate cancer.[5] Polyphenols have powerful anti-aging traits. Many research studies have shown that Polyphenols (from green tea) boost longevity due to their ability to minimize cell stress. Some of the most powerful polyphenols come from enriched cocoa extract. These extracts work best when used in small doses. One study found that just 28% was efficient as free radical scavenger. [6] A second study showed that a moderate amount of cocoa under normal oxygen levels increased life span, whereas at higher oxygen concentrations, life span was normal. This means taking cocoa after exercise, as oxygen levels return to normal is beneficial. The study also found that cocoa acted as a metal chelator for removal of excess heavy metals. [7] It has also been shown to be a potential candidate for reduction of negative inflammatory responses.[8] Polyphenols are also common in the apple, with the red apples having the strongest concentrations. A study found that the unique apple polyphenol named phloridzin, when added to yeast cells allowed the cells to live an average of 2.3 generations longer than control cultures. [9] Phloridzin is heavily concentrated in apple skins and also helps suppresses the processes leading up to glycation (AGE Protein Crosslinking) a major contributor to aging. Phloridzin can be found in high levels in the following foods: Paradise Apple Species, Prune Juice, Apple Cider and Oregano. [10]

Another group of foods high in Polyphenols, are the berry family. In my previous books, I went into detail about the Goji berry and how it is a powerful anti-aging food. I believe that the reason the berry family of plants have such powerful longevity effects are due to its levels of anthocyanins. The founder of the Doyle berry, ate a lot of berries and lived to over 100 years of age. [11] At the end of this book, I list over 3 Goji Berry Synergists and 4 Goji Berry combinations that treat everything from hair loss to boosting ORAC values.

Protocatechuic Acid

One of the major antioxidant polyphenols found in green tea is Protocatechuic acid (PCA). It is a dihydroxybenzoic acid related to phenolic acids. [12] Turmeric also contains an antioxidant called protocatechuic acid and the açai palm (*Euterpe oleracea*), from which the Acai Berry is obtained contains high levels of protocatechuic acid. Protocatechuic acid also exists in skins of some strains of onion, where it acts to protect against rot. Does this mean that exposing sliced onion to open air for a few hours would increase its protocatechuic acid content? Studies are needed to confirm this.

Protocatechuic acid's longevity abilities have been proven in experiments with worms. It not only increased lifespan, but made them more healthy in the process. [13] Protocatechuic acid can also be found in *Allium*, Roselle (*Hibiscus sabdariffa*) and mushrooms such as *Agaricus bisporus* and *Phellinus linteus*.

Another longevity mushroom is Ling Zhi. In a study titled: *Ganoderma lucidum* ("Lingzhi"), a Chinese medicinal mushroom: biomarker responses in a controlled human supplementation study, by researchers, Wachtel-Galor S. and Tomlinson B., they showed that Ling Zhi possessed strong antioxidant properties.

Protocatechuic acid RDA

The University of Maryland Medical Center states that the standard dose of Protocatechuic acid should be 3 g per day if using the root and up to 600 mg three times a day of the powder. Stomach ulcers can develop after long term or excessive use.

The Herbal Combination Yunnan Degao

The next item we shall explore is a Chinese herbal combination shown to exert powerful longevity results. It is known as Yunnan Degao which extended the lifespan of fruit flies 124%. Yunnan Degao comes from a food prepared by the Yunnan Delinhai Biological Sci-Tech Co.,Ltd in China. The ingredients are as follows: Solomon's seal (Also called FO TI or He Shou Wu), Fu Ling (also called Poria), Chinese wolfberry (also called Goji Berry), Chinese Yam, Longan Meat, walnut kernel, apricot kernel (high in Laetrile) and chrysanthemum flower. From my years of researching longevity herbal combinations, Fo Ti, Goji Berry, Walnuts, Apricot Kernels and Chrysanthemum Flower are some of the most potent anti-aging herbs available. These can be mixed with Chinese Licorice or Poria to increase the absorption of the herbs into the body.

Goji Berry, Chrysanthemum flower and Chinese Yam are used together in some tinctures to improve vision and Goji Berry and nicotinamide are used together for skin repair and healing. Goji Berry synergizes with the Citrus Compound Bergamot. Goji is also sometimes mixed with grapefruit.

One interesting thing is chrysanthemum flower improves blood circulation to the capillaries in the brains of the elderly. In Chinese medicine it is used to remove wind and heat from the body. Chrysanthemum is also used in many Chinese longevity herbal formulas.

Chrysanthemum flower and green tea synergize together. Wolfberry, Chrysanthemum and Rehmannia are a powerful 3 way synergy. Hawthorn fruit, lotus and chrysanthemum flower are used to treat headache,

dizziness, dysphoria, insomnia, and induce dreamful sleep.

Chrysanthemum and Hawthorn berry synergize together and are used in a tea combination.

So in closing, we can see that the Yunnan Degao combination works together to form powerful synergy that helps create powerful anti-aging effects on the body. This is unique because many anti-aging compounds if taken excessively can impair the immune system, the Yunnan Degao combination, due to its high berry and flower content make it more appropriate for longer term use, although you may need to take more than an average extract.

Fungi and Mushrooms that promote Longevity

I have extensively covered the mushroom Reishi in my previous books and its connection to longevity. Let's take a closer look at the scientific documentation confirming this. One of the best parts about Reishi is its ability to boost memory. In China, Reishi mushroom is also known as the immortality mushroom.

An extract from Reishi Mushroom extended the lifespan of male fruit flies by 42.32% at a dose of 80 mg/ml. For female fruit flies it was 29.24% at the dose of 5 mg/ml. [14]

Another study showed a combination of Shitake Mushroom and Almond Mushroom extracts extended the lifespans fruit flies by 40.51% and 6.03%, and 32.13 and 2.69% [14]

There was also an extract from the Jelly Ear mushroom (*A. auricula*) which extended the lifespan of male fruit flies by 31.41% at a dose of 5 mg/ml and female flies by 16.85% at a dose of 20 mg/ml. [14]

I can personally testify from taking Reishi Mushroom for the past 5 years (which I synergize with other herbs), that Reishi is a remarkable mushroom for increasing endurance and enhancing memory. Experience over the years has also taught me that some of the most successful anti-aging

compounds are mushrooms and fungi.

A good synergist for longevity mushrooms are acetic acid, especially when combined with Reishi Mushroom [15]. Acetic Acid is readily available in high doses in apple cider vinegar and balsamic vinegar. Acetic Acid is used to extract anthocyanins from plants. Anthocyanins are one of the most potent anti-aging substances ever discovered. We will explore the properties of anthocyanins in a later chapter. As will be covered later in this book, experiments with balsamic vinegar extended the lifespan of fruit flies when used with potassium. This is because acetic acid depletes potassium levels.

In a research study in La Jolla, CA, mushroom extracts, including Reishi, fractions of Chang-Chih (*A. camphorata*), and lion's mane (*H. erinaceus*) caused significant increases in lifespan, ranging from 25% to 35%. Synergy was obtained when acetic acid and RF-3 (reishi) were combined with lifespans extending up to 40%. [16]

Longevity Mushroom Synergists

A popular tincture consists of Red Reishi Mushroom, Distilled Water and Apple Cider Vinegar and is used as an energy enhancer.

Foods high in Acetic Acid: Apple Cider Vinegar, Wine, Distilled White Vinegar, Pickles and pickled foods such as Sauerkraut.

The Amazing Longevity Properties of Common Beer Yeast

This next study covers beer yeast. Beer yeast is in the same category as Malt, Nutritional Yeast and Brewer's Yeast. Yeast are starters used to begin fermentation to make beers, bread or other foods. Foods that have undergone complete fermentation include wine, pickles and yogurt. These happen to all be all longevity foods. I conclude that fermentation creates a beneficial form of super microorganism, that acts as a natural antibiotic to rid the body of harmful microorganism, which is what is responsible for extending lifespan.

A research study found that up to a 41% extended lifespan was obtained with a mixture of Isolated Soy Protein and Beer Yeast.[17] The best results were obtained with ordinary beer yeast.

Rapamycin

Our next study involves Rapamycin. Rapamycin is used as an immunosuppressant drug to prevent rejection in organ transplantation. A study showed that Rapamycin extended the lifespan in eukaryotes. It also has been shown to be of significant healing benefit to those with autism, cancer and Alzheimer's. A 2009 study showed mice fed rapamycin had increased lifespans of between 28% and 38%. Treatment began in mice aged 20 months which is equal to 60 human years.[18] An in-depth scientific study showed that feeding rapamycin to *Drosophila* (fruit flies) produced an extended lifespan. [19]

What makes Rapamycin particularly interesting is that when it was fed to older mice, it still had longevity benefits. Usually reversing the effects of aging is much harder once a person passes 43 years of age, so Rapamycin shows significant promise in treating advanced levels of age related problems.

Where does Rapamycin Come From?

Rapamycin was first discovered in the soil on Easter Island in 1970. Rapamycin is produced by soil bacteria called *Streptomyces hygroscopicus*. Rapamycin is also called by the name Sirolimus. Large doses of sirolimus lowers the body's ability to fight infection and disease. As long as you follow the rule of taking longevity substances in moderation, than your risk of developing infection or certain types of cancer are greatly reduced. So Rapamycin should be used in moderation as a longevity supplement.



Rapamycin is available only by prescription in the United States. It is currently marketed under the name Rapamune by Pfizer.

