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***Phillip W. Warren, B.A., Ph.C., Zetetic Scholar, Professor Emeritus***
4459 52A St., Delta, B.C., V4K 2Y3 Canada
Phone and voice mail: (604) 946-4919
EMail: phillip_warren@telus.net.
Website: http://www.REBprotocol.net "Emotional Freedom is in Your hands with REB"
Chemical pollution (NCD) http://my.waiora.com/home.php?475030
Electro Pollution http://www.mybiopro.com/BIOPROventionProgram.aspx?ID=LifeSkills
Chemical, Electro and total body-mind-spirit balance: https://www.2lolii.com/lifeskills/
U.S. mailing address: P.O. Box 1595, Point Roberts, WA 98281-1595

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# What You Need to Know to Stay Young and Healthy


John L. Zenk, M.D. & Rik J. Deitsch Foreward by Steven Trobiani, M.D.
2004 September Sound Concepts. Inc.
15 East 400 South Grem, UT 84058
www.soundconcepts.com 1-800-544-7044


## FORWARD

One of the principle paradoxes of humanity is that, while we are all mortal, we have from the dawn of civilization striven to achieve immortality. Nearly every ancient society has a record of deification of its kings, queens, and emperors. Every school child knows the medieval story of Ponce de Leon and his search for the mythical fountain of youth. The quest for immortality is at the center of such modern literary classics as Faust, Frankenstein, and The Picture of Dorian Gray. Birth, aging, and death characterize the human condition, and it is only natural that the process holds an intense fascination for us.

My own fascination with life and death began at the age of seven, when I first became intrigued with the science of medicine. Through the years in which I have been privileged to practice the art and science of medicine, I have had the opportunity to observe amazing advances in our ability to diagnose and treat a wide variety of conditions. These advances, primarily in early detection and more. effective therapies, have allowed modern medicine to greatly extend the average life expectancy and delay the point at which we have to face our own mortality.

This increase in the duration of life, however, has not always been coupled with a corresponding increase in the quality of life. The goal of a long life free from infirmity and illness has largely eluded us. This is about to change as we enter the next phase in the evolution of modern medicine and now begin to focus on effective prevention in addition to early detection and treatment.

While the attainment of immortality remains elusive, we have gained a greater understanding of what constitutes aging. As a result of that understanding, we now can slow the aging process and retain vigor, vitality, and good health as we get older. Preventing the consequences of aging requires an understanding of the changes that take place within our bodies as we age. In the following pages, authors Zenk and Deitsch present a uniquely comprehensive approach to the subject of aging and, in so doing, transform a complex topic into terms that are easily understood.

Countless books before this one have focused on nutrition in the prevention of disease. Nutritional supplementation is important in addressing the issues of oxidative stress and inflammation which underlie many of the changes leading to aging and illness. However, this is only a part of the story. Declines in critical hormone levels play an equal, and possibly greater, role in the process of aging and illness. In addressing this aspect of aging as well as the issue of nutrition, Zenk and Deitsch have created a reference which will stand as a landmark on the subject of aging. This "A-Z Reference to Anti-Aging" is a comprehensive and practical guide to ingredients which have been proven to be safe and effective and can be used today to slow the aging process. Reference to this guide will allow the reader to avoid the "Ponce de Leon effect" in choosing supplements, i.e. avoiding ingredients which are purported to be effective but lack research data to support their effectiveness and, hence, are more myth than reality. This is an essential addition to the reference library of anyone seriously concerned with the subject of aging.

Steven Trobiani, M.D. Medical Director Northstar Pain Care/Neurological Clinic

About John L. Zenk, M.D.

Dr. Zenk is the Chief Medical and Scientific Officer for the *Humanetics Corporation* and President and Medical Director of *Minnesota Applied Research Center*. He earned his medical degree at the University of Minnesota and completed a residency in internal medicine. He has practiced medicine since the early 1980s and is a popular national and international speaker on topics including anti-aging technologies, effectiveness of alternative medicine, and dietary supplement research and development. Dr. Zenk is the author of *Living Longer in the Boomer Age* and is a frequent contributor to national magazines, newsletters, and Web sites on the subject of nutraceutical research and integrative medicine. He has also acted as the principal investigator for fourteen controlled clinical studies, several of which have been published in peer-reviewed journals.

About Rik J. Deitsch Mr. Deitsch holds both a B.S. in chemistry and an M.S. in biochemistry from Florida Atlantic University. He conducted his Ph.D. Research for the Duke University Medical School Comprehensive Cancer Center. Currently, he is the Chairman of the Waiora Scientific Advisory Board, as well as Chairman of the Board and Chief Executive Officer for *Nutra Pharma Corporation*, a publicly traded biotechnology and pharmaceutical company dedicated to researching neurological disorders and viral diseases. Mr. Deitsch has authored several papers on rational drug design using computer simulations. He currently teaches at Florida Atlantic University's Continuing Education Department and College of Business. He also teaches CME courses internationally.

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# 1. When Does Aging Begin?

## 1.1. Introduction

Are you getting older?

Of course.

In fact, our global population is getting older at an unprecedented rate, with more people living well into their 80s, 90s and beyond than ever before. Consider these statistics (which, although gathered for the United States, lead a marked trend worldwide):

- People born at the beginning of the 21st century will have lifespans approximately 30 years longer than people born at the beginning of the 20th century.
- The population over 65 has increased tenfold since 1900.
- Today, nearly 13% of the population is 65+. By 2030, this figure is projected to grow to 20% of the population.
- The "over 85" age group is the fastest growing segment of the population. I

Clearly, you are getting older and you're surrounded by a world of people getting older. Bur are you aging? That's an entirely different question.

You can't control getting older. However, you must control aging if you want to enjoy a healthy, active, fulfilling life. The statistics show that as a society, we're living longer. Bur remember that a longer life doesn't necessarily mean a healthier life. Whether you are 20 now or 60 now, you can learn what causes aging, when it starts, and how to slow it down. This indispensable reference can help you get "Age Wise" today! Believe it or not, the "aging" process begins as early as your 20s, when sun damage starts taking root in your skin, causing tiny wrinkles, blotching, and spotting you may not see with the naked eye for another ten years. It's when vital hormones, including DHEA and growth hormones begin to decline (even though you may not see the effects until your 40s or 50s).

*Hormones do not decline because we age,*
*we age because hormones decline.*

Even memory and cognitive function begin to slip shortly after adolescence. Says Denise Park, director of the *Center for Aging and Cognition* at the University of Michigan Institute for Social Research: "Younger adults notice no losses at all, even though they are declining at the same rate as people in their 60s and 70s." By the time those people hit their 60s, the cognitive losses become noticeable.[2]

The message is clear: You must begin to take steps to slow the aging process long before you feel old. Growing older is inevitable, as time marches on equally for all of us -- 30-somethings and 60-

somethings alike. But with innovations in science, health, and nutrition, aging can be deterred so that you retain your youthful appearance, energy, and health.

If you're 30 and you feel great, now is the ideal time to safeguard your youth by understanding the causes of aging and working to eliminate them. If you're older-in your 40s, 50s, 60s or 70s and you've already started noticing some of the external signs of aging, or perhaps even the internal weakness of aging, it is not too late to recapture your youth. In fact, if you are already experiencing noticeable symptoms of aging, the time is critical-get educated, protect your future, and potentially even reverse key damage caused by aging so you stay young and healthy for many years to come.

## 1.2.Aging: The Impact on the World

The global population is becoming older, so aging issues are at the forefront. In the U.S. alone, the impact of the aging Baby Boomer population is causing an explosion in social and economic issues, including the availability and cost of health care, insurance issues, nutritional awareness, and more.

***Consider these findings published in the White House Conference on Aging:***

- *In 2000, there were 26 times as many Americans over age 85 as there were in 1900.*
- *That same year, there were almost 76,000 Americans aged 100 or older.*
- *More than one million Baby Boomers are expected to live to 100 years of age or 0lder.*[3]

The bottom line is that we're living longer-not just in the U.S., but around the world. And there is a larger population living these longer lives. That brings good news, but not without concern-longer lives don't necessarily mean *healthier* lives.

Currently, 75 million Americans are moving into their 50s and 60s. The *American Association of Retired Persons* (AARP), says they will have three concerns:

1. Security -- financial well-being
2. Health-day-to-day vitality and ability to be active and free from limitations
3. Quality of life-independence for the long term. [4]

## 1.3. Aging: The Impact on You

Now we'll pose a more important question: What does all this mean for *you*?

If you're already 50+, it means you may be planning for retirement and hoping you have the financial stability you need to live well into your 80s or 90s. You may be concerned about long-term medical coverage and health care; current government policy won't be able to cover the demand created by the explosion in the senior population. And frankly, even if you're 30, you can't escape the undeniable signs of aging you may be starting to see in your reflection, including:

- Wrinkles, age spots, and "laugh lines"
- Graying or thinning hair ·

- Loss of muscle tone and/or weight gain

In addition to these visible signs of aging, you may be feeling the effects of getting older, including:

- Stiffness in joints, or aching after simple physical activity
- Reduction in cardiovascular output, resulting in loss of stamina and increased fatigue · Forgetfulness, difficulty remembering names or appointments
- Lowered immunity, resulting in more colds and flu
- Reduced libido

Of all these signs, though, perhaps the most frightening component of aging is this: acceptance. Too many people -- of all ages-think these symptoms are normal and inevitable. They accept their body's decline and believe there is nothing they can do to hold on to their youth and vitality.

This means that millions of people are resigning themselves to decades of "golden years" that are filled with pain, sickness, dependence on prescription drugs, expensive health care, and loss of independence due to failing health. Regardless of your age, you must learn the truth now so you can take charge and enjoy senior years filled with activity, security, and the riches of robust health. The truth is simple: We will all grow older. But we can fight aging, the rate at which we age and age-related diseases if we start now. If you take active steps today, you can safeguard your health. You can live a fuller, longer life through preventive care and natural solutions. You can defy time. You can rediscover your youth.

### 1.4. Chronological Age Vs. Biological Age

"Act your age."

You've heard the cliche, but it takes on new meaning in a discussion of chronological vs. biological age. What is age, after all?

Chronologically, it's easy to define age: it's a simple addition problem involving days, months, and years. But pinning down biological age is more challenging. It involves calculating vitality vs. frailty, avoidance of disease and illness, youthful appearance, stamina, and many more criteria. Aging typically means increased weakness and susceptibility to injury and disease, negative external changes like weight gain or saggy skin or dull hair, and internal changes like slowed metabolism or organ failure.