Epithalamin

Next let's explore Epithalamin. Epithalamin is a preparation that produces peptides that affect the pineal gland. It was discovered by Vladimir Dilman of St. Petersburg Russia. It has shown to increase melatonin production in animals and acts very similar to Melatonin. Tests have been conducted on both rodents and humans showing its effects. It synergizes with Melatonin, fights free radicals, has shown potential to fight cancer, reduces injury from x-rays, restore fertility in rats, and lowers cholesterol. Tests showed that it has significant effects on lipid peroxide oxidation, boosted melatonin

production and also boosted Superoxide Dismutase activity in males of *D.melanogaster* by 41%.[20] Another independent study also verified the effects by decreasing mortality by 52% in *D. melanogaster*, by 52% in rats and by 27% in C3H/Sn mice. [21]

Melatonin

Melatonin is also a powerful free-radical scavenger and wide-spectrum antioxidant. It was discovered in 1993. Because melatonin has similar effects to Epithalamin, here are a list of herbs and foods high in melatonin: St. Johns wort, Sweet Corn and Oats. The Herb Huang Qin

(also called *Scutellaria* or milk-vetch root) contains one of the highest levels of Melatonin in the herb family, followed by Fever Few. Huang Qin is a genus of the herb astragalus and happens to be used in many skin moisture products to rejuvenate the skin. Huang Qin is used in Chinese medicine to raise the Yang Qi of the Spleen and Stomach, thus helping to relieve fatigue. Chasteberry or chasteberry tea has been shown to help stimulate melatonin production in the body, especially during the morning. Melatonin levels can also be increased from foods we eat, such as banana or pineapple.

The Longevity Extract EGB761

Next let's look at the substance identified as EGB761. EGB761 is an extract obtained from Ginkgo. Ginkgo is commonly used to keep the mind sharp and boost memory. In an in-depth scientific study, a flavonoid of EGB761 called tamarixetin, extended the median life span of *C. Elegans* by 25% and also increased resistance to oxidative and thermal stress by 33% and 25%. [22] Ginkgo synergizes with Ginseng and Bacopa and is sometimes combined with Melatonin to protect the brain against beta-amyloid, one of the causes of alzimers. In an in-depth study, Ginkgo partially reversed memory associated diseases in rats. [23] And in another study using spin-trapping measurement (a measurement of the power of

antioxidant compounds) EGB761, extracted from Ginkgo, protected the cells against free radicals. [24]

Spermidine

Spermidine naturally declines as a person grows older, however it can be re-introduced through eating foods high in Spermidines. Spermidine is created in the body by Putrescine, occurring through a reversible metabolic process and protects proteins from structural damage by AGE precursors (cross linking effect of aging). Carnosine, a substance we shall cover later on, also has protective effects on vital proteins and is also a major longevity substance. Another substance that has been found to protect proteins from oxidation is the substance Vanillin, commonly extracted from the Vanilla Bean. We shall cover Vanillin more in depth in a later chapter.

Spermidine is a rather interesting substance, because it is found in the Japanese food Natto, which is a type of fermented soybean. Natto is available in many Korean and Japanese Supermarkets. Some well-known health food stores such as Whole Foods sell a fermented soybean liquid called Bio K, which is made of fermented soybeans.

Spermidine is in the Polyamine category of substances, which include putrescine and spermine. From my personal experience of consuming Natto over the past decade, I always use it when I feel cavities coming on, because it is a super concentrated source of Vitamin K2, which helps quickly remineralize teeth. In a scientific study using Spermidine, it prolonged the lifespan of *C. elegans* and *Drosophila* by 15% and 30%. [25] In another study, Spermidine was shown to reverse arterial aging by increasing the bioavailability of Nitric Oxide (a substance that helps move nutrients through the arteries) [26]. Another in-depth study involving thousands of people from 35 Asian countries, showed that people with a high intake of Spermidines in their diet have longer lifespans. [27]

Spermidine can be found in the following foods: Dry soy beans, Natto, blue

cheese, green peas, corn, Pumpkin, Swedish Hard Cheese and shell fish. Spermine is also found in high levels in pork and turkey. Closely related to Spermidines are the class of Polyamines, which are often found close together. We shall briefly cover these next.

Polyamines

Polyamines are a cool food group, because you can eat a lot of these foods and they have less side effects than other longevity foods. Only recently manufacturers have started combining probiotics with Polyamines. The result has been a Soy Yogurt shown to raise polyamine levels. Polyamine levels can be boosted by probiotics, especially the strain *Bifidobacterium animalis subsp. lactis* LKM512. [28] [29]. In another study, mice fed high levels of polyamine had lifespans significantly higher than the control groups. [30].

Phenformin

Next we shall examine the substance phenformin. Phenformin is an antidiabetic drug. It was banned in the U.S. after people started suffering from induced lactic acidosis. As of 2013, it is available in Brazil, Uruguay, Italy, China, Greece, Portugal and Poland. Phenformin has been shown to extend the mean life span of mice by 21.1%, with a maximum lifespan of 26%. [31] It has also shown remarkable cancer fighting properties. In another in-depth study, Phenformin showed remarkable activity in lowering the blood glucose levels and lowered cholesterol and total lipid levels. [32] When Phenformin was combined with buformin it boosted lifespan 1.22-fold and decreased tumors by 49.5%. [31] When combined with metformin, it has reduced blood sugar and body weight of those with diabetes. [33]

A substance in the same class as Phenformin is phenytoin (sometimes called diphenylhydantoin or dilantin), which has also been shown to extend lifespan. Phenytoin has been renowned for its negative side effects and in

high doses has been shown to cause brain damage. Phenytoin is not banned in the U.S. and is available by prescription, due to it being used to treat epileptics. In a control study, Mice treated with phenformin had an extended lifespan of 21.1%. [31]

It is interesting to note that substances that treat epilepsy, such as the anticonvulsant compounds trimethadione, ethosuximide, and 3,3-diethyl-2-pyrrolidinone, which are used to treat absence seizures in humans have shown potential to also delay vertebrate aging. [34]

In closing, it is rather interesting that the herb Skullcap, which has been used for hundreds of years as a nerve tonic, and recently as treatment for epilepsy and lowering blood sugar levels, is starting to show through recent research that Skullcap has significant anti-aging and lifespan extending properties. Due to its high levels of baicalin, baicalein, and wogonin, Skullcap is showing good promise as an anti-aging substance. [35] Skullcap is used to help boost memory and blood circulation to the brain. It has also been suggested as a helpful form of cancer treatment.

Excess Iron Accumulation and Shortened Lifespan

Iron, especially if taken in excess, has an ability to stay in the body and build up over time. Iron is effective for red blood cells and other vital functions, but excess amounts that accumulate in the tissues can cause "rust" leading to disease. Studies have now verified that removal of excess iron prolongs lifespan. This is why many natural foods contain iron chelating substances called oxalates contained within them. Spinach, one of the longevity foods contains high levels of oxalates, suggesting that this food not be over eaten. Another substance called Swedish cocoa (a polyphenol) has been shown to inhibit iron absorption up to 90%.

Besides Tea, IP6 rice bran extract also removes iron quickly from the body. Brands with a reputation for quality are Cell Forte or Jarrow brand of IP6 and Coffee. Early in the 19th century there was a procedure called "bloodletting" which was supposed to heal the body if the person was ill.

Because blood contains the highest amounts of iron in the body, this may have been a way to remove excess iron. Today the practice is known as phlebotomy, which has been shown to lower excessively high iron levels in the blood.

The life span of *Drosophila* was found to be prolonged by as much as 21.4% when it consumed Dietary tea (*Camellia sinensis* from tea) extracts which were discovered to inhibit the age related accumulation of excess iron. This study showed that life span was shown to be directly proportional to how much iron was accumulated in the body in studies involving mice and men.[36]

Qucertin

Our next substance is Qucertin. Greek medicine states that herbal tea made from caper root and/or young shoots is beneficial against rheumatism. It also has been used to treat strangury and inflammation, which is why taking capers after exercise works well to reduce inflammation in the muscles.

Qucertin is one of my personal favorites. After a particularly long exercise workout or bike ride I take Capers, which are one of the foods highest in Qucertin and 1 vitamin C capsule. Capers happen to be very high in Qucertin, which helps reduce inflammation of the muscles. This instantly provides a refreshing, rejuvenation feeling, removing inflammation and helping to soothe sore, tired muscles. It should be taken with care, especially when using the extracts, as some people may suffer a severe reaction from taking the extracts, but not when taking foods high in Qucertin. Onion is also high in Qucertin, which can also be added to capers to create a powerful natural anti-inflammatory after intense physical exercise. Qucertin is found in foods high in polyphenols, apples being a common source.

Let's take a look at scientific studies involving Qucertin which is a flavonoid. Flavonoids are found in teas and are also known as Vitamin P. In a

scientific study, quercetin increased chronological life span by 60%.[37] This ranks in the top 10 substances that prolong lifespan. I believe that because herbs, and extracts that reduce inflammation also are strong anti-aging candidates, Quercetin makes it a perfect longevity substance. When Quercetin is mixed with a berry called blackcurrant juice extract (high in flavonoids), it has been shown to significantly prolong the life span female mice.[38]. In another study, Quercetin from onion peels was shown to have high antioxidative activity, with the quercetin derivative quercetin 3-O-d-glucopyranoside, having stronger antioxidant activity than normal quercetin. [39] 3-O-d-glucopyranoside is found in the extreme longevity super foods Purple Corn (and purple corn seeds) and Black Rice, which we will go into more in-depth later on in this book. Because Quercetin works well at fighting inflammation, a research study showed that it offered from thermal stress and prolonged the lifespan of a nematode up to 16%. [41]

Quercetin Synergy

Plants high in Saponins boost the absorption of Quercetin. Salicin from which aspirin comes from (found in the bark of the willow tree) synergizes with Quercetin.

Foods high in Quercetin include: Capers, Red Onions, Buckwheat Tea, Apples and the Sophora japonica flower (also known as Huaihua) contain quercetin. Other foods include cocoa, Elderberries, Dried Mexican Oregano and cloves. [40] In red onions quercetin is concentrated in the outermost rings and also in the part closest to the root. Herbs and spices highest in quercetin from highest to lowest: lovage, dock like sorrel and dill.

In closing, there are many conflicting studies showing quercetin extends lifespan, however I believe it is due to these factors: Not testing it when inflammation is present, over use, poor quality of extracts or foods or improperly combining it with certain foods. I believe that a vegetarian diet and exercise, combined with small amounts of quercetin are actually responsible for producing the longevity effects.

From my years of experience, I much prefer to take the quercetin found in foods, especially considering that taking the supplement form in large doses can cause overdoses. Like green tea, quercetin should be taken in moderation, especially after intensive exercise for fast recovery.

Probiotics

Next we shall cover probiotics. In all my years of anti-aging research, I have found probiotics to be one of the more powerful anti-aging strategies. Yogurt and Kefir, which are high in Probiotics are one of the most simplest and powerful anti-aging foods. I believe this is the case because over 70% of our immune system is in our stomachs, if the right bacteria, such as *Lactobacillus rhamnosus* is present, it stops the bad bacteria in the gut from multiplying, weakening our immune systems. This is why laughter is one of the best medicines because it causes your stomach muscles to relax.

One of the stars of good gut bacteria is the strain known as *Lactobacillus rhamnosus*, found in yogurt, it was shown to have significant anti-inflammatory properties. In one of numerous scientific studies on this strain, *C. elegans* fed a strain of *Lactobacillus rhamnosus* had their lifespan extended up to 20%. The good thing about yogurt is you can eat a lot of it, and not have to worry about too much of an allergic reaction. I eat more yogurt during early summer and early winter, times the immune system needs it most. *Lactobacillus rhamnosus* has also been found to reduce diarrhea and boost immunity in the urinary tract.

Food Sources of *Lactobacillus Rhamnosus*

The healthy strain of *Lactobacillus rhamnosus* can be found in yogurt, kefir, fermented milk, pasteurized milk, and semi-hard cheeses such as provolone and parmesan cheeses. It is also found in pickles, sauerkraut and other fermented foods. The food yogurt is also high in the amino acids Lysine, Leucine, Valine and Proline.

Lactobacillus Rhamnosus Synergists

Ginseng has been shown to be a Lactobacillus rhamnosus synergist.[43] Another probiotic synergist is oligofructose which also synergizes with inulin. [44] To boost the good bacteria in yogurt, add Chicory Root or Inulin powder to your yogurt. Inulin comes from Chicory Root. Foods high in Inulin include: chicory, Jerusalem Artichoke, garlic, and leeks,

In closing, there is a wealth of research information showing probiotics and longevity, so I will keep it simple. I have gotten the best results from combining yogurt with certain amino acids as well as honey. This provides a 2 fold effect. Honey, due to its boron content, increases the amount of calcium absorption into the bones of the body when taken with yogurt. Amino acids have a tendency to synergize with the amino acids in yogurt. I usually take the amino acids before sleep, after having the yogurt for dinner. More of this will be covered later in the book.

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Chapter 2

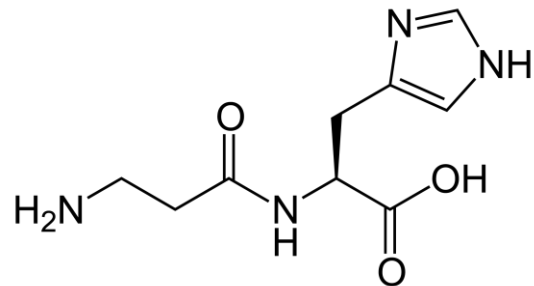
The Miraculous Muscle and Tissue Building Effects of Carnosine

What is Carnosine?

This next chapter is devoted to the amino acid Carnosine. Carnosine is one of the most water-soluble nitrogen amino acids (much like B vitamins are extremely water soluble). It is a dipeptide combined of two amino acids named alanine and histidine. Foods highest in alanine: Raw seaweed, Egg Whites and Egg white dried powder and Tuna.

What is Carnosine and How does it Work to Lengthen Lifespan?

Carnosine was drowned out by the noise Resveratrol made when it entered the market, however Carnosine is still highly regarded as an anti-aging substance. Carnosine is a powerful antioxidant, due to its ability to prevent age related accumulation of free radicals. It is a dipeptide (a small molecule with two amino acids) consisting of histidine and beta alanine. The remarkable fact about Carnosine is it continues working preventing, oxidant damage even after the cellular molecules are attacked. It also prevents destructive effects of oxidized chemicals, such as malondialdehyde, which are associated with brain cell death in many neurodegenerative disorders including Alzheimer's and Parkinson's. To the right is the chemical symbol for Carnosine.



One of the most important features of carnosine is its ability to interfere with proteins. Especially the reactions between glucose and oxygen, the main

two that contribute to inflammation and aging. One of the more promising aspects of Carnosine is its ability to mitigate inflammatory effects of viral infections, including influenza. Because of all these beneficial biochemical reactions, carnosine shows great promise as a possible life span extender. This unique multi-level action allows carnosine to target the causes of aging in the brain, heart, skin and other organ systems. Experiments on animals including rats and fruit flies, showed it extended life span. Carnosine has also been shown to extend lifespan in human tissue in culture.

Carnosine declines with age and is produced in the skeletal muscle and central nervous system and is highly concentrated in the body at high levels in the Quadriceps. Carnosine was discovered by the Russian chemist V.Gulevich, who also discovered carnitine. It has strong antioxidant properties and also helps slow down the cross linking of proteins that cause aging (Glycation). It also helps remove toxic metals from the body. It has shown promise in reducing cataracts and is used to moisturize the skin due to its unique ability to protect important proteins. It has also shown promise in treating children who have autism. In a famous 6 month trial study on Carnosine by Professor Wang, a clinical study of 96 patients with cataracts, showed a success rate of 80% in dissolving advanced senile cataracts. In another study the success rate was 100% in patients who had mild to moderate cataracts. This has been a key repetitive pattern in anti-aging substances, that they also dissolve cataracts, without surgery, an important key factor to look for when identifying anti-aging substances, herbs and compounds. One such herb is eyebright, which is used in an anti-aging skin cream and is available as a tea. Other things to look for are the ability to fight inflammation and relieve depression. Anyway, back to topic. Carnosine has been shown to increase the Hayflick limit (the number of times human cell population divides until cell division stops) and help reduce the shortening of telomeres.

How Much Carnosine is Recommended for Best Results?

Many people think they get enough Carnosine from eating meat, however a study showed that of 250 mg of ingested carnosine from a 7 oz. hamburger, Carnosine had completely cleared itself from the volunteers blood within 5-6 hours. The recommended daily allowance for Carnosine is 1,000 mg daily, which can be obtained with a good Carnosine Supplement, or less can be used with Carnosine Synergists to maintain optimal levels in the body.

Carnosine comes in many varieties, and until the explosion of interest in Resveratrol, Carnosine was the most sought after supplement. However, due to its continued success as an anti-aging amino acid, interest is starting to return to this remarkable amino acid. It is key to purchase Carnosine that is of good quality, and you will know you have the right brand by the results you experience, or you can look for reviews online from reputable websites and see what others have shared about their experiences.

Why Carnosine Outperforms Resveratrol

If you are interested in maintaining healthy tissues and muscles into advanced age, Carnosine is the supplement to have. This is because when combined with green tea, catechins, vitamin D(3) and blueberry, carnosine has been shown to be one of the most simplest combinations to grow stem cells (which we shall go into more detail later on in this book). [1] In a study on animals, Carnosine was found to boost lifespan up to 50%. [2]

This new science of building stem cells naturally is known as regenerative medicine, which is technology that is on the horizon consisting of methods that are non-invasive, allowing us to end the pain, suffering and excessive sums of money using surgery to treat some illnesses. In a study titled: Protective actions of green tea polyphenols and alfacalcidol on bone microstructure, researchers at Texas Tech University Health Sciences Center in Lubbock, Texas discovered that a combination of green tea

polyphenols and alfacalcidol (A form of Vitamin D) increased bone microstructure density and strength.

Unlike Resveratrol, which performs best by itself, Carnosine synergizes well, especially with herbs and substances that enhance protein synthesis, allowing for faster tissue rebuilding. By using synergy with Carnosine, we can use less and increase its effectiveness. Synergy, when properly used, also increases bioavailability or absorption. The key is to know which herbs or foods and how much to create the proper synergy. Much like gunpowder requires the proper ingredients, if we want to maximize the anti-aging effects of Carnosine, we need to know the right ingredients.

One of the amino acids that acts very similar to Carnosine is Proline. It also shows similar synergistic effects. In a study of a mixture of lysine with ascorbic acid, proline, arginine and green tea extract, results showed that it strongly suppressed the growth of tumors, all without adverse effects, showing excellent anticancer activity. [3]

The Cost of Carnosine

As the effects of Carnosine become more well known, the price will hopefully continue to decline. From my experience, living in Los Angeles, a bottle costs up to \$50.00 at whole foods, a natural health supermarket. However, thankfully a store called Vitamin Shoppe has it for about \$15.00 a bottle, so if you look hard enough, you can find it for a good price.

Carnosine, A Scientifically Proven Missing Vital Link in the Diet of Vegetarians

Because Carnosine is a special energy builder, and is found in high levels in meats, many vegetarians don't get enough of it, and could be one of the main reasons recent vegetarians complain of a lack of energy, especially if they are just starting out to become vegetarians. I know, this was one of the first things I successfully overcame at first. I would take care of my energy

needs by eating cottage cheese, however during Summer, cottage cheese for some reason does not agree with me, so the Carnosine fills in what I miss when I don't get cottage cheese. I also eat raisins or cranberries daily as an energy source. I love Carnosine because I get the same energy supply, without the dark side of meat proteins.

Numerous studies are now showing that excessive meat consumption can contribute to negative long term health consequences. It is a fact that vegetarians don't suffer heart attacks. This is because the proteins in meat have been scientifically proven to clog arteries, due to their inability to become completely dissolved by digestion. [4]

It is key to get adequate amounts of Carnosine in the diet if you are vegetarian. There are studies showing that rats fed purely vegetarian diets were stunted in growth, compared to rats fed an omnivorous diet.[5] Also in this study, life span was prolonged by intermittent fasting of rats fed an omnivorous diet compared to rats fed a vegetarian diet. This is most likely due to the lack of B12 and Carnosine in the diet of the Vegetarian rats.