***For generations, getting older has been synonymous with "aging." It's a logical association, when you consider the trends:***

- *From young adulthood to middle age, adults tend to lose 67 pounds of muscle every decade.*
- *Between age 20 and 70, adults lose almost 30% of total muscle mass.*

- *Basal metabolic rate tends to drop an average of 2% every 10 years starting at age 20, meaning that every decade a person burns 100 fewer calories daily.*[5]

*But it's a connection that's incorrect-chronological age and "aging" are not the same thing.*

Today, medical science understands that biological age is somewhat independent of chronological age. Biological age is also more important. Consider the conclusions of a 2002 Canadian study that reported: "In a Cox regression analysis, biological age was significantly more highly associated with death than chronological age." [6]

The exciting news is that there is plenty you can do to manage your biological age. It's influenced by a myriad of environmental factors that you can control, including diet, exercise, sleep, stress, and nutritional supplementation. For example, if you're under constant stress, you'll accelerate your biological age. If you exercise regularly and reduce your level of stress, you'll slow down the biological aging process. What you bring into your body is key: nourishing fresh foods, pure water, and essential nutrients all slow biological aging to keep you looking and feeling younger. Years of smoking, eating processed flour and sugar, fried snacks, drinking alcohol and soda, and other nutrient-raided foods speeds biological aging. As a result, aging shows up as wrinkles, sallow skin, brittle hair, excess weight, low energy, weakened muscles, and often sickness and disease.

Ever look at someone and think: "Look at her, she's only 35 but she looks 50." Or conversely, "I can't believe she's 60. She has the energy of a teenager!" It's because biological aging and chronological aging are two different things. What this means is that "acting your age" may be up to us, and not up to the clock.

### 1.5. What's Your Age . . . Really?

How can you know your biological age compared to your chronological age?

One way is with this simple test. The survey is subjective rather than scientific, but will still give you an excellent reflection of whether you are younger than your years or biologically older than the calendar dictates. Answer as truthfully as possible to yield the most accurate score.

## 1.6. Biological Age Questionnaire

### **Biological Age Questionnaire** (Ronald J. Grisanti)

**Section A**: **Your Chronological Age**
1. What is your current age in years?_____

Total section A:_____

**Section B: Your Dietary Choices**
2. How often do you eat fried, broiled, or barbecued foods?
Often! several times per day = 4
Once per day = 3
A few times per week = 2
Once per week = 1
Rarely to never = 0

3. How often do you consume nutritional oils (not heated or fried), i.e. flax seed oil?
Never = 2
Once per week = 1
Once per day = 0
Twice or more per day = -1

4. How many servings of fruits or vegetables do you consume?
None (rarely to never) = 2
One per week = 1
One per day = 0
Two or more per day = -1

5. How often do you consume whole grains and!or natural fiber? (i.e. whole wheat, psyllium, brown or wild rice)
Rarely to never = 3
Once per week = 2
A few times per week = 1
Daily = -2

6. How many 8-oz. glasses of pure water (not soda, juice, coffee, or alcohol) do you consume daily?
Zero=3
One = 2
Four = 1
Eight = 0
Ten or more = -2

7. How often do you consume sugar, soda, white flour, or other processed foods? (i.e. canned food, frozen dinners, fast food)
Daily = 3
More than 3 times per week = 2
Twice per week = 1
Almost never = -1

8. How many alcoholic drinks do you consume per week?
Twelve or more = 3
Eight = 2
Four = 1
Two = 0
Almost none = -1

9. How often do you add salt to your food?
Always = 3
Regularly = 2
A few times per week = 1
Once per month = 0
Almost never = -1

Total Section B: _____

**Section C: Dietary Supplementation**

10. Do you take a multivitamin?
Never = 2
Once per week = 1
A few times per week= 0
Daily = -1

11. Do you take antioxidant supplements? (i.e. grape seed extract, green tea, blueberry concentrate)
Never = 3
Once per week = 2
A few times per week = 0
Daily = -2

Total Section. C: _____

**Section D: Daily Activities**

12. Do you exercise (30 minutes or more of continuous activity)?
Rarely to never = 3
Once per week = 2
Three times per week = -2

Five or more times per week = -3

13. When you exercise, do you do so for more than two hours at a time? (If you do not exercise, please mark "almost never" as your answer)
Most times = 4
Half the time = 2
Almost never = 0

14. Do you sleep well and awake rested?
Almost never = 3
Sometimes = 2
Usually = 0
Always = -1

15. How often do you have,normal bowel movements?
Once per week = 4
Every four days = 3
Every two days = 2
Daily = 0
Two or more times per day = -2

Total Section D:_____

**Section E: Medical History**

16. Is there a history of the following conditions in your family:
cancer, diabetes, heart disease, depression, obesity, liver disease, high cholesterol or high blood pressure?
Two or more = 1
One = 0
None = -1

17. Have you ever had any of the following conditions: cancer, diabetes, heart disease, depression, obesity, liver disease, high cholesterol or high blood pressure?
Yes, two or more = 3
Yes, one = 2
No = -2

18. How frequently do you experience the following conditions:headache, fever, sore throat, muscle aches that are not exercise related, cold or flu, rash or swelling?
Daily = 3
Once per week = 2
Once per month = 1
Rarely to never = -2

19. Have you ever been exposed to heavy metals or toxic substances? (nail care products, chemicals, automotive fluids, paints, etc.)
Daily = 4
Once per week = 3
Once per month = 2
Rarely to never = 0

20. Have you ever been exposed to heavy metals via dental work or fillings?
Yes, three or more fillings = 4
Yes, two fillings = 3
Yes, one filling = 2
No = 0

Total Section E: _____

**Section F: Stress**

21. How many full meals do you eat per day? (not snacks)
Zero =3
Four or more per day = 2
Three per day = 0
Two per day = 1
One per day = 2

22. At work or home, how many hours are you in front of electronic equipment, including computers, TVs, cameras, and electrical wiring?
Eight hours or more = 3
Six hours = 2
A few hours per day = 1
Rarely to never = -1

23. How often are you exposed to cigarette smoke (direct or secondhand)?
All day = 4
A few times per day = 3
A few times per week = 1
Rarely to never = -1

24. Do you use recreational drugs?
Yes, two or more times per day = 4
Yes, once per day = 2
Yes, once per week = 2
Yes, once per month = 1
Never = 0

25. Do you drive in heavy traffic?

Yes, for a living = 3
Yes, daily (more than three hours) = 2
Yes, daily (less than two hours) = 1
Rarely to never = -1

26. At work and/or home, do you experience stress?
Yes, constant high stress = 4
Yes, fairly high stress = 3
Yes, moderate stress = 2
Yes, slight stress = 1
No or rarely = -2

Total Section F: _____

Now; calculate your biological age by totaling your scores from all sections: _____

**Section A**: Chronological Age _____
**Section B**: Dietary Choices _____
**Section C**: Dietary Supplementation _____
**Section D**: Daily Activities _____
**Section E**: Medical History _____
**Section F**: Stress _____

**Total (Your Biological Age)**: _____

Were you surprised by your score? Is your body telling you it's older than your birthdays indicate? Here's how to interpret your results:

**If your score is --11 (or more) lower than your chronological age:**
Your overall health is terrific, and you are making the right choices to protect your body and mind against the .ravages of aging.

**If your score is --1 to --10 lower than your chronological age:** Your general health is positive. Continue to focus on improving healthy habits to manage biological aging.

**If your score is the same as your chronological age:**
The "clock" and your body are in sync. But why be average when what you want is optimal health for years to come?

**If your score is 1 to 10 higher than your chronological age:** You should have some concern. Even though the discrepancy I between your actual age and your biological age may be slight today, it will continue to widen with time and continued. poor habits. Consider yourself at risk for future health problems. Begin effective lifestyle changes including diet, exercise, and supplementation.

**If your score is 11 to 20 higher than your chronological age:** So far, your health history is probably average,. so the discrepancy between your biological and chronological ages may have surprised you. But this gap is a strong, early warning sign that a decline-perhaps a rapid one-in vitality, mobility, and energy is coming. Although most Americans fall into this category, it's no reason for complacence. You have a moderate risk of serious health complications within the next five years unless you do something to slow your biological aging. Begin effective lifestyle changes including diet, exercise, and supplementation.

**If your score is 21 or higher than your chronological age:**
You are at the highest risk of developing age-related illnesses, diseases, and weakness-regardless of your actual age. If you haven't already started to notice marked degeneration in your health, it is highly likely that you will see problems emerge soon. You must take dramatic, committed action at once to reverse or slow the aging process. Immediately begin changes to your diet, increase exercise, and begin a program of nutritional supplementation.

### 1.7. The Two Villains of Aging

Before you can slow the aging process, you must know what causes it.

Today, medical science recognizes two main culprits of aging:

1. Oxidative stress
2. Declining levels of vital biological elements

The good news is these two factors are controllable, thanks to specific research that has yielded important news about nutrition, supplementation, and lifestyle. First, let's look at each more closely.

### 1.8. The Battle Against Oxidative Stress

"Oxidative stress" is a term for aging associated with cellular damage caused by free radicals. In simple terms, a free radical is an unstable atom in search of an electron. As free radicals move throughout the body, they damage the cells they contact, causing inflammation, spurring abnormal cell growth, or inciting disease in tissues and organs.

When you're young, your immune and repair systems spring into action to fend off most free radicals, so the negative effects are minor. But as time wears on and your vital organs and immune system become more susceptible, free radicals take their toll-causing wrinkles and age spots on the outside; and cancer, diabetes, and even Alzheimer's disease on the inside.

> *Oxygen free radicals and antioxidants were a novel aspect of illness and its prevention to most nurses 15 years ago. But numerous exposes in the mainstream media in recent years. . . have turned free radicals and antioxidants into household words.*
>
> *Merrily A. Kuhn, Ph.D., R.N.*

There is little you can do to stop free radical production, as 1-3% of the oxygen we breathe generates free radicals -- oxygen is actually a toxic byproduct of the metabolism of lower cell organisms, and our bodies use it to produce energy. [8] Add an environment full of pollutants (like household chemicals, cleaning products, industrial waste, even cigarettes, which can generate a quadrillion free radicals each when smoked), and it's easy to see how free radicals can run rampant to destroy your health and rob you of your youth.