Studies have shown that vegetarians have low levels of carnosine, as well as low levels of vitamin B12. A lack of Vitamin B12 has also been linked to brain shrinkage, especially if the person is older. The minimum RDA of B12 is 180-200 nano-grams a day. I personally have gotten mild allergic reactions to the supplement form of B12, so I take it in natural foods to avoid this reaction.

B12 is very unique in that the only organisms capable of producing it are yeast, algae and mold. No plant or animal can produce it. It can be found in high levels in salmon and sardines. Because Carnosine is an amino acid protein, and excessive protein intake can cause problems, it should be taken in moderation, as studies have shown that excessive proteins can build up in the tissues, which is why studies have proven that calorie restriction extends lifespan. I like to rotate it with longevity herbal formulas on some days for best results.

To date, the best Carnosine Synergists I have discovered include: Brewer's

yeast, Astragalus (responsible for protein synthesis), Alanine (found in Spirulina), Docosapentaenoic acid (found in Cod Liver Oil or flax seeds), Vitamin D3 (high amounts can be found in Cod Liver Oil) and foods high in anthocyanins, especially the anthocyanin named 3-O-glucoside, which we shall cover later on.

Foods highest in Alanine include: Raw Seaweed, Egg White, Spirulina, Tuna and Pumpkin Seeds. (Source: NutritionData.com)

My experience using Carnosine

Because I stumbled across Carnosine only recently, I have had about 5 months to work with synergists and find the dosages that were right for me. I have gotten best results taking it before going to sleep. This is because Carnosine works from the inside out. It works with the good bacteria in the stomach. The immune system of the stomach is most active between the hours of 10 p.m. and 2 a.m., going to work, rebuilding the body.

The Anti-Aging Carnosine Mix Formula

I assembled a simple formula that synergizes well with Carnosine. For the first few mornings after using this formula, my tongue had a bad taste, which is a good sign, as this shows that toxins are being removed. The next few days I needed to take less because it was having such a profound restorative effect on my body. I usually take it every 2nd day. I have gotten excellent results by using 2 types of meals beforehand, which are either high in good bacteria supporting nutrients or are high in anthocyanins. We will cover foods to take with this more in depth later.

I have found best results taking 2 capsules before bed for 2 days in a row, than not taking them for 1 day and then taking for 2 days in a row and repeating. In other words 2 days on and 1 day off. Best results are obtained taking just before bed. I also notice taking more Vitamin E when using this combination is also beneficial.

Here are the effects that occur after taking this formula

- Increased Mental Sharpness and enhanced Mental Alertness
- Skin has become smoother and softer
- Stronger Immune System. I used to take more immune system boosting supplements than usual during flu season, however after taking this formula, I have had to use less
- Faster Reflexes
- Wake up in the morning feeling refreshed and energized
- Bones become stronger and more flexible
- Body Weight becomes reduced to optimal levels
- Significantly Increased Hand Grip Strength

Here is the formula:

7 Parts Carnosine

3 Parts Spirulina

0.005 Parts Billberry Herb (leaf or stem)

2,000 IU of Vitamin D3 (powered version, liquid version less is needed)

1000 IU of Vitamin K (Some Vitamin D3 supplements include Vitamin K)

0.05 Parts of Decaffeinated Green Tea

1.5 Parts of Brewer's Yeast

1 Part Astragalus herb

1 Part Lemon Verbana

1 Part Tart Cherry (*which includes Blackberry and Stinging Nettle*)

The Tart Cherry Powder I used is the Brand Called Eclectic Institute which includes per 1 Part: 1 gram of freeze dried Tart Cherry, 1 gram of freeze dried Blackberry and 0.2 grams of freeze dried Stinging Nettle.

I have named this formulation **RejuvenEssence**. This is combined into an ordinary capsule, which you can make your own with a capsule making machine.

Lemon Verbana is an especially interesting herb, because not only does it

contain Benfotiamine, a stem cell boosting substance, it has also been scientifically proven to reduce oxidative stress, and increase recovery from intense exercise. *(Please see additional references at the end of this chapter for scientific studies on Lemon Verbana and recovery from exercise and as a powerful antioxidant)*

If you want to grind the herbs up yourself, use a mortar and pestle and then add the contents to a strainer and gently shake to get the smoothest powder than put into capsules. You can also put together the raw herbs in a kettle, tea bag or container and allow to “steep” for 5 to 10 minutes, then strain and drink.

Compatible Foods to Take with this Formula

Plain honey seems to synergize well with this formula. Also plain yogurt sweetened with raw honey and Organic Stevia that has a pinch of cinnamon, garlic powder and 2 tablespoons of flax seeds works well.

The second meal consists of Purple taco Shells (sometimes called blue taco shells), Sardines with Brown Rice and French Lentils, or Sweet Corn, or Spinach which can be bought together in the store in cans or you can sprout or cook them yourself. A small amount of Garlic powder is added to the sardines. This combination works very, very well, as the brown rice increases the absorption of the nutrients in the beans. The sardines are high in DMAE and the purple taco shells are very high in anthocyanins, especially the 3-O-glycoamide anthocyanin. The reason garlic is used in both these meals is because garlic will circulate longer in the body than most vitamins, so when the carnosine is introduced later, it creates a beneficial reaction.

Additional foods to take with this formula are: Parmesan or Provolone Cheese, Black Olives, Cooked or Sprouted Azuki Beans, Cooked Brown Rice and Cooked Lentils. 3 to 5 Black Olives and the above cheeses go especially well with this formula. Parmesan cheese is high in butyric acid and olives are high in vanillin. It also works well when there is more

humidity present in the air due to the higher moisture, which we will go into more detail later, showing how moisture is related to enhanced nutrient absorption.

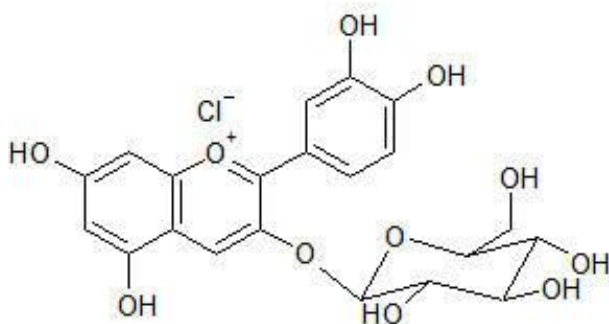
Additional Instructions: Do not overuse. Overuse may contribute to less effectiveness. Do Not use if nursing or pregnant. Overuse may result in pre-mature fatigue and rapid weight loss. Best taken before going to sleep.

From my experiences with this formula just before going to bed at night the next morning I wake up feeling extremely refreshed, re-energized and I can feel the newly rebuilt muscles and tissues, it works so well. As mentioned previously, some days I skip the formula, as it works so well. These ingredients all synergize together, and with a synergist you can use less and get the same effects, and in some cases even better results. It works especially well taken on a Friday or Saturday night, or the day before you take a day of rest. This is because on days you get more rest, if you increase your intake of nutrients, your body re-builds itself quickly and more efficiently, than on days you are working, as excessive work, stress and/or exercise drain the body of nutrients.

As mentioned earlier, during summer, when I reduce my intake of cottage cheese and other energy proteins, I will take slightly more carnosine to increase my energy. Also at the start of winter, taking St. Johns wort works well to resupply lower levels of melatonin and to help remove winter depression, which can happen during winter time. I have also noticed a major increase in my ability to maintain a longer level of concentration when taking carnosine, as well as reduced eyestrain. One of the major synergists with carnosine is the anthocyanin named cyanidin 3-glucoside, which has significantly more antioxidants than blueberries. [6] Before we go further we have to understand what Anthocyanins are, which we shall explore next.

What are Anthocyanins?

An Anthocyanin is a highly soluble compound that produces the purple color in flowers, foods and plants. Although this has yet to be confirmed, there is the possibility that anthocyanin are responsible for making the leaves turn their bright yellow orange, red and tan colors during the start of the fall season. Because they are superabsorbent, due to their tiny



and excreted into bile. Bile is a detoxifying agent that metabolically breaks down fats from food.

A study titled: Anthocyanin absorption and antioxidant status in pigs by Walton MC, Lentle RG, Reynolds GW, Kruger MC, McGhie TK stated that the anthocyanins

reached a peak in 4 hours after being injected. To the left is an image of the anthocyanin chemical structure.

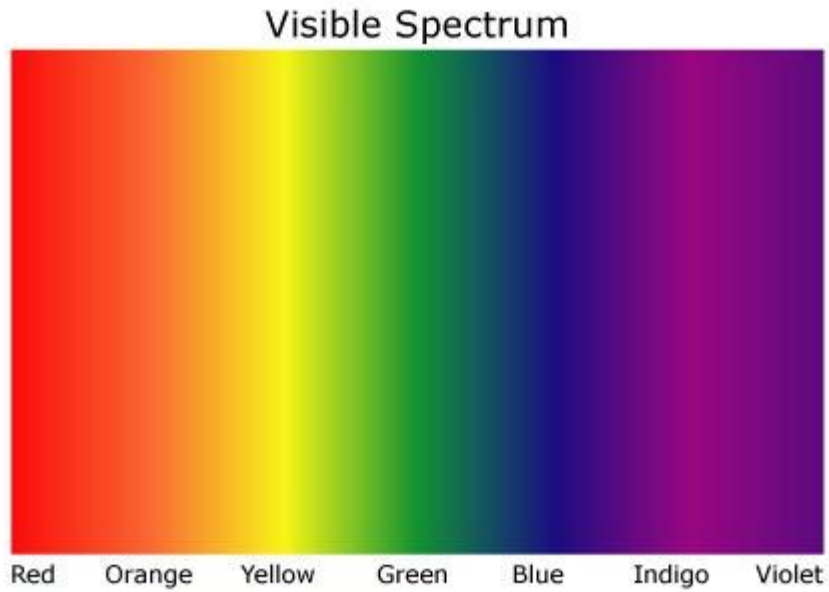
Anthocyanins concentrate themselves most in purple colored foods. Purple wheat for example has been shown to extended the lifespan of worms up to 10.5%. [7] Many herbs, plants and foods high in anthocyanins, naturally have a deep violet or purple color. Plants also produce anthocyanins as a way for providing protection from insect attack. Many anthocyanins are red at acidic conditions and turn blue at less acid, making them a great way to test for PH levels.

We can think of Carnosine as the ingredients for new muscle tissue and Anthocyanins as the nanobots that go to work helping re-build various parts of the body. Anthocyanins are known for their ability to inhibit alpha-glucosidase activity, which naturally reduces blood glucose levels, especially after starch-rich meals. Anthocyanins are starting to show promise in prevention of neurodegenerative and cardiovascular diseases,

especially inflammation, obesity and cancer.

Anthocyanins How They Can Be Used To Test For Acidity Or Alkaline PH.

One of the foods highest in anthocyanins are cabbage. When cabbage leaves are boiled, anthocyanins are extracted. Anthocyanins can also be extracted using citric acid from apple cider or lemon juice, which is why the Carnosine formula just mentioned, contains 1 drop of Apple Cider Vinegar. When anthocyanins are added to an acid such as lime or lemon juice, it turns bright pink, if it is a neutral substance such as Gatorade, then it will be reddish-purple and if it is an alkaline solution, then the color will turn green. Because the color pink (or indigo) is close to the color purple (or violet) in the spectrum of colors, it proves that anthocyanins react, or become more concentrated in a slightly acidic medium, which is the same as our stomachs. Our stomachs need a slightly acidic PH in order for nutrients to be properly absorbed into our bodies. Another interesting observation is Lime Juice is high in citric acid. When a drop of lime juice is added to a food high in anthocyanins, such as the juice of Clitoria ternatea, (butterfly-pea), it turns it to a deep purple, because its acidity has been increased. Citric acid is also used as a medium to extract anthocyanins from plants and foods.



A study titled: Improved stability of chokeberry juice anthocyanins by cyclodextrin addition and refrigeration (by researchers Howard LR, Brownmiller C, Prior RL and Mauromoustakos A) demonstrated that slightly acidic PH levels increased the stability of the anthocyanins in chokeberry juice.

Citric Acid Synergy

Citric Acid is sometimes made from Orange Peels. The amino acid lysine synergizes with citric acid. In a study titled: Determination of synergistic effects of polymethoxylated flavone extracts of Jincheng orange peels (*Citrus Sinensis* Osberk) with amino acids (by researchers Xiaolin Yao, Xiaoyun Xu, Gang Fan, Yu Qiao, Shaoqian Cao and Siyi Pan) they demonstrated that a mixture of citric acid and lysine were highly synergistic. The combination used was 120 µg/mL citric acid 42 µg/mL of lysine (or roughly 2:1)

Foods highest in Anthocyanins from highest to lowest include: Chokeberry, Purple Corn (and purple corn seeds), Eggplant, Blueberry and Raspberries and Cherries. In the food groups, berries contain the second highest level of anthocyanins. Here they are from highest to lowest: Crowberrys, Blueberries Blackberries, Strawberries, Elderberries, Cranberries and Bilberries. [7] The Colombian Andes berry (*Rubus* berries) is also high in Anthocyanins.

Researchers at the Horticultural Sciences Department of Texas A&M University discovered that the anthocyanin content of purple corn was much higher than fresh blueberries.

One of the more concentrated sources of Anthocyanins are blue-green algae, especially if it comes from volcanic regions, or areas where it was grown in a nutrient rich environment. Blue-green algae is high in a pigment called pigment Phycocyanins. Certain algae absorb light in a specific wavelength. Phycocyanins absorb orange and red light (620 nm). They do this due to some of them living at extreme water depths, where light is scarce.

Species Of Plants That Contain Anthocyanins

Plants include: The water Lilly (*Nymphaea marliacea*) which has 3 types of anthocyanins and is one of the rare species of Lilly that includes Gallic

acid. *Clarkia elegans*, *Linaria alpina*, Garden Pea, *Salvia Horminum*, *Viola odorata*, Corn- flower, *Lobelia Erinus*, *Myosotis sylvatica*, *Delphinium Ajacis*, *Campanula medium* and *Aquilegia vulgaris* (Columbine).

Anthocyanin Synergy

Anthocyanin synergists include the Tart Cherry, one of the berries that contains one of the broadest range of polyphenols, gallic acids and other unique antioxidants. Because Anthocyanins such as blueberries synergize with carnosine, they promote stem growth.

Tart Cherry has also shown significant stem growing promise. [8] Another well-known berry is Strawberry, which has shown synergism with Riboflavin. [9] And sucrose has also shown synergistic properties with strawberries. [10]

Anthocyanin Bioavailability And Absorption

Synergists also help improve absorption. One of the most common ways of this is via bacteria. Usually the good bacteria in yogurt can assist bioavailability, especially with Carnosine and anthocyanin substances. One substance mentioned earlier is cabbage. When strawberries were eaten with medium to large doses of steamed red cabbage, it has been shown to increase anthocyanin absorption. [11]. What is most interesting in this study is that there was no overdose tolerance, or a saturation point, as is often the case where if specific nutrients are overeaten it causes the absorption of nutrients taken with it to decrease. In the case of cabbage, medium to large doses were required to boost the bioavailability of anthocyanins, possibly due to the cabbage acting as a type of “buffer”, allowing more room for the anthocyanins to gather.

I believe that the best synergists for anthocyanin bioavailability are cherry, followed by elderberry and pomegranate, which as we shall cover later, were found to make fruit flies live 3 times longer than average. Other

berries that synergize well to increase anthocyanin uptake include: Blueberry and raspberry. A good combination is Eggplant and Red Cabbage or Purple Corn and Eggplant. We shall cover why Eggplant builds stem cells later on.

The key anthocyanin that delivers best results is the **cyanidin-3-O-beta-D-glucoside**, also simply known as 3-O-glucoside. Foods containing this in highest levels include: Blackberries, Black Soybean Hulls, Purple Corn, Chokeberry, Bilberry (including the stems and leaves of the plant), Elderberries, Acai and Blueberry. Any of these would also show stem cell building potential, as blueberry has already done. [12] An interesting fact is isoflavones, which have shown significant longevity potential in studies, is found in high levels in soybeans. Anthocyanins are extracted from the hulls of black soybeans. [13] Because anthocyanins also affect stem cell growth when combined with certain substances, this means isoflavones also affect stem cell growth. Because this is such a new discovery, research is starting to look at the properties of isoflavones and stem cell growth. [14]

Citric Acid and Longevity

As we will cover in more detail later in this book, the hundreds of fruit fly experiments performed by Mr. Doug Skrecky over a 4 year period showed that when the addition of citric acid (an acidic substance), was added to fly food, especially the berry foods such as the elderberry or pomegranate (which contains the anthocyanin cyanidin-3-glucoside, which we shall go into more detail later on in this chapter), it boosted lifespan significantly, outliving the controls easily by a factor of 3 to 1. This I believe is due to apple cider's ability to draw out Anthocyanins from the substances and increase the digestion of the anthocyanins, especially if used with plants that have "soft" tissues, such as Mulberry or Pomegranate. Dramatic fruit fly longevity results were also obtained with rice protein. Rice protein happens to have high levels of anthocyanins. The experiment also showed that only a small amount of citric acid was all that was necessary. There happens to be a drink on the market called Purple Corn Juice, which

includes in its formula apple cider vinegar. People are already starting to discover its health benefits and many people are reporting how good they feel after drinking this combination.

Chlorogenic acid is another substance that has shown promise as an anthocyanin recovery agent. Chlorogenic acid helps slow the release of glucose into the bloodstream, much like Casein slows down the digestion of proteins, allowing a stronger protein synthesis to take place. Chlorogenic acid can be found in high levels in the following foods: Green Coffee Bean extract, Bamboo, Peaches and Prunes. Bamboo is used in many skin moisturizers to soothe and return moisture to the skin.

Anthocyanin Stability

Because anthocyanin stability is key to getting the most out of its benefits, we shall explore further into mechanisms that help boost stability. Much like many nutrients, anthocyanins can degrade over time. Although research is yet to confirm this, substances that increase anthocyanin stability, may also create beneficial synergy in the body. One of the most remarkable substances that boosted anthocyanin stability was Rooibos Tea. This was shown to improve the stability of the anthocyanins in acai by up to 46 percent due to the high number of flavone-C-glycosides in the Rooibos. [16] Rooibos has got to be one of the best substances known to help keep anthocyanins stable over a long period of time. Rooibos is commonly drunk as a hot tea. Research has also shown that sodium benzoate, widely used food preservative, can boost anthocyanin stability. In a study titled: Anthocyanin contents and the phytonutrient changes in blueberry juice by Stojanovic and Jelena, the study showed that sodium benzoate was the most effective substance for stabilizing anthocyanin levels.

Substances high in flavone-C-glycosides include: Bamboo, Trollius chinensis Bunge, Ficus deltoidea (Moraceae) (a herbal tea in Malaysia), the African Medicinal Plant Biophytum umbraculum and Hawthore Berry. Butterfly Pea (Clitoria ternata) has shown remarkable stability in its

anthocyanin when stored for long periods, even outlasting that of grapes. As a note, Hawthorne Berry has shown remarkable lifespan extension abilities in fruit fly longevity experiments as we will cover later on.

Covered earlier, Cyclodextrin, which is extracted from corn starch, has been shown to improve the stability of Anthocyanins. Cyclodextrin has been shown to lower blood sugar. It has also been shown to immediately stop chronic diarrhea and constipation.

One study titled: Content levels Interaction of vitamin C and flavonoids in elderberry by researchers K. Kaack and T. Austed, showed that when ascorbic acid was added to elderberry juice it stabilized the anthocyanin content levels.