The good news is that there is a powerful, natural remedy that fights free radical damage-antioxidants. Antioxidants are plentiful in nature, in foods and essential nutrients you should enjoy in abundance daily, including cherries, blueberries, selenium, vitamins C and A and many more.

Many foods have been tested and assigned an "ORAC" (*Oxygen Radical Absorbance Capacity*) value to measure their effectiveness at fighting free radicals, as well as the longevity of the antioxidant in your body. The higher the value, the better an antioxidant the food is. For example, an orange scores a decent ORAC value of aboUt 1,000. Blueberries can pack a powerful ORAC value of 2,400.

The challenge is getting sufficient antioxidants, and frankly, it's tough to do with diet alone. The U.S. recommended daily allowance (RDA) of fruits and vegetables is a five-serving minimum per day -- but the National Research Council notes that the average person eats only one serving per day. That's why adding supplements with tested high ORAC values can be one of the most effective and easiest methods of fighting oxidative stress -- and slowing biological aging. Look for a quality supplement that can deliver the ORAC value of up to 10 fruit/vegetable servings, and you'll see immediate and long-term benefits of antioxidants. Supplementation is also important because many fruits and vegetables with naturally high ORAC values have been robbed of their antioxidant powers through premature harvesting, heavy pesticide use, and/or nutrient-depleted soil. It's a problem commonly called the "empty harvest" -- although fruits and vegetables may appear robust and fresh, modern farming techniques may have stolen their greatest value. For example, oranges have been randomly selected and tested, and found to contain no vitamin C at all, due to the forced conditions under which the crop was grown.

Once foods are processed, they lose additional antioxidant value. Cooking depletes nutrients, and so does the removal of certain parts of the produce, like its skin or stalk. Supplementation is key to getting the antioxidant strength your body needs.

And remember, antioxidants can also boost immunity, fight inflammation related to age-associated arthritis, and protect vital organs to help you live not only longer but much healthier-physically, mentally, and emotionally. We'll discuss the role of specific antioxidants and essential nutrients later in this book.

### 1.9. The Fight To Maintain Vital Biological Elements

The second aging villain is declining levels of vital biological elements. Simply put, this means that you no longer produce enough of the hormones and other key elements that sustain organ function and maintain youthful appearance. As hormone production drops, your internal organs, including

your pituitary gland, kidneys and liver, shrink. Your bones become more porous and frail. You feel tired more frequently. Your metabolism slows so you gain weight easily and it's difficult to shed. Your appearance loses its youthful vitality, first with blotchy or sallow skin, then with graying hair, and ultimately wrinkles and age spots.

For example, one of these declining vital biological elements is DHEA (*dehydroepiandrosterone*), a naturally occurring hormone in both men and women. Studies have shown a correlation in declining DHEA and osteoporosis, depression, loss of libido, weight gain, and other "aging" symptoms. In response, many are rushing to purchase DHEA and other hormone replacements as the answer to their fading youth. However, hormone replacement therapy (commonly called "HRT") has yielded a spate of controversy. While it appears to have some short term benefits, including reducing the negative symptoms of menopause in women, and alleviating erectile dysfunction in men, its long-term impact is uncertain. Numerous studies have linked HRT to cancer and other serious diseases and ailments associated with aging.

What, then, is the right course of action?

First, it's important to understand that DHEA and other hormones do drop in production as you age. And staying youthful means restoring the balance they provide. But you can't simply "replace" them with synthetic equivalents that your body may treat as foreign substances or convert into sex hormones only.

Instead, you should look to natural alternatives that have been proven both safe and effective in restoring this important hormonal balance. People are turning to natural derivatives of DHEA, and one leading alternative is 3-BETA (*3B-acetoxyandrost-S-ene-7, 17 dione*). 3BETA is a patented, clinically proven, natural metabolite of DHEA providing the benefits of DHEA supplementation without any of the negative effects.

The news about 3-BETA is exciting. We'll further discuss biological element maintenance and 3-BETA's role later in this book, along with more information about fighting oxidative stress through antioxidants. You'll learn specific ways to improve your balance-and your health-through simple, natural options.

But first, let's take a closer look at aging and what's *really* happening inside your body.

# 2. HOW DOES AGING AFFECT YOU?

### 2 1. Introduction

Regardless of your chronological age, you may have already started noticing some of the effects of aging -- whether those are small aches and pains, little laugh lines that aren't so funny, or a widening waistline despite unchanged eating habits. Although these symptoms may seem insignificant, cumulatively they can signal serious deterioration in your health, well-being, and appearance. In essence, what you see on the outside is only a minute manifestation of the changes

happening inside. And if you are already battling issues like hypertension, diabetes, or heart disease, the consequences of aging will be more pronounced. Specifically, the two villains of aging -- oxidative stress and declining vital biological elements -- attack your nine body systems in very specific ways. Are you aware of how aging may already be affecting your health?

## 2.2. Aging and Your Cardiovascular System

Perhaps the most significant impact aging can have is on your heart. With more than 68 million Americans currently diagnosed with heart disease, and diagnoses occurring more frequently in younger and younger patients, it's clear we must slow the aging process to protect heart health.

***Aging and Your Cardiovascular System:***
***What You May Notice***

- *Less stamina for activities, becoming easily winded or tired*
- *Drop in maximal exercising heart rate*
- *Shortness of breath, occasional nausea, chest/arm pain -- may indicate that serious heart problems, are already present ·*
- *Arrhythmia (irregular heart beat)*
- *Hypertension (high blood pressure)*

The average healthy child can achieve a maximal heart rate of approximately 220 beats per minute. But this declines with age, dropping to an average of about 160 beats per minute for a 60-year-old male. As maximal heart rate declines, so too does your maximal oxygen consumption -- declining at an average rate of 10% every decade after age 25.9 What this means is that an aging heart and lungs are less efficient at pumping blood and oxygen to organs and tissues. This loss limits your capacity for strenuous exercise and other activities, so you find yourself quickly tired or winded.

The fatigue or loss of stamina you're noticing is common. But it isn't normal, and may signal the onset of cardiovascular disease -- especially when accompanied by other symptoms, including shortness of breath, occasional dizziness, nausea, or chest/neck/arm pain, all of which may indicate a heart attack. Don't ignore these often subtle symptoms or assume they are indigestion, stress, or just indicators of "getting old."

> *The* American Heart Association *reports that cardiovascular disease accounts for 950,000 deaths each year. This means that every 33 seconds, an American dies of heart disease. Heart disease is the No. 1 killer of men and women in the US., and it is rising on the list of global killers as diet and exercise worsen around the world.*

In fact, consider this sobering news: *American Journal of Critical Care* reports that "50% of all patients with coronary artery disease do not have any of the traditional risk factors. In fact, 50% of all individuals 50 years or younger who die from heart disease succumb without any established signs of heart disease." [10] Your heart may be "aging" and you may not even know it -- even if you're younger than 50!

Or perhaps you've already been diagnosed with hypertension, a leading risk factor for stroke (the No.3 killer in the US). High blood pressure is a common ailment induced by aging, and many think a simple prescription solves the problem. It doesn't. Prescription medication only manages the problem, suppressing its symptoms. Drugs are a temporary fix, and if you ever cease or change your regimen, your blood pressure will rise again to potentially artery and heart-damaging consequences. Besides, who wants to be a lifelong slave to expensive medications that may have side effects and/or drug interaction risks?

Maintaining heart health starts by understanding the causes and recognizing the symptoms of poor heart health.

### *Aging and Your Cardiovascular System: What May Be Happening Inside*

- *Stiffening of the arteries, which increases systolic blood pressure*
- *Atherosclerosis, or the buildup of fats along the arterial wall, limiting oxygenated blood flow; If an, occlusion (blockage) occurs, a heart attack can result*
- *Thickening of the left ventricular wall in the heart, forcing the heart to labor harder*

Most of the heart problems listed above are caused by "aging," but the aging is often caused by chronic inflammation, or swelling. Inflammation, though the body's natural defense mechanism against disease, can also weaken body systems when chronic. For example, years of eating too much sugar, refined white flour, fatty animal foods and fried snacks causes serious oxidation damage and free radical growth. Oxidation stresses tissues and damages organs, causing inflammation. Your heart has to work harder to fight off its enemies-poor diet, smoking, oxidative stress-and as a result, it may become enlarged.

One of the recent discoveries regarding inflammation and heart disease is that C-reactive protein, an inflammatory marker, is often present -- and in high quantities -- in patients who develop heart disease. This means that now, doctors can conduct a blood test to measure C-reactive protein levels. If the levels are high, it's an accurate warning that heart disease is on its way, even if you have no other symptoms. C-reactive proteins indicate that inflammation is becoming a problem, stressing and enlarging the heart.

In time, this enlargement weakens the heart muscle and makes it less able to heal itself. Fatty deposits (plaque) will build up, increasing your risk of a sudden, severe, even fatal heart attack or stroke. As plaque builds, the arteries become stiffer and lose resilience. Overall cardiovascular efficiency drops.

You may feel like exercising less as your stamina and capacity shrink, but that will only compound the problem. It's a vicious cycle, one that can only be broken by increased activity and improved nutrition. With the right help, you can fight inflammation and the damage of oxidative stress to prevent further heart muscle damage-and potentially even reverse it,. regardless of your chronological age!

Early studies indicate that *Bioactive Hyperimmune Milk Protein Concentrate* is an effective general inflammation fighter, which will help protect your heart. Even more importantly, the concentrate actively reduces C-reactive protein levels in your blood. By keeping these levels in check, you are on your way to staving off heart disease forever. You also need to watch your diet. Eating heart healthy starts with including a number of "heart smart" nutrients in your diet and a supplementation plan, specifically, *L-arginine, hawthorne*, and *resveratrol*.

*L-arginine* is a building block for nitric oxide, which relaxes smooth muscle and expands blood vessels to improve blood flow. Managed blood flow has been shown to reduce arterial plaque buildup as well as keeping your blood pressure stable. Similarly, *hawthorne berry powder*, which is high in flavonoids, improves the strength of the arterial wall. The powder has shown promise in the treatment of congestive heart failure, as well as the ability to improve blood lipid (fat) levels.

Finally, *resveratrol* is a potent antioxidant at the center of the "French paradox," so named for the low incidence of heart disease among the French despite a diet high in carbohydrates and fat. Researchers believe that resveratrol, found abundantly in the skins of red grapes used to make French wine, works to strengthen the heart muscle.