Herbs And Teas High In Anthocyanins

A U.S.D.A. study found anthocyanin levels ranging from 4.1 to 52.4 in the leaves of certain flowers and between 0.8 and 26.8 in the flowers. The highest levels were observed in tick clover (14.6) with the highest flower anthocyanin levels of 17.3 observed in the periwinkle. Other plants studied were jute, butterfly pea (*Clitoria ternatea*) and roselle. [17] A tea named Sunrouge tea is an anthocyanin-rich tea. [18]

The Remarkable Anti-Aging Anthocyanin - Cyanidin 3-Glucoside

Like B vitamins, Anthocyanins are water-soluble, making them high bioavailable in the body. The longer fruit is left to mature, the higher the levels of cyanidin 3-O-glucoside accumulate within it, perhaps due to the fermentation of the sugars. [19] This is why experiments with fruit flies showed that overripe bananas were a significant longevity food and some longevity fruits such as the Wax Gourd, increase their antioxidants when left to ripen longer than usual. One of the more important anthocyanins is cyanidin 3-glucoside (also called Chrysanthemum), which has been scientifically proven to lower blood sugar glucose levels and help with

protein synthesis. This anthocyanin is present in red apples [20] and is contained in the outer levels or hulls of dark beans, especially the black bean.

Cyanidin is found in the majority of berries that have a red color, which we just covered earlier, such as blueberry, cherry, cranberry, grapes, bilberry, blackberry, elderberry, raspberry, hawthorn, loganberry, and acai berry. In fruits it is found in apples, red cabbage, plums and especially onions (red being the best). Red onion is the source of over 4 main cyanidin derivatives. [21]

According to Phenol Explorer, the top 10 foods highest in cyanidin 3-glucoside are listed in the order from highest to lowest: black elderberry (at 1315 mg/100 g) and the black chokeberry (at 876 mg/100 g). Other foods high in cyanidin 3-glucoside include: Raw Blackberries, Sweet Cherries, Black Grapes, Red Raspberries, Raw Black Olives, Plums, Pomegranate Juice from Concentrate and black beans. Because this database is relatively new, purple corn was not listed. [22]

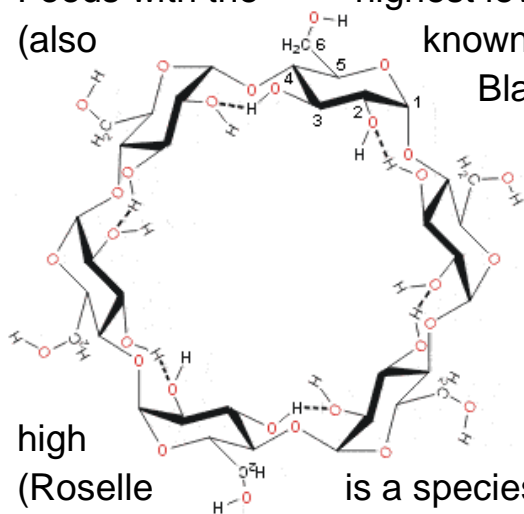
The molecule Cyanidin 3-O-glucoside also gathers and attaches itself in the seed coats of red and black kidney beans and black and yellow soybeans. If these seeds are dehulled, which often occurs during processing, the cyanidin 3-glucoside is lost.

Foods with the highest levels of the substance cyanidin 3-glucoside (also known as Chrysanthemum or Cyanidin) include:

Blackcurrant pomace, Purple corn (and purple corn seeds), the flower Hibiscus sabdariffa, Chinese bayberry fruit and Elderberry.

Plants, Herbs And Teas High In The 3-Glucoside Anthocyanin

Cyanidin 3-glucoside has also been found in levels in the following plants: Roselle plant (Roselle is a species of Hibiscus), Rhaponticum, also known as Maral Root, Asteraceae, a purple flower part of the sunflower family,



Smooth arrowwood fruit (also known as *Viburnum dentatum*), Caprifoliaceae, a pink/purple plant part of the honeysuckle family and sweet potatoes. It is also found in lower concentrations in red raspberries, victoria plum, peaches, lychee and acai.

Hibiscus tea has good levels of Cyanidin 3-glucoside, and an excellent combination is Hibiscus tea and Elderberry. Elderberry also combines well with Rooibos, an Anthocyanin stabilization substance.

Japanese Knotweed (also called *Polygonum Cuspidatum*) contains 3-O-glucoside. The concentrations are highest in the aerial parts and the wood root portion. It is commonly used to make Itadori Tea, which is high in 3-O-glucoside. Japanese Knotweed also contains concentrated sources of resveratrol. This makes it an excellent way to get good levels of resveratrol without side effects, and an excellent combination is purple corn with Itadori Tea.

As this book was just going to print, new information about cyclodextrins has come up, which I will add here. As stated earlier, Cyclodextrins are extracted from corn starch and has been shown to improve the stability of Anthocyanins. A Cyclodextrin is a non-reducing cyclic glucose oligosaccharides that comes from the cyclomaltodextrin glucoamylase catalyzed degradation of starch. *Bacillus clausii* strain E16 can be used to create cyclodextrins from different types of starches such as soluble starch, cassava, sweet potato, waxy corn and corn starches. (Source: Production of Cyclodextrins by CGTase from *Bacillus clausii* Using Different Starches as Substrates.)

In simple terms cyclodextrins have sugar type effects, which may act as a fuel source for the cells, similar to Betaine, which is found in beet juice. Cyclodextrin has already been proven in the lab to extend lifespan, as the study titled: Function of the Niemann-Pick type C proteins and their bypass by cyclodextrin by Vance JE and Peake KB showed. Their study concluded that when NPC deficient mice (a disease causing mutations in genes) were treated with cyclodextrin, it extended their lifespan.

Now, let's explore how to use Nutraceuticals to create new stem cells.

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Chapter 3

What are Stem Cells?

Stem cells are composed of biological cells, which differentiate into specialized cells by division to produce more stem cells. This chapter focuses primarily on adult stem cells, due to their ability to act as repair systems for the aging body via their unique ability to re-plentish adult tissues, especially the bones. It has been my conclusion throughout studying regenerative anti-aging compounds that when the bones are rebuilt, they also show significant anti-aging traits.

Adult stem cells are routinely used in bone marrow transplantation, to strengthen or add new bone. Bone marrow happens to be one of the richest sources of adult stem cells. Much of the research is based on using artificial pharmaceutical methods to enhance and encourage adult stem growth; however natural foods, extracts and herbs are starting to show the same results, if not better, in numerous independent studies concerning certain nutraceutical combinations that promote stem cell growth.

One excellent example of how stem cells can induce biological immortality in nature is in a species of jellyfish known as The Benjamin Button of the animal kingdom (*Turritopsis dohrnii*). This jellyfish has never been observed to die, due to its unique ability to revert its biological structure back to its original stem cell formation. [1] It originated in the Caribbean, and studies in the laboratory proved that 100% of specimens reverted to their polyp stage (the ability to reverse the life cycle and grow younger). Unless a virus or predator can help control its populations, it is starting to become very common all over the world, due to its unique ability to cheat death.

The pigment Phycocyanins, which we covered earlier, have shown significant promise in growing stem cells. The species of algae from which it is found in, absorbs light in a specific wavelength, and we all know that

sunshine is good for our bones, due to its ability to produce vitamin D (D3 is a stem cell builder).

Phycocyanins are found in high amounts in eggplants and Spirulina. Dr. Rob Shore researched stem cell regeneration using eggplants and concluded that eggplant extract influenced significant muscle healing (anti-inflammatory properties). He discovered that an alkaloid in eggplant acts on the acetylcholine receptors enabling stem cell recruitment. He now sells it under the name: Protein Power Mix Nighttime Formula, used to build muscle, because it is taken before bed, which rebuilds the muscles and tissues as you sleep at night. [2] Because this is a new commercial product, no major research institutions have studied it yet, however all the particulars of the product point to the fact that stem cell building properties exist in the formula.

The ingredients are: Casein protein which digests slowly, allowing protein synthesis, Whole Grain Brown Rice, which increases the bioavailability of the nutrients, Fructose, because it is combined with slow releasing carbohydrates in this mix, sustains blood sugar levels by releasing the fructose slowly into the blood via the small intestines, Alpha Lipoic Acid, due to its antioxidant regenerative properties, increases bioavailability, Glutamine, provides a source of fuel for the brain, Eggplant extract, for rebuilding stem cells, Inulin Fiber, which can't be broken down into monosaccharides in the small intestine, which does not allow it to be absorbed into the blood stream from the small intestines, raising blood glucose levels, and Bromelain, which is an anti-inflammatory. It also contains trace minerals of Potassium, Calcium and Magnesium. Now I don't mention this as a plug for the product, just as proof of concept that the Eggplant synergizing with these ingredients boosts stem cell growth. Eggplant is also one of the foods highest in Chlorogenic acid. Chlorogenic acid, as mentioned earlier, has shown great promise as a anthocyanin stabilizing agent.

Eggplants are part of the night shade family of plants, which includes: sweet and hot peppers, potatoes, tomatoes, tomatillos, tamaros, pepinos,

pimentos, cayenne peppers and paprika. As we shall cover later on, Paprika in fruit fly experiments was shown to be one of the most successful anti-aging compounds.

While I don't want to get off topic, I want to also show that herbs high in alkaloids have extreme benefits in healing extreme chronic inflammatory disorders and rheumatoid arthritis. Nightshade plants are high in alkaloids. As of early 2013, there has been extreme interest in using stem cell therapy to heal arthritis. So I want to list these herbs, as they may have significant stem cell regenerative ability in mammals and humans. Let's cover these next.

Stem Cell Building Substances Have Joint Anti-Inflammatory Properties

This section will briefly cover alkaloids scientifically proven to re-build stem cells. In sports, inflammation is a form of recovery, muscle building or healing. It is the body's natural repair mechanism, and this is a good type of inflammation. It is the wrong type of inflammation that is dangerous, such as the inflammation caused by arthritis. This means that the "rust" is outpacing the renewal repair abilities of the body. Stem cells make up for this "gap" of repair, by re-supplying the necessary nutrients needed for repair. Thus many substances that help arthritis, are also stem cell building substances as we shall examine briefly.

Chelidonium majus (also called greater celandine; in Europe tetterwort). Chelidonine belongs to the poppy seed plant family and has shown significant ability to regenerate stem cells in planarian flatworms. [3] Studies on mammals have yet to verify its effectiveness on mammals. Chelidonine also shows significant anti-cancer effects. It can be bought as an extract or tincture online.

Sophora flavescens, besides its anti-inflammatory, anti-arthritic [4] and anti-cancer properties has shown outstanding potential for hair regrowth. [5]

Berberine has shown significant anti-inflammatory effects on rheumatoid arthritis. [6]

Stephania tetrandra has shown to suppress neutrophil function in patients with rheumatoid arthritis. [7]

Rhizoma Coptidis has shown strong anti-inflammatory effects in cases of chronic inflammation. [8]

Black pepper (Piper nigrum and Piper longum) (also used to increase the bioavailability/nutrient enhance of nutrients in food) has shown strong anti-arthritis effects. [9]

Evodia Rutaecarpa, which yields small berries, is a well-known fat burner and warms the body. [10] It also has been shown to relieve arthritis. [11]

Evodia rutaecarpa. This herb has also been shown to boost skin microcirculation and improve skin condition. It is often combined with Algae to enhance glowing skin. It to has powerful Anti-inflammatory properties. [12]

Sanguinaria Canadensis has been used by Native Americans for centuries to treat arthritis and improve respiratory conditions.

Next we are going to explore combining different substances of stem cell substances to enhance stem cell growth.

Stem Cell Rebuilding Synergistic Combinations

Now let's explore nutraceutical combinations to find the best ones that enhance natural stem cell growth. Besides the already published combination of carnosine, blueberry, green tea and vitamin D3 combination have been shown to boost stem cell growth, similar combinations can also be used. In the book titled *The Anti-Aging Triad* By Stephen Holt MD, [13] he reports that new bone marrow stem cells have been grown when a combination of Vitamin D3, Oleic and Linoleic Acids, blueberry extract, fucoidan and blue green algae were combined. Dr. Stephen Holt is a world

renowned Professor of Medicine (Emerite). He has over 25 books to his credit and hundreds of scientific communications along with thousands of publications and citations in medical consumer and trade press publications. He graduated with Honors in 1972 from Liverpool University Medical School in England. His website is: <http://www.stephenholtmd.com/>

Sulforaphane

Because Broccoli has shown stem cell building potential, we have to understand the molecular mechanism taking place that causes it, which is Sulforaphane. Unlike eating large doses of cabbage which boost anthocyanin intake, researchers have discovered that low doses of sulforaphane, about the amount you find in an average meal containing cabbage, stimulated the development of mesenchymal stem cells (also called MSC's, which can differentiate into bone cells) and helped existing stem cells to live longer. [14] Mesenchymal stem cells, also known as MSCs, differentiate into a variety of cell types. Some are even able to make new bone cells. In a study titled: Mesenchymal stromal cells prolonged the lifespan in rats, which was performed at the Institute of Experimental Medicine, Academy of Sciences of the Czech Republic, Prague, Czech Republic, Mesenchymal stromal cells prolonged the lifespan of rats in an in-depth research study.

How Sulforaphanes Are Formed In The Body

Much like the healing properties of garlic are released when you slice them fresh, when you slice fresh batches of Broccoli, Kale, Cabbage or other foods high in glucosinolates, it releases the cancer fighting compounds glucoraphanin and myrosinase. Myrosinase is an enzyme that is released when you cut the vegetables, cook them lightly or chew them, and this converts the glucosinolates into sulforaphane. Broccoli sprouts are one of the richest food sources of glucoraphanin, which is a precursor to sulforaphane (also known as glucoraphanin sulforaphane). When broccoli

sprouts are just 3 days old, they have between 10 and 100 times more than mature broccoli plants. Other foods high in glucosinolates include: Cress, Chinese cabbage, and cauliflower. These vegetables should be lightly steamed, if you boil them it decreases the glucosinolate content by between 18 to 59 percent.

Sulforaphanes and Gene Expression

Scientists discovered that sulforaphane, which is a glucosinolate formed when kale is chopped or chewed, alters gene expression. This specific gene that is turned on clears carcinogenic substances from the body very quickly, making it an excellent food to add to your list of foods that quickly detox.

Scientists speculate that sulforaphane triggers the liver so it can produce detoxification phase II enzymes. These neutralize cancer-causing substances. Therefore, an excellent cancer fighting diet would consist of adding 3 day old organic broccoli sprouts that are freshly sliced with shredded organic kale. A diet including small amounts of sulforaphane can offer protection against some kinds of cancer, especially intestinal cancer. Excessive amounts robs the body of its detoxifying capacity. Savoy and red cabbage are particularly high in the sulforaphane precursor with the highest amounts in Savoy Cabbage. Savoy Cabbage was shown to have good longevity potential in fruit fly experiments as will be covered later in this book.

Another study found that Sulforaphane helps protect against age-related macular degeneration, which is a leading cause of blindness in those who grow old. [15]

Other researchers found that Sulforaphane stimulates the development of new mesenchymal stem cells. [16] Cabbage happens to have high amounts of Sulforaphanes, so eating more cabbage is an excellent way to keep a good supply of healthy stem cells in the body. Cabbage and broccoli have also been proven in research studies to gain more muscle

tissue as a study at North Carolina State University showed.

Sulforaphane Synergy

When the pharmaceutical drug called sorafenib is combined with sulforaphane, it exhibits synergistic activity abolishing pancreatic cancer stem cell characteristics. [17]

How Fucoidan Contributes to Stem Cell Growth

Fucoidan is starting to show promise as a major stem cell catalyst, especially in bone tissue engineering. [18] Fucoidan is a sulfated polysaccharide discovered in various species of brown seaweed and algae; including mozuku, bladderwrack, wakame, kombu, and hijiki. It is found in high concentrations in the Sea Cucumber, an animal famous for its ability to regenerate new limbs. Fucoidan is used in many commercial stem cell supplement formulas. It is also available in Capsule or Supplement form from reputable online merchants.

Another promising synergist is Vitamin MK-7 (also known as Vitamin K2 and also as Menaquinone-7), comes from the fermented soybean food called Natto. When it was combined with Vitamin D3, it showed significantly good results in helping strengthen bones and keeping them healthy via growing new stem cells. [19] An in-depth research study showed that MK-7 intake may help postmenopausal women prevent bone loss by reducing bone loss at the lumbar spine and femoral neck. [20]

Although no thorough scientific studies have been done on this supplement, it is worth mentioning. A supplement called StemEnhance contains a blend of 2 extracts from the algae cyanophyta *Aphanizomenon flos-aquae* (AFA). The first extract is an L-selectin ligand (a "homing receptor" for lymphocytes) and a polysaccharide extract (high in plant sugars) named Migratose. Their website states that a triple-blind study showed that consumption of the StemEnhance supplement triggered a 25% to 30% increase in the number of circulating stem cells. [21]

Varying combinations of Hawthorne berry, grape seed, cordyceps, acai berry, passion fruit, roselle, goji berry and blue berry are used in commercial products to stimulate stem cell growth on the skin.

My Personal Research Discoveries with Stem Cell Synergists

Because I always base my observations on how quickly my body recovers from exercise, by experimenting with different herbal and amino acids before bed, especially after a heavy day of exercise, I find this helps me to intuitively listen to my body, by experiencing how fresh or drained I feel the following morning. When I get the same rejuvenative/restorative effects over and over from the same types of combinations, than I know I have hit upon an excellent recovery formula. Some examples include good results from including the foods Flax Seeds and Parmesan Cheese with the Carnosine Mix mentioned previously. Flax seeds are high in Linolenic Acid and Docosapentaenoic acid. Linoleic acid has been scientifically proven to grow new embryonic stem cells. [22]

A diet rich in Linolenic Acid has been shown to Prevent Myocardial Damage and Expand Longevity in Hamsters. [24] Parmesan Cheese is high in Butyric acid (also called butanoic acid), which has scientifically been shown to induce protein synthesis. [26] Other studies have shown it to be of considerable benefit in healing rats who underwent cardiac arrest.

Foods highest in Linolenic Acid include: Flax Seeds and oil, Chia Seeds, Walnuts, Basil, Oregano, Cloves, Grape Leaves, Marjoram, Spinach and the herb Tarragon. Additional foods include: Coffee, Safflower Oil, Grape Seed, Sunflower Oil, Poppy seed oil and wheat germ. [23]

Foods highest in butyric acid: Goat Cheeses and Goat's Milk, Parmesan Cheese, Salted Butter, Romano cheese, Ricotta Cheese, Feta and Swiss Cheese. [27]

An interesting fact is aged Parmesan Cheese contains high levels of ethanol, and ethanol is used to recover anthocyanins from plants. Ethanol

is a remarkable substance known to retain moisture.

Although the research is still forthcoming, there is some possibility that Butyrate detoxifies or removes excess ammonia in the body. Other substances that also help remove ammonia from the body include the Amino acids Citrulline, Glutamine and Arginine. What is most interesting a scientific study showed that a combination of the 2 amino acids, Glutamine and Arginine, enhanced the recovery of seriously ill patients. [28] And another study using arginine butyrate, showed it helped increase muscle tissue, reduce inflammation, myogenesis among many other benefits. [29] So it appears that arginine is a powerful butyrate synergist.

Another study showed that when Butyrate is combined with the amino acid Carnitine, it inhibits colon cancer cells. [30] And when butyrate and Carnitine are combined with Probiotics, such as Yogurt, it has been shown to synergistically work together to reduce oxidative stress and heal inflammatory bowel disease. [31] Butyrate also synergizes well with retinoic acid, which comes from Vitamin A. Retinoic Acid has also been shown to boost Embryonic Hematopoietic Stem Cell Development. [32]

Foods highest in Retinoc acid: Broccoli, kale, spinach and collard greens. Now that we have covered the basics of Stem Cell generation, let's explore how Carnosine interacts with substances to create synergistic effects that enhance stem cell growth.