These three ingredients, L-arginine, hawthorne and resveratrol, together are a powerful triumvirate in the fight against heart disease and are a trio no heart healthy regimen should be without.

### 1.3. Aging and Your Metabolic System

They say that life begins after 40. That's good news. The bad news is that for many, weight gain begins after 40, too.

***Aging and Your Metabolism System: I***
***What You May Notice***

- *Maintaining your weight is more difficult -- the same exercise regimen/diet no longer produces the same results.*
- *Men begin gaining excess weight around the abdomen, Women around hips and thighs (an average off 1 lb. per year after age 25)*
- *Increase in the number of infections*
- *Loss of strength*
- *Muscles seem to be "turning to flab"*

Metabolic symptoms of aging are caused by two related factors: a dropping metabolic rate (the rate at which your body turns calories into energy) and increased body fat. Fat burns fewer calories than muscle, so as lean muscle mass is replaced with fat, you'll require fewer calories. Even eating the same calorie count over the years can result in increased weight. For example, a 130-lb. woman with a body mass index of 19 will burn more calories, even at rest, than a 130-lb. woman with a body mass index of 25. As metabolic rate declines, you'll also become increasingly susceptible to a variety of ailments, including colds, flu, and complications from infections.

***Aging and Your Metabolic System:***
***What May Be Happening Inside***

- *Rising, uncontrolled blood glucose, which can lead to insulin resistance and type II diabetes*
- *Fat cell expansion Inflammation of cells and organs, further slowing calorie burning*
- *Loss of lean muscle tissue (further worsened by low/no exercise)*

And if you gain significant weight, particularly in a short amount of time, you're at serious risk from *Syndrome X*, also called "Metabolic Syndrome."The American Heart Association now estimates that 20-25% of American adults suffer from the disease, [11] which is characterized by abdomen-centric obesity, high cholesterol and blood pressure, and high fasting blood sugar. This rampant condition, which is exacerbated by an aging metabolism, is at the heart of risk for cardiovascular disease, hypertension, diabetes, and stroke.

Your *resting metabolic rate* (RMR) represents about 60% of your total calories burned, on average. The thermic effect of food accounts for another 10%, and the remaining 30% of calories is typically burned through activity. Your lean muscle mass represents your metabolically active tissue, and it's the major determinant of RMR. As your lean muscle mass declines, so will your RMR. The challenge to aging adults is two-fold: maintain lean muscle mass while also boosting RMR.

In addition to being vigilant about diet and exercise, there is a powerful supplement you can take to bolster your metabolism and help you stay slim as you age-3-BETA. This natural derivative of DHEA provides the benefits of DHEA supplementation without any of the drawbacks, and one of its strongest benefits is as a metabolism enhancer. Regular 3-BETA supplementation will give you more energy so that you'll burn more calories through activity. And it will also raise your resting metabolism so that every pound of tissue will burn more calories -- even at rest.

In fact, the results of a recently completed study reveal that administration of 3-BETA to overweight adults in conjunction with a calorie restricted diet will effectively reverse the decline in resting metabolic rate normally associated with pre-dieting. When administered with a calorie restricted diet, 3-BETA demonstrated an ability to significantly increase RMR by 1.4% above baseline levels. Subjects in the study on a calorie restricted diet alone, had a 4% decline in RMR from their pre-diet levels. Since it is well known that your metabolism drops when you diet, the increase in RMR provided by 3-BETA offers dieter's a distinct advantage toward achieving and maintaining their weight loss goals. Even though these percentages seem small, they can have a real impact over time, helping you shed pounds and maintain energy while eating a sensible diet.

## 2.4. Aging and Your Bones and Joints

It's one of the first signs of aging: you aren't as flexible as you used to be. Running up the stairs makes your hips pop. Bending over causes your back to pinch. And touching your toes is like reaching for the stars.

***Aging and Your Bones and Joints:***
***What You May Notice***

- *Pain or aching after simple exercise, or even after sitting/sleeping*
- *Swelling in joints*
- *Difficulty doing fine motor skill activities (sewing, writing, typing, etc.)*
- *Decreased range of flexibility, stiffness*

In your youth, you may have struggled with joint aches and pains but likely as a result of illness or injury. As you age, it may seem that bone and joint stiffness are chronic. For most people, osteoarthritis (the most common form of arthritis) is a result of years of "wear and tear" on the cartilage that surrounds a joint. Time, trauma, years of improper alignment and weight gain can all take a toll on cartilage, causing it to tear, fray, and deteriorate.

> *By age 65, half the population has X-ray evidence of osteoarthritis in at least one joint, most often the hips, knees, or fingers.*
>
> *-National Institutes of Health*

And arthritis is only one threat your bones and joints face. A second is osteoporosis, the epidemic brittle-bone disease. *The National Osteoporosis Foundation* reports that osteoporosis is responsible for a bone fracture every 20 seconds and 71 % of women who have the disease have not been diagnosed -- leaving them at even higher risk for fractures. And it isn't just women who are at risk. One in two women and one in eight men over age 50 will have an osteoporotic fracture during their lifetime. [12]

***Aging and Your Bones and Joints:***
***What May Be Happening Inside***

- *Arthritis, a degenerative condition that may cause pain, swelling, deformation and disability ·*
- *Osteoporosis, or loss of bone density. Essential calcium and other nutrients may be leached from bones, making them more susceptible to fracture and even collapse*

It isn't realistic to try to live your life in a box-protected from "wear and tear" that damages cartilage or that exposes bones to injury. The years will exact some price on your bones and joints. Other factors can include a poor diet low in calcium and protein, weight gain or years of dieting, and inactivity or extreme activity. But arthritis and osteoporosis aren't inevitable. They can be managed, even improved with essential nutrients that restore flexibility to joints and help bones

retain bone-building calcium. Arthritis and osteoporosis don't just herald aging, they signal skeletal failure. That's a devastating situation that can lead to pain, disability, and loss of independence.

One of the smartest, most effective combatants against weakening joints and bones is *Bioactive Hyperimmune Milk Protein Concentrate*. Two independently conducted clinical trials have confirmed that it works to improve joint function in a short period of use with a side effect profile that was no different from placebo. In addition, when compared to glucosamine, Bioactive Hyperimmune Milk Protein Concentrate was found to have a treatment effect that was 60% greater than glucosamine for improvement in overall joint function. Bioactive Hyperimmune Milk Protein Concentrate works by supporting the body's natural anti-inflammatory system, allowing faster relief of symptoms. This remarkable supplement offers a new and unique treatment option for the increasing number of people suffering from the debilitating conditions of arthritis, osteoporosis, and joint pain.

## 2.5. Aging and Your Immune System

What's happening? It seems that if anyone around you has a cold or the flu, you're bound to get it. Your immune system may be trying to tell you something. Lowered immunity is one of the first, and often most subtle, signs of aging. As you age, your body's innate response to infection slows. For example, a fever is a key defense in fighting infection. The raised temperature of a fever, although uncomfortable, is essential to killing cells associated with illness and infection. But studies show that 20% of people over 65 with serious bacterial infections never produce a fever-allowing the infection to rage unchecked. [13] Why doesn't the body respond as it should?

***Aging and Your Immune System:***
***What You May Notice***

- *More sicknesses, including colds and flu*
- *Ailments are more persistent; illness is more intense and you take longer to recover*
- *Warning signs evident for degenerative diseases, including osteoporosis, cancer, heart disease, arthritis, diabetes, etc.*

There are a number of issues at work. A key culprit is declining vital biological elements, specifically hormone production. As you age, your thymus becomes nearly dormant, ceasing production of essential hormones that kept you young and drove the changes associated with puberty. Growth hormone and melatonin also decline, causing a slip in immunity as well as loss of skin vitality and healing capability. Weakened skin is also easier for bacteria to penetrate, making you sick more often.

> *The thymus, one of the organs of the immune system, is the site where certain immune cells called T lymphocytes or T cells mature. The thymus begins to shrink (atrophy) after adolescence. By middle age it is only about 15% of its maximum size.*
>
> *- National Institutes of Health*

And while these hormones are dropping, odds are you'll produce higher levels of *prostaglandins* as you age. Prostaglandins are hormone-like substances that have significant impact on body processes including body temperature and metabolism; [14] specifically, they can suppress fevers and slow metabolism, causing both illness and weight gain. And the illnesses and infections aren't just more frequent, they're more severe and protracted.

Throughout your life, your immune system carefully detects the difference betWeen healthy cells and foreign matter, including: fungi, bacteria, viruses, and cancerous cells. It attacks these foreign substances, often before you see any symptoms. But as you age, your body can become less tolerant of its own cells. Sometimes an autoimmune disorder develops: normal tissue is mistaken for non-self tissue, and immune cells attack certain organs or tissues. The immune system becomes less able to detect malignant cells, and cancer risk also increases with age. [15]

***Aging and Your Immune System:***
***What May Be Happening Inside***

- *Dropping DHEA levels cause immunity to waiver -- increasing susceptibility to a wide variety of ailments, potentially even heart disease and cancer* [16].
- *Increased inflammation*
- *Decline in T and B cells and/or a change in their effectiveness at fighting disease*
- *Risk of accumulation of cellular and DNA mutations that can cause cancer, Alzheimer's disease, and other diseases*

Ultimately, we can't overlook what dropping DHEA levels do to your body. Without sustaining levels of this key hormone, your body's delicate balance tips off-kilter. But as noted earlier, simply taking a synthetic DHEA supplement may not be effective.

Instead, boosting your immunity depends on a mix of essential nutrients that can be found in nature: antioxidant rich raw foods, herbs known for their healing and restorative properties, and 3-BETA, a proprietary, proven metabolite of DHEA without any hormonal side effects.

You also need to know about the power of two other immunity boosters: *agaricus blazei* and *inulin*. The agaricus is a specific species of mushroom rich in beta glucans that stimulate your immune system's production of cells-specifically, macrophages, interferon, T cells and "natural killer" cells that fight off tumors and other diseases. In fact, when human subjects were given agaricus blazei supplements, their natural killer cell levels increased 3000% in only two to four days. It's also a powerful antiviral agent and can protect your tissues from entering viruses.

This mushroom supplement is helpful for anyone concerned about aging, but it is exceptionally critical for those with compromised immune systems, including those who have had cancer, skin rashes or sensitivity, allergies; those with chronic diseases such as diabetes or fibromyalgia; and people exposed to radiation.