Carnosine and Stem Cell Production

Because Carnosine is such a powerful anti-aging protein, it must have Stem Cell regenerative abilities. So when we explore the Carnosine synergy further, we start to find scientific studies starting to confirm this. As of 2013, the research is still fairly new, however further studies should continue to verify this beneficial reaction.

In a study, rats fed carnosine mixed with vitamin D3, blueberry, and green tea polyphenols showed increased production of new brain cells and there was also less brain cell inflammation and/or deterioration. [33] This is due

to the fact that one of the master molecules for Stem Cell production are Anthocyanins, which D3 and Carnosine work together to activate.

In article titled Stem Cell Therapy in a Pill? published by Life Extension Magazine, reporters stated that Blueberry and catechin increased bone marrow cell proliferation by 70%, and when carnosine and blueberry were added, the growth promotion observed was 83%, these results outperformed the expensive stem cell therapy drug called GM-CSF!43. [34] These published studies demonstrate for the first time that natural compounds promote the proliferation of human bone marrow cells and human stem cells. Now let's explore Carnosine Synergy.

Carnosine Synergism

Carnosine combined with Schizandra Berry is used as a skin moisturizer in many commercial skin care moisturizers.

Carnosine shows major synergy with DMAE. DMAE can be purchased as an extract or can be found in high levels in Sardines or Anchovies.

Carnosine combined with Rhodiola Rosea at just 1% has been shown to significantly protect the skin by enhancing its natural peptides that protect it from age. [35]

How DMAE Contributes To Glowing Skin And Increased Mental Alertness

DMAE has been shown to inhibit and reverse the cross-linking of proteins, one of the major mechanisms responsible for aging. DMAE is a precursor to acetylcholine, and is found in abundant amounts in sardines, salmon and anchovies. As mentioned earlier, DMAE shows major synergy with Carnosine.

In commercial applications, DMAE is combined with the following:

With Pantothenic Acid, and Vitamin B6 to help create an alert mind.

With Vitamin E for skin moisturizers.

DMAE is commonly used to remove wrinkles when combined with sesame oil and aloe vera.

It is combined with soybean oil, alpha lipoic acid, and aloe vera gel for skin moisturizers.

It is combined with Ginkgo, Choline and/or Vitamin B12 in energy supplements.

Carnosine combined with Ginkgo, Lipoic Acid, Red Berry (such as cherries), and White Willow Bark is used to help diabetics.[36]

Carnosine combined with zinc creates Zinc Carnosine (ZnC), which is used to treat gastrointestinal problems, stomach ulcers or heal the intestine, as confirmed by a Japanese study. The study showed that out of 66 patients with H. pylori infections (gastrointestinal symptoms) 86% of the patients treated with antibiotics experienced eradication of H. pylori. However 100% of the patients who received zinc-carnosine with the antibiotics completely recovered.

As I stated earlier, Carnosine works its magic in the intestines, where all healing begins, because over 70% of our immune system is in our stomachs. [37] Another stomach soothing combination is a Zinc-Carnosine combined with cranberry and licorice extract which soothes and heals stomach pain or upset.

Carnosine combined with the herb Chinese licorice, grape seed extract, zinc, blueberry and picrorhiza kurroa extract is sold under the commercial name CarnoSoothe and is used for chronic stomach problems. Picrorhiza is especially interesting because it is used in combination with Milk Thistle in the ratio of 2 parts Milk Thistle to 1 part Picrorhiza as a simple liver protector and liver detoxor.

Carnosine combined with blueberry extract, green tea extract, and vitamin

D3 has shown significant anti-inflammatory actions that affect the elderly. A formulation of this synergistic blend called NT-020, as of 2013, is currently undergoing human clinical trials to confirm this, which has already been successfully proven in mice models.[38]

In another commercial application, Carnosine is combined with Glutathione and placed on acupuncture points using an adhesive patch placed on the body that delivers significant energy when worn. [39] One person who has publically mentioned good results from it is actress Suzanne Somers.

Carnosine, when combined with aspirin, has shown to be beneficial in dissolving cataracts. [40] Willow Bark, also used as an aspirin alternative, is high in acetylsalicylic acid. Later on as we explore further in this book, salicylic acid, which is a part of acetylsalicylic acid, has been shown to be one of the most powerful substances to extend the lives of fruit flies. Salicylic acid is also used to fight inflammation and unnecessary swelling.

Carnosine combined with Betaine (found in beet juice) has been shown to be effective in protecting the liver tissue of aged mice. [41]

Carnosine combined with DMAE is used in many anti-aging supplements.

Carnosine combined with Blue Green Algae and Vitamin E are used in skin moisturizers.

Carnosine combined with rosemary, lavender, and/or Geranium are used in commercial applications as a powerful natural preservative for meats.

Rosemary is one of the most powerful natural herbs used to keep meat fresh. Because of this, a combination of rosemary and lemon essential oils has shown remarkable promise in improving cognitive function in patients suffering from Alzheimer's disease. [42]

Carnosine combined with Vitamin E has been shown to decrease oxidative stress in the heart, liver and brain. [43]

Melatonin, a substance that affects the Pineal Gland, has shown significant results when combined with Carnosine. In one study it protected the liver [44] and in another study when 250 mg/kg of Carnosine was combined with

10 mg/kg of Melatonin, it provided significant protection in the liver of rats. Another study showed it effective in reducing symptoms of angina (a reduced flow of blood to the heart). [45] In many commercial supplements, Melatonin is combined with theanine to boost its absorption by increasing the ability to cross the blood brain barrier (goes directly to the brain). Theanine is found naturally in many teas and is especially high in black teas.

In the Carnosine formula mentioned earlier, I use St. Johns Wort, which contains melatonin. Other foods high in Melatonin include: Sweet Corn and Oats. The Herb Huang Qin (also called Scutellaria) contains one of the highest levels of Melatonin in the herb family, followed by Fever Few. Huang Qin, also known as milk-vetch root (Scutellaria) is a genus of Astragalus and happens to be used in many skin moisture products to rejuvenate the skin. The herb valerian boosts melatonin levels and is best absorbed when taken with hops because research shows a combination of hops extract (120 mg) and valerian extract (500 mg) helps induce peaceful sleep.

Chasteberry or chasteberry tea has been shown to help stimulate melatonin production in the body, especially during the morning. Melatonin levels can also be increased from foods we eat, such as banana or pineapple.

A scientific study showed that Creatine is a carnosine synergist. [46] In the study, carnosine only synergized with older rats, rather than younger ones. My experiments adding Creatine to Carnosine have not been altogether stellar, however the results may be different with humans, as this test was done on mice. We can also look for excellent Carnosine synergists by exploring the labels in popular Carnosine supplements. This we shall briefly cover in the next chapter.

Carnosine Synergists used in Supplements

Carnosine synergy has been shown to grow new stem cells, and only

within the last few years have supplements become available, that help nurture this new stem cell growth. Because Blueberry and Green Tea enhance stem cell growth, we can look at stem cell supplements and see that they create synergy, increase bioavailability or are better absorbed together. This accelerates their effects and allows you to use less. The main component in Blueberry is Anthocyanin. One of the main components in Green Tea are catechins (EECG). When you combine EECG and anthocyanins, you get a major synergistic bio-organic chemical reaction. When you add Vitamin D3 (fish oil), it enhances the effects even further.

Let's look at some of the supplements on the market today using carnosine synergists:

A supplement called Stem Cells Activator by SuperSmart.com lists the following ingredients in their Stem Cell Activator Capsules, Beta glucans (215 mg from oats) 150 mg, Green Tea Extract 150 mg, L-carnosine 50 mg, Astragaloside IV (from Astragalus) 20 mg, Polygonum Multiflorum extract 800 mg (also known as He Shou Wu or FO TI), Fucoidan (from Laminaria japonica) 300 mg and Blueberry anthocyanins 250 mg.

So we can see from the above, that beta glucans from oats and Polygonum Multiflorum are used as the "Carriers/Buffers", because there is more of them. The remaining amounts appear to be used in lower amounts, which are also the most concentrated extracts. I've experimented with larger amounts of Oat Powder and FO TI with Carnosine and obtained very good results.

Another supplement lists the following combined with carnosine: Folic Acid, Vitamin D3, Vitamin B12, Blue Green Algae, Blueberry Fruit Extract, Flaxseed Oil Powder, Green Tea Extract, Fucoidan (from brown algae), Fucoxanthin (from brown algae) and Grape Seed Extract. This combination varies in the above ingredients, however the synergy of these extracts blend well together.

The next supplement called Super Carnosine Supplement lists the following ingredients. Thiamine (also known as vitamin B1) 50 mg, L-

Carnosine 500 mg, Benfotiamine (a derivative of vitamin B1) 50 mg and Luteolin [from orange citrus extract (fruit)] 4 mg. As we shall cover later on, extracts of citrus have extremely powerful antioxidant properties, especially in the upper region of the body.

We can also put together a food combination using the above by combining foods high in these nutrients: Spices ranked in order from highest to lowest in B1 - Dried coriander leaves, poppy seed and sage. Yeast Extract Spread is extremely high in B1, (Marmite) providing 9.7mg (647% DV) per 100 gram serving. Dried Maitiake Mushroom is highest in B1. I have also tested Poppy seeds in the Carnosine mix with good results, due to the B1, which boosts the absorption of the melatonin.

B1 synergizes with Benfotiamine. Benfotiamine is found in onions, garlic, shallots, leeks and other plants of the allium family. I have got best results with Garlic. Luteolin is found in celery, green pepper, rosemary and oregano. Spices high in Luteolin include: Thyme and Dried Peppermint. Other spices include Lemon Verbena followed by Dried Mexican oregano. Mexican Oregano is also very high in Quercetin.

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