The other key supplement is inulin, a water-soluble polysaccharide known to have powerful immunity and anti-inflammatory benefits. For example, the herb Echinacea, one of the most

popular herbal remedies for colds, flu, and other illnesses, contains about 6% inulin. Additional research on inulin as an anti-tumor agent is also promising.

Boosting your immunity may seem complex, but it's so important because of its connection to all the other body systems. Immunity strength starts with supplementation (particularly a safe alternative to DHEA hormone supplementation). Add in plenty of water, rest, exercise, and an optimistic outlook, and you can stop the clock's war against your immune system.

### 1.6. Aging and Your Brain

You can remember twenty years ago like it was yesterday. Yesterday, however, is another matter. You may chalk it up to stress, distraction, or pure irrelevance, but the truth is, you may be concerned about your mental acuity. What if you're losing your edge?

Many of us would rather admit to diabetes, or discuss weight gain, or show our age spots than discuss our mental health. If that describes you, you're not alone. And you don't have to be 60+ to worry about losing your mental sharpness. The challenges of work overload, high stress, too little sleep -- even in your 20s and 30s -- can produce confusion, memory loss, and that frustrating "What did I come in this room to get?" - type scenario.

***Aging and Your Brain:***
***What You May Notice***

- *Forgetfulness-you can't remember where you put something; you forget a name or an appointment*
- *You drift off or daydream frequently*
- *You feel confused or lost*
- *It takes longer to learn new things*
- *It's increasingly difficult to stay on task or create/follow a logical plan*

To most people, nothing is more important than their personality, wit, intelligence, and of course, their memories. The risk of losing key brain function is a devastating prospect. And while forgetting happens to everyone, young and old, loss of cognitive function is not normal, but tends to target the aging. Cognitive function includes reasoning, logic, attention, imagination, abstract thinking, even the ability to appreciate beauty. [17]

It's terrifying to think that losing these essential attributes could happen to you. More alarming, perhaps, is the knowledge that some of the negative behaviors you engage in today-poor eating, insufficient sleeping, overworking, lack of exercising (both physical and mental)can have a dramatic impact ten, twenty, or thirty years from now.

For too long, we've had a "fix it" approach to dealing with aging brain function. We tend to deal with symptoms as they arise. But what we know about the brain's connection to all the other body systems proves that diet, exercise, and specific nutrients can defer or altogether deter loss of cognitive function. We must shift from treating symptoms to preventing the problems altogether.

Protecting yourself from cognitive function and memory loss is a multi-step process, but an important one. And no matter your current age, you can begin to take steps now to improve your mental health. First, understand the role diet plays in brain function. A recent landmark study showed that people with high cholesterol (LDL, commonly referred to as "bad" cholesterol, not HDL, the "good" cholesterol), high fat diets, and high blood pressure were up to 2 times as likely to develop dementia as their counterparts. [18]

At a recent Conference on Alzheimer's Disease and Related Disorders, physicians shared growing evidence that the brain is largely dependent on other body systems. Heart disease, obesity, and diabetes now appear connected to' the development of age-related cognitive disorders. One srudy showed that women with high levels (between 60-75) of HDL have a 50% reduction in the risk of Alzheimer's disease.19 And cholesterol is a tricky factor to monitor. That's because "total cholesterol" can be a misleading indicator, as it includes both "good" and "bad" cholesterol figures. An acceptable cholesterol level is between 180-200 for total cholesterol -- but if HDL comprises a significant portion of that total, your risk may be higher than you think. A much better predictor of risk is your total cholesterol number divided by your HDL number. Keeping this number low (at or below 2.5) is a stronger indication that your risk of cholesterol-related disease is managed more so than total cholesterol alone.

> *"Overweight people often suffer from a host of health problems, such as clogged arteries and high blood pressure. Those risk factors for heart disease might set the stage for the development of Alzheimers. This is a huge public health problem. "*
>
> *-Hugh Hendrie Indiana University School of Medicine.*
> *quoted in USA Today, July 21,2004*

> *Up to 16 million Americans may have Alzheimers by 2050. Currently, 4.5 million Americans suffer from the disease.*
>
> *-USA Today, July 21,2004*

The news is powerful: all your body systems are connected. Whatever you feed your body feeds your brain. In addition to reducing saturated fats in your diet and lowering your LDL cholesterol, you also need to increase your intake of vitamins and minerals.

As a solid foundation, we know that the antioxidant vitamins E, C, and the B-complex are connected to long-term brain health. In a five year study, nearly 5,000 participants were provided high-dose supplements of vitamins E and C (1,000 IU, 500 mg and 1,000 mg, respectively). At the conclusion of the study, researchers determined that participants had a 78% risk reduction for Alzheimer's disease. Vitamin E has also been linked to stopping brain cell damage due to inflammation and/or oxidation. [21] And, as we've already noted, inflammation is at the root of nearly every age-related dysfunction, from cognitive loss to heart disease, cancer, and diabetes.

***Aging and Your Brain:***
***What May Be Happening Inside***

- *"Cell-to-cell" communication is hampered by nerve cell dysfunction*
- *Brain neurotransmitter production drops as brain cell count declines*
- *Extensive cell death in the hippocampus region of the brain, a known root of dementia (including Alzheimer's disease), which is not considered "normal" aging despite its prevalence*

Thiamine (a B vitamin) is also essential because it helps produce the hydrochloric acid our stomachs use to break down the nutrients in our food. We already know that acid production drops as we age, making it more difficult for food to provide needed nourishment. Nutrient deprivation causes a host of immediate gastrointestinal and metabolic problems, but it can cause brain function loss as well. Supplementing B vitamins can help boost our hydrochloric acid production, improving digestion and nourishment, thereby improving long-term brain function.

*Cat's claw*, too, is important. Like the B vitamins, cat's claw yields cognitive benefits via the "brain-gut connection." The herb supports the growth of probiotics that help manage normal digestion and treat tough ailments like Crohn's disease. All cells communicate with one another, ultimately. If you have chronic intestinal ailments, you must know that it can ultimately affect your cognitive function. Cat's claw and B vitamin supplementation will keep both body systems balanced and healthy. Remember, your brain cannot function without the same basic nutrients the rest of your body demands.

Another brain-booster is *vinpocetine*. Vinpocetine, an herbal alkaloid, dilates blood vessels, enhances circulation in the brain, and improves oxygen utilization. Vinpocetine levels peak in the bloodstream within an hour and a half after ingestion, working quickly to cross the blood-brain barrier to improve circulation. Studies indicate a strong improvement in memory and lessened dementia with the herb.

Finally, a great way to safeguard your mind is by staying sharp: read, learn, and invest in new opportunities for study and growth. People who work to develop their mental abilities tend to hang on to their acuity. Mental and physical activity, coupled with a strong supplementation plan -- beginning today, will help you protect your mind for decades to come.

## 2.7. Aging and Your Skin

Nothing betrays your age -- real or biological -- to the world quite like your skin. Wrinkles, blotchiness and age spots speak louder than any concealer. Truth be told, the effects of aging start showing up in your skin as early as your 20s, but you may nor know how to recognize them. Aging starts as dryness in skin, freckling from sun exposure, or simply slower healing from a sore or wound. What at first only shows up under ultraviolet light (in a person's teens, 20s, or 30s) will become readily apparent to the naked eye by age 40. The challenge is to stop what you can't see before you can see it.

***Aging and Your Skin:***
***What You May Notice***

- *Sagging*
- *Blotches, freckles, moles*
- *Dryness Slow healing; more pronounced scarring*
- *Wrinkles*

Don't just chalk up loss of skin beauty to stress or fatigue. Recapturing youthful skin requires action. The first thing you should be doing is moisturizing, every day. Select a quality moisturizer with a sunscreen. Even if you work in an office or stay indoors all day, the SPF will guard your delicate facial skin from environmental damage like smoke, haze, wind, dust, and pollen.

Exfoliating is another important step to youthful skin. Exfoliating means removing the dry, dead skin, called "cornified cells" of the epidermis to reveal the new skin cells beneath. If you don't regularly scrub these cells away, your skin will look dry, flaky, and old (even with a moisturizer). We recommend regular exfoliation with a quality cleanser, up to two times per week.

***Aging and Your Skin:***
***What May Be Happening Inside*** [22]

- *Lost skin firmness due to loss of collagen and elastin (declining vital biological elements)*
- *Poor hydration; organs don't have enough pure water to keep skin soft*
- *Inflammation due to years of sun/weather exposure withour proper protection*
- *Lowered immunity*

Next, remember that your skin is the largest organ in your body. And while all body systems need hydration to flourish, it's most true of your skin -- not only is it your largest organ, it's constantly exposed to the harshness of moisture-depleting elements. Combat dehydration with plenty of pure water, at least eight glasses per day. Not only will water refresh and hydrate skin, tissues, and other organs, water will help flush away impurities that can accumulate in your system. And "fluids" aren't synonymous with water -- juices, coffee, and soda don't count. In fact, in many instances the caffeine, sugar, and/or carbonation in these beverages do more damage than drinking nothing at all.

They may act as a diuretic, pulling water from your body, or worse: leaching calcium and other nutrients from your bones and leaving them more brittle.

As we age, our new skin cells tend to develop much differently than when we were young. They also dry and die more quickly with fewer new skin cells ready to replace the old ones. One of the best combatants to this problem is retinol, a pure form of vitamin A clinically proven to stimulate collagen and elastin production. What this means is that using a quality retinol treatment can help your skin produce higher volumes of healthier, plumper skin cells that resemble skin cells of your youth. Your skin will look softer and smoother, existing lines will fade, and your pores will shrink and become less noticeable.

## 2.8. Aging and Your Endocrine System

Your endocrine system refers to the glands working inside you to regulate the production of hormones and other secretions by the pituitary, pancreas, adrenals, thyroid, ovaries/testes, and parathyroid. Because all of these glands are working quietly on the inside, you may not associate outward aging changes you see with a decline in your endocrine system.

***Aging and Your Endocrine System:***
***What You May Notice***

- *Frequent exhaustion*
- *Higher susceptibility to infections*
- *Weakened connective tissue in joints*
- *Inexplicable weight gain*
- *Onset of type 2 diabetes (formerly called "adult onset")*

Each of the glands/organs in your endocrine system produces vital biological elements that keep your body perfectly balanced, healthy, and youthful. When one of these organs begins to over -- or under -- produce due to aging, that balance is toppled, and typically sets off a chain reaction. For example, as the pituitary (the master gland for regulating energy and growth) begins to waiver, it sends strong signals to the other glands to alter their production. You feel more tired, and that exhaustion is only exacerbated when the thyroid responds by slowing down. This will slow your metabolism, which can lead to weight gain and overproduction of insulin, causing stress on both your pancreas and adrenals. In short, the entire system is connected and interdependent. Simply taking thyroid medication or estrogen replacement will not safeguard your entire endocrine system -- and may in fact further worsen your balance.

> *While it may be true that the endocrine glands are getting old and will not put out as much hormone as needed to keep the rest of the body young, that does not mean we should lie down and learn to live with it. If we can rejuvenate or supplement the endocrine glands, and if that rejuvenation or supplementation is safe and creates an enhanced experience of health and well-being, as well as increased longevity, why shouldn't we do it? While it is true that our ancestors had to live with degeneration of the endocrine system, it does not necessarily follow that we should retrace their footsteps.*
>
> *-Dr. Ron Kennedy*

Type 2 diabetes is one of the most common ailments of an aging endocrine system. In fact, more than 18 million people suffer from diabetes, and nearly one-third don't know it yet. That's because often the symptoms of diabetes-excessive thirst, a change in weight, increased urination, and fatigue-are often confused with simply getting older. In reality, diabetes is the result of insulin resistance and/or an exhausted pancreas.

Here's how it works: When you eat, your body breaks down food components into glucose, blood sugar that your cells accept and transform into the energy of life. Insulin is the key that "unlocks" the cell so the glucose can enter it, and it is produced by the pancreas. However, diets high in simple carbohydrates, like processed flour, starches, and sugar will spike insulin production every time you eat, causing a surge in blood sugar and a strain on the pancreas.

**The Blood Sugar-Insulin Roller Coaster and Diabetes**

Over time, this constant roller coaster of insulin production to balance a carbohydrate rush can do two things:

1. The cells will become insulin resistant-meaning that they no longer accept glucose to transform into energy. Instead, the sugar remains in the blood where it can soar to

dangerously high levels, causing prolonged inflammation, organ and tissue damage, blindness, and circulatory deprivation so severe it can require limb amputation.

2. The pancreas ceases to produce insulin-fatigued from years of peaks and valleys, the pancreas produces less or no insulin which allows blood sugar to rise unchecked. Unless the pancreas can be supported to restart normal insulin production, the patient becomes dependent on daily insulin injections.

A smart way to fortify your adrenal system is to reduce simple carbohydrates, particularly sugar. But another, often overlooked, supplement is fiber. Fiber is miraculous because it provides so many benefits: it improves regularity, it helps pull toxins from fecal matter to prevent reabsorption in the body, and it provides energy and fullness without high calories or fat. Fiber is especially helpful in supporting pancreatic health because it regulates blood sugar. Specifically, when you eat sufficient fiber, that fiber slows sugar's "hit" on the system. Instead of causing your blood sugar to spike after a high-carb meal, fiber will buffer the carbohydrates, keeping blood sugar stable. As a consequence, you'll feel full after a meal without the intense energy rush and exhausting drop typical with heavy carbohydrate consumption.

Internally, your pancreas won't have to hurry to produce large quantities of insulin to compensate for the sugar. You can avoid the "blood sugar-insulin roller coaster" altogether! You'll support your endocrine system, and perhaps even back away from the edge of type 2 diabetes, simply by adding fiber to your diet.

***Aging and Your Endocrine System:***
***What May Be Happening Inside*** [23]

- *A fatigued adrenal system is unable to fend off the effects of stress*
- *Pancreas produces less insulin, affecting blood glucose levels and potentially denying the endocrine system the glucose it needs to produce energy*
- *Insulin resistance, the precursor to diabetes (also traditionally accompanied by weight gain)*
- *Hormone production in ovaries/testes drops*
- *Faltering thyroid causes metabolism to slow*

## 2.9. Aging and Your Gastrointestinal System

Food. Most of us love to eat it, all of us need it. Yet your relationship with food may change as you age. For instance, you may find your appetite isn't as hearty as it used to be (even though your declining appetite doesn't seem to correlate with a drop in weight). You may have a drier mouth, your favorite foods don't taste as delicious as they used to, and perhaps some even cause stomach upset, bloating, gas, or provoke diarrhea.

### *Aging and Your Gastrointestinal System: What You May Notice*

- *More frequent stomach upsets, or bloating after eating*
- *Heartburn*
- *Increased constipation*
- *Decreased appetite, food doesn't taste as good*
- *In some cases, diarrhea, weight loss*
- *Gallstones*

Whatever the symptoms you're experiencing, many may be due to your aging gastrointestinal tract (GI). If you ignore that heartburn, or pass off constipation as simply due to "something you ate," you're putting yourself at risk for colon cancer, a disease that increases in prevalence with age and that will claim the lives of more than 50,000 Americans this year. [24] And although colon cancer has a nearly 90% cure rate when treated early, nearly one-third of those diagnosed with it this year will die. Why? Because too many don't know the signs of a faltering GI system, or think the discomfort in their gut is a normal part of aging, so they ignore it. And by the time colon cancer spreads to a neighboring organ, its successful treatment rate drops to 66%. [25]

Additionally, approximately 60-70 million people in the US suffer from some type of gastrointestinal disorder, from irritable bowel syndrome, to Crohn's disease, acid indigestion, or ulcerative colitis. All of which tend to rise in prevalence as we age.

### *Aging and Your Gastrointestinal System: What May Be Happening Inside* [26]

- *Reduced capacity of gastric mucosa (the protective mucus lining of the stomach) to resist damage from stomach acid. Ulcers and gastritis more common with age*
- *Malabsorption of nutrients or bacterial overgrowth in the small intestines may yield diarrhea, stomach discomfort, and potentially weight loss (often due to a drop in the production of essential stomach acid).*
- *Decrease in saliva production (which may hamper digestion), as well as declining taste sensation*
- *Decreasing gall bladder efficacy; reduced bile flow*
- *Fatigued digestive system damaged by years of eating fatty, sugary, and/or processed foods low in dietary fiber*

The good news is that your GI vitality can be preserved. One of the smartest ways to ensure digestive health is to eat plenty of fiber. The National Institutes of Health recommend a minimum of 35 grams of fiber per day, but the average adult in the US gets only one-third of that-between 10-12 grams. And fiber's benefits are many:

- A British study shows that fiber cut the risk of heart disease in women by half, and prolonged the life of study participants by more than one-third over the "non-fiber eaters." [27]
- Fiber has a protective effect against cancer.

- Fiber lowers low-density lipoprotein (LDL, the "bad" cholesterol) while promoting high-density lipoprotein (HDL, the "good" cholesterol).
- Fiber helps you stay slim. Fiber helps keep blood sugar levels stable, preventing the insulin spikes that can lead to hunger and overeating. Fiber fills you up, suppresses appetite, and may help you ward off diabetes and obesity.
- Fiber is gentle on your system, providing the roughage you need to consistently move foods through your digestive tract. Eating high fiber has been shown to cut the risk of ulcers in half, reduce gallstones by one-third, and prevent diverticulosis, a severe intestinal disorder that affects more than half of the population over 60. [28]

If it's difficult for you to get 35+ grams of daily fiber (you need both soluble and insoluble, balanced for maximum wellness), you need a daily fiber supplement. In the past, this could have meant a chalky, unsavory liquid, or handfuls of oversized caplets. No more. Today's quality fiber supplements contain high-potency, pure fiber in easy-to-take formulations -- and can offer 10+ grams of fiber with just two small daily doses. It's an easy, simple way to protect your digestive health.

Also ensure you're eating a well-balanced diet, high in fresh fruits and vegetables. Not only are these foods high in fiber, they're bursting with antioxidants, nutrients, and water to refresh your system. This environment will help encourage the right "healthy bacteria" necessary for normal digestion, support colon health, and reduce constipation or other bowel trauma. But it's clear: the status quo -- your favorite burger or fried chicken or cheesecake -- just won't work anymore if you want to stay young inside.

### 2.10. Aging and Your Reproductive System

Reproductive health isn't simply a women's issue. Men and women both suffer from age-related reproductive issues, and both genders' problems are related to declining hormone levels. It's important that everyone understand the roles that the three sex hormones (estrogen, progesterone, and testosterone) play in healthy living and aging, because as these vital elements decline, they can spur a host of health problems, beyond the obvious infertility or lowered libido. Many symptoms of failing reproductive health may surprise you -- from mood shifts to depression to urinary discomfort or incontinence and more. It's important to understand that the root of these problems is hormonal, so that you can effectively treat them and improve your quality of life.

For centuries, women have struggled with "the change," thinking the discomforts of menopause are normal. From night sweats to hot flashes to weight gain and moodiness, hormonal imbalance is at the root of it all. And it's not normal. These symptoms occur because at menopause, estrogen production drops by 60%, but progesterone production drops 100% -- to 0%. And as estrogen is dropping, it may actually spike periodically, putting a woman on a hormonal roller coaster with miserable results.

***Aging and Your Reproductive System:***
***What You May Notice***

- *Loss of reproductive capacity*
- *Women: hot flashes, night sweats, irregular menstruation or cessation of menstruation*
- *Men: loss of sexual stamina or desire, difficulty urinating*
- *Loss of libido*
- *Weight loss or gain*
- *Increasing brittleness in bones*

Unfortunately, many women -- 6 million currently -- seek symptom relief with hormone replacement therapy (HRT). HRT may yield some short-term comfort for both genders trying to restore hormone balance, but its long-term effects are unclear at best and threatening at worst, showing increased incidence of breast cancer in women and prostate cancer in men. HRT has also been connected to depression, blood clots, sleep disorders, high blood pressure, and anxiety, among others: symptoms many boomers mistakenly attribute to aging.

***Aging and Your Reproductive System:***
***What May Be Happening Inside***

- *Fluctuations in the production of estrogen and progesterone (in women). Estrogen is ultimately declining, but may have brief peaks, causing emotional/physical discomfort.*
- *Dropping androgens*
- *Enlargement of the prostate, often called "BPH," or benign prostatic hyperplasia*

It's critical to note that reproductive health isn't only a women's issue. Men, also, experience dramatic and often disconcerting changes in their sexual and reproductive health as they age.

*An estimated 60% of men over age 40 suffer from an enlarged prostate.*

For many men, an enlarged prostate is seen as an inconvenience or modest discomfort. It may cause difficult urination or frequent urination. And it may cause some interruption in sexual performance as well, often attributed to stress, fatigue, or age. But an enlarged prostate, while common, isn't normal, and may have dropping androgen levels at its source.

> *Prostate cancer is the second most common cancer in men, after skin cancer. One in every six men will develop it. According to the American Cancer Society, about 230,900 new cases will be diagnosed this year.*

An enlarged prostate is a leading marker for prostate cancer, a cancer that kills because it's quiet and often too embarrassing for men to have checked.

Whether you're male or female, you can protect your sexual health. A cessation of reproductive capabilities is normal and expected as you age. But the rough chasms and exhausting highs of hormone imbalance are not. Neither are the dangers of increased cancer risk. Smooth the peaks and valleys, and you can transition into your senior years with a healthy sex drive, calm emotional state, and youthful vigor.

## 3. INGREDIENTS FOR HEALTHY LIVING AND AGING

Now that you understand more about what happens to your body as you age, you see that much of it -- wrinkles, weakness, disease -- can be prevented or slowed as you grow older. In fact, "normal" aging should be a happy, healthy, enriching, and full period of life when you're free to enjoy travel and time with loved ones without health woes.

It can be a reality. We'll show you how.

### 3.1. Get Smart about Supplementation

Preserving your youth hinges on supplementation, because diet and exercise simply don't provide enough nutrients to ward off aging alone. Happily, you can supplement with natural solutions -- without drugs or invasive therapy or surgery, using herbs, vitamins, and key nutrients from pure fruits and vegetables.

Around the world, more people and their physicians are recognizing the power of supplementation, coupled with a healthy diet and regular exercise program. In fact, a recent Roper-Starch survey shows that more boomers than ever are turning to supplements as an anti-aging intervention.

### 3.2. Supplementation: The Path to Youth

More than 60% of Americans age 65+ are actively pursuing aging interventions, primarily through nutritional supplementation. By percentage, these seniors want to:

Maintain general wellness, 39%
Enhance energy levels, 17%
Strengthen bone health, 16%
Improve stamina, 12%
Relieve joint pain and discomfort, 11 %

It's good news that we recognize the power of supplementation. However -- and this is critical -- your grocery store's multivitamin or an occasional herb capsule is inadequate. Why?

### 3.3. Why Most Supplements Will Fail You

Many widely available, generic supplements often fall short of their promises. Here's why.

***Poor quality*** -- Herbs are not produced, they're grown. Many "grocery store" brand herbs are mass-produced in conditions that rob the herb of its benefits. Just because an herb is listed on the label doesn't mean that it's fresh and robust. An apple may be juicy, sweet, and packed with vitamins when grown under the right conditions -- or it may be spotted, coated in pesticides, and watery or gritty when grown under unfavorable conditions. Herbs are similar.

***Low potency*** -- Most herbs have a shelf life and many on your grocer's shelf have exceeded theirs. Additionally, many popular brands lack sufficient quantities of the herb needed to provide the benefits you seek. Have you ever wondered how those popular "all-in-one" multivitamins in your grocery store can pack everything into a single pill? The truth is they can't. A simple one-a-day multivitamin does not contain enough of each ingredient, nor the purity of ingredients to meet your body's nutritional needs.

***Missing key ingredients*** -- Check the label on that "complete" supplement, and you'll likely find key nutrients missing. An aging individual needs more and different nutrients than a younger adult, and getting the proper blend demands using a supplement formulated with seniors' needs in mind.

***Low in bioavailability*** -- "Bioavailability" refers to how easily your body can access nutrients and use them to fight disease, keep body systems functioning, and maintain youth. But quality supplement production is an expensive science, and many manufacturers take short cuts, producing supplements

that don't dissolve properly and never do what they're designed to do. In short, the supplement may pass right through you-wasting your money and potentially damaging your health.

If you've committed to maintaining your youth, then commit to the next important step: getting educated about supplements. Before you begin taking any herb or vitamin, ask:

- *What does the nutrient do to fight aging?*
- *How much do I need?*
- *How will I benefit in the short-term and long-term?*
- *Have the nutrient's benefits been proven in medical and/or clinical studies?*
- *Is the supplement produced by a quality manufacturer I can trust?*

These are tough questions. But if you want your next 20 or 30 or 40 or more years of life to be healthy, they're questions you need to ask.

### 4. Your A-Z Reference to Anti-Aging

Throughout out combined years in of medical and scientific experience, we've researched the answers to the questions of natural supplementation. We've assembled the leading anti-aging ingredients into an alphabetical reference that offers a brief description, benefits, and clinical support for each. We believe you'll find this guide an indispensable reference to help you select supplements uniquely designed to help you rediscover your youth the natural way. The nutrients are real. The proof is conclusive. The time is now, before one more wrinkle, before one more laugh line.

### 4.1. 3BETA (3β-acetoxyandrost-S-ene-7, 17-dione)

***Description***: This natural metabolite of dehydroepiandrosterone (DHEA) is perhaps the most important supplement to fight aging. DHEA is a vital pro-hormone that declines with age, spurring a host of unwelcome side effects and disorders, from weight gain, to energy loss, and reduction in immune function. While many nutritional companies have rushed to offer DHEA supplements to offset aging, there is a huge concern: In the body, DHEA supplements convert into sex hormones -- bringing a different slew of issues associated with hormone replacement therapy.

*Many DHEA studies report significant androgen increases in women, even at the relatively low dose of 50 mg.* [(1,8,18,19,21)] *Increased androgen levels in women may relate not only to the mild effects of excess facial hair and acne, but to the more serious issues of abdominal obesity, hyperglycemia and insulin resistance.* [(26)] *And one report found a decreased testosterone level in men, combined with an increase in estradiol, hardly ideal for a man s health. Fortunately, a natural metabolite ofDHEA, normally found in the human body, and which cannot be bio-transformed into androgens or estrogens, is now available. And scientific research indicates this "new" DHEA metabolite is more potent than DHEA.*[29]

***Anti-Aging Benefits***: 3-BETA has so many positive benefits, it's difficult to box it into a single category. One of its key strengths is in bolstering an aging immune system. Specifically, tests with primates infected with immunodeficiency virus (similar to HIV in humans) have shown that 3-BETA boosts T "helper" cell counts, increases white blood cells, and helps the subjects improve weight, physical condition, and behavior.[30]

Similarly, 3-BETA is known to help the immune system "go into battle" against pathogens by helping the body produce IL-2, a key cytokine regulator. This establishes a very direct connection: 3-BETA

helps the body produce essential disease fighters (IL-2) that can dramatically reduce the risk of deadly age-related diseases. In a recent study, the effect of 3-BETA was evaluated in regard to its effect on elderly immune function. In this study, healthy adults were given 3-BETA orally twice daily over a period of one month. The results of the study revealed that 3-BETA was able to augment several key T-cell mediated immune function parameters compared to placebo administration. By supplementing with 3-BETA, you can boost your natural immunity to ward off a variety of common viruses, bacteria, and infections to live a healthier, more vibrant life every day.

The majority of diets end in failure and, as we get older, our ability to lose weight through dieting becomes increasingly more difficult. While dieting, your body immediately starts to conserve your fat stores by lowering your body's metabolism. 3-BETA reverses this drop in metabolism. The result of adding 3-BETA to any weight loss program is dramatic and supported by two published clinical studies. These studies reveal that individuals who took 3-BETA with a program of diet and exercise lost 3 times more weight and body fat than individuals who took a placebo pill. In another clinical study, individuals taking 3-BETA had an increase in their metabolism while the placebo group on calorie restriction alone had the expected decrease. Furthermore, 3-BETA is not a stimulant like ephedra. Now, with the addition of 3-BETA, dieters can enjoy more success, which can motivate them to continue toward their weight-loss goals.

The supplement has also been found to be better than DHEA in enhancing memory. A study conducted by Dr. Henry Lardy at the University of Wisconsin tested the memory of mice given no supplementation, supplementation with DHEA, and those given 3-BETA supplements. The mice were then trained to negotiate a water maze and remember the exit path after two weeks. Lardy's study showed that the control mice took 34 seconds to complete the maze. Those on DHEA took 22 seconds. But those who had been given the 3-BETA supplements finished the course in only 7.6 seconds. [31]

> *". . . an energy enhancer, anti-cortisol stress reducer, and general revitalizing agent. I have gradually dropped 20 pounds of weight, have experienced a significant thinning of my face away from the classic cortisol 'moon face' I was developing in recent years. I consider [it] one of my core anti-aging supplements."*
>
> *-Dr. James South, M.A., author of DHEA: The Next Generation*

As we age, the benefits of 3-BETA begin to fade as this important natural molecule fades. We gain weight, we suffer from insulin resistance (leading to diabetes), we lose cognitive function, and we fall prey to an array of diseases. Now, it appears that many of these problems can be directly linked to dropping DHEA and 3-BETA production. But (he key is not simply replacing DHEA-which can have serious hormonal side effects. The answer lies in 3-BETA supplementation: a natural alternative, derived from DHEA that provides all the benefits without any of the drawbacks.

### 4.2. Agaricus Blazei (Mushroom)

***Description***: This mushroom derivative is a water-soluble powder extracted from a select type of fungus known for its anti-tumor capabilities. The mushroom contains a specific polysaccharide called beta glucan. Beta glucan activates the body's immune cells (namely, the T cells, macrophages, interferon, and natural "killer" cells) to help fight abnormal tumor growth and support immunity. The supplement is also known as "almond portobello."

***Anti-Aging Benefits***: Agaricus blazei doesn't suppress tumor growth -- instead, it motivates your body's own immune system to produce greater amounts of natural "killer" cells designed to fight off cancer (abnormal cell growth) and inflammation (swelling). Because inflammation is directly linked to aging diseases including type 2 diabetes, heart disease, and Alzheimer's disease, boosting immunity with an agaric blazei supplement is smart.

> *Research has shown that agaricus blazei has anti-tumor and antiviral activity, as well as moderating effects on blood sugar and cholesterol. In japan and Brazil, the mushroom is widely used by cancer patients.*
>
> *-Andrew Weil, M.D.*

**4.3. Aloe**

***Description***: Often mistaken for a cactus, aloe vera is actually a member of the lily family that flourishes in dry, arid climates. It has a wide range of uses, is particularly effective in healing infections, wounds, and sunburns, and has long been known as the "miracle plant."

***Anti-Aging Benefits***: Aloe is a powerful antioxidant and terrific supplier of vitamins A and C. It's also one of the few robust plant sources of vitamin B-12 (most sources are animal based). Aloe also offers unparalleled defense of your skin systems-adding moisture, protecting against environmental damage, smoothing away wrinkles, and erasing blotchiness and uneven skin tone.

**4.4. Alpha Hydroxy Acid**

***Description***: Alpha Hydroxy Acids (AHAs) are often called "fruit acids" because they are derived from fruit-based plants. You may hear of products containing "glycolic" or "lactic" acids, which are the most common types of alpha hydroxy acids used in skin remedies and antiaging treatments.

***Anti-Aging Benefits***: AHAs work to stimulate new skin cell growth unlike any other natural treatment. The acids actually gently "burn" away dead skin cells and motivate new skin cell growth underneath. This process makes your skin more receptive to moisturizers, so within a few weeks of use, you'll notice younger-looking, smoother, softer skin. AHAs have also been directly linked to the effacement of stretch marks, even marks that are years old.

Despite some myths about AHAs, they actually improve the thickness of aging skin as well as collagen production, both of which will improve skin's elasticity. Additionally, when used properly, AHAs will not increase your skin's sensitivity to the sun -- quite the opposite. Some AHAs, including malic and tartaric acid, have substantial antioxidant capabilities to fight free radical damage the sun can cause. And while there are many skin treatments on the market, those without AHAs can't rival the benefits of AHA-containing products. A recent article in *Skin Tips* newsletter (published by SkinCareRX) notes:

> *"Mechanical Scrubs work only to remove already loosened skin cells on the upper layer of skin. Alpha hydroxy acids work at the lowermost levels of the stratum corneum. It appears that AHAs modulate stratum corneum (the upper layer of the skin) formation weakening the bonds between corneocytes (a type of skin cell) at the lowest levels of the stratum corneum. This unique action results in a smoother skin cell layout throughout the stratum corneum and not just at the uppermost layer. Also, AHAs stimulate hyaluronic acid production, whereas salicylic acid and mechanical scrubs do not."* [32]

Alpha hydroxy acid products work best in a concentration of 5-8%, and at a pH between 3 and 4. Selecting treatment products within this range will deliver younger skin without over-drying or causing excessive abrasion.

### 4.5. Arabinogalactan

***Description***: Arabinogalactan is considered a nondigestible soluble dietary fiber derived from wood. It stimulates the colonic growth of the "good" bacteria bifidobacteria and lactobacilli that protect digestive health. It's most richly found in carrots, radishes, tomatoes, pears, and wheat, but it's also found in immune-enhancing herbs like Echinacea and mushrooms. Arabinogalactan, then, is well regarded as a natural, safe immunity enhancer with no known side effects.

***Anti-Aging Benefits***: In laboratory experiments, arabinogalactan has slowed or stopped the metastasis of tumor cells to the liver. Although these findings were not conducted on human tests, they offer the promise of arabinogalactan as a cancer fighter that boosts the body's production of "natural killer cells" to resist tumors.

It's also excellent reinforcement for an aging digestive system. Arabinogalactan helps in two ways:

1. It's a fiber, so it helps level blood glucose, control your weight, and suppress appetite while providing gentle support to your gastrointestinal tract
2. It encourages production of "good bacteria." This healthy bacteria, which tends to decline with age, is key to avoiding heartburn, constipation, diarrhea, indigestion, acid reflux, nutrient absorption deficiency and many other digestive disorders associated with aging.

### 4.6. Ascorbic Acid (Vitamin C)

***Description***: Vitamin C is a water-soluble vitamin that is dissolved in the blood stream and delivered for immediate use by the body. Because the body can't store excess Vitamin C (it's eliminated in the urine), you need constant replishment of this nutrient known for its immunity boosting properties: fighting infection and wounds. Additionally, poor storage conditions and cooking easily destroy Vitamin C, so vitamin rich foods must be prepared properly, and supplements must be stored for short periods only and in environment-controlled conditions. Vitamin C is available from a spectrum of different sources and exists in a variety of types/potencies -- it's important that you receive a variety of them daily to get the full benefit of the vitamin.

***Anti-aging benefits***: Vitamin C is vital for collagen production. Collagen, known as "nature's cement," keeps skin smooth and taut, and strengthens bones, teeth, and capillaries. [33] Recommended daily allowance is 90 mg daily for men, 75 mg for women, but as you age, you'll need much more-the *American Academy of Anti-Aging Medicine* recommends 1,000-2,000 mg to see optimal anti-aging benefits and fortifying of your immune system. If you're a smoker, also know that smoking interferes with your body's ability to absorb Vitamin C -- which means you'll need much more of the vitamin than a healthy non-smoker.

Vitamin C is also a stellar antioxidant, which is why it's so effective at warding off colds and flu and in healing infections. Research also shows that sufficient Vitamin C builds up the "good" cholesterol (HDL) levels, while preventing "bad" cholesterol (LDL) oxidation, so atherosclerotic plaque doesn't build up. Bottom line: Vitamin C can be a powerful protectant against cardiovascular disease as you age.

*"Oxidative stress" may be a causal factor in the etiology of such diverse and important disorders of aging as cancer, cardiovascular disease, and cataract formation. The present evidence is strong enough to have convinced nutritionists that daily Vitamin C intake should be many times higher than the amount needed to protect against scurvy, and this is reflected in the present Recommended Dietary Allowances.*

*-Nutritional Review* [34]

### 4.7. Reta-Carotene

***Description***: Beta-carotene is the compound that drives the bright oranges, reds and yellows in your favorite fruits and vegetables. It's also a powerful antioxidant that protects fruits and vegetables from cell damage during photosynthesis, and it provides similar protections for your body. Beta-carotene is a two-molecule compound that converts to much-needed Vitamin A in the body.

*In a preliminary study done in 1982 of more than 300 doctors taking part in the Harvard University Physicians' Health Study, researchers found that ingesting 50 mg (85,000 IU) of betacarotene daily cut the subsequent risk of heart attack or stroke, or death from cardiovascular disease in half*

***Anti-Aging Benefits***: Beta-carotene appears to have great power in protecting your body and mind from cell damage-specifically the deep cell damage that can cause heart disease, cancer, and Alzheimer's. Low levels of the nutrient have also been linked to autoimmune disorders including lupus, fibromyalgia, and chronic fatigue syndrome. [35] However, beta-carotene isn't a cure-all to be taken independently in high doses (even though your body will eliminate any excess nutrient, making an overdose highly unlikely). Instead, beta-carotene provides optimal benefits when taken as part of a complete antioxidant regimen. Because no FDA recommended daily allowance has ever been set, it may be tough to guess whether you're getting enough in the food you eat. Experts recommend a multi-complex supplement that cumulatively delivers 25,000 IV of beta-carotene.

### 4.8. Bilberry Concentrate

***Description***: Bilberry is a berry grown from a shrubby perennial. Long praised for its strong antioxidant capabilities, bilberry concentrate is a known fighter of free radical damage and has a history of use in treating eye diseases. Daily dosage recommendations range from 20 -160 mg, depending on your needs.

***Anti-Aging Benefits***: Bilberry protects fading vision, even in healthy people. It's also been tied to improvements in cataracts, glaucoma, night blindness, etc. In a 1987 clinical bilberry study, Italian researchers demonstrated in 40 patients a significant improvement in vision and measurable microcirculation resulting from bilberry anthocyanins..[36] Improvement was around 80% in both measurements. In the late 1960's, research confirmed bilberry could increase the activity of enzymes in the eye responsible for energy production. [37]

*Bilberry's effects in improving normal and night vision have been known since World war II, when British pilots used bilberry jam to improve their bombing accuracy in night raids.*

Additionally, bilberry contains glucoquinine, shown to reduce and stabilize blood sugar levels, a great aid for the pre-diabetic. Its antioxidant strengths (bilberry is high in anthocyanin, a leading

antioxidant), have also been linked to improved blood flow and its accompanying benefits: fighting high blood pressure, thrombosis, varicose veins, angina, and weak circulation.

But bilberry's strengths go beyond basic circulatory support. Specifically, it has been found helpful to treat weak or fragile capillaries or capillaries that leak blood/fluids into the body. Many use it to strengthen capillaries prior to surgery, and to assist in speedy recovery following surgery. While fragile capillaries may not seem a huge concern, the condition can have severe consequences: it can cause stroke, hemorrhage, or blindness following diabetic or hypertensive damage to the retina. For these reasons, bilberry is often called the "circulatory microplumber," because it fixes (or prevents) damage to your tiniest blood vessels and even improves the flexibility of red blood cells. Bilberry is also a cardiac health supporter because it's high in flavonoids, one of the most powerful classes of antioxidants. It's a modest blood thinner, so it acts to prevent the platelet aggregation that can lead to the formation of deadly clots. Similarly, it fights plaque deposits on arterial walls, a dangerous condition called atherosclerosis (hardening of the arteries).

### 4.9. Bioactive Hyperimmune Milk Protein Concentrate

***Description***: This patented, clinically proven unique milk protein concentrate contains bioactive compounds shown to improve joint function. The concentrate is cultivated from the milk of specially cared-for cows raised in New Zealand, which goes through a patented isolation and concentration process to extract the most beneficial compounds in the milk.

***Anti-Aging Benefits***: Bioactive Hyperimmune Milk Protein Concentrate represents a new direction in joint care supplements. Two independently conducted clinical trials have confirmed that it is highly effective at improving joint function in a short period of use with a side effect profile that was no different from placebo. In addition, when compared to glucosamine, Bioactive Hyperimmune Milk Protein Concentrate was found to have a treatment effect that was 60% greater than glucosamine for improvement in overall joint function. Bioactive Hyperimmune Milk Protein Concentrate works by supporting the body's natural anti-inflammatory system, allowing faster relief of symptoms. It offers a new and unique treatment option for the increasing number of people suffering from this debilitating condition as they get older.

In a structured longitudinal survey of over 8000 people the concentrate has proven to provide benefits beyond improving mobility and stamping out arthritis for the aging. It has also been shown to lower cholesterol, improve blood pressure, lessen fatigue and sleep problems, and even alleviate indigestion and allergies.

Individuals in this study taking Bioactive Hyperimmune Milk Protein Concentrate showed the following improvements (percentages reflect participants noting improvements):

Joint pain = 83.7%
Cholesterol = 71.5%
Blood pressure = 66.4%
Fatigue = 74.2%
Sleep problems = 69.3%
Indigestion = 70.7%
Allergies = 67.8%

In a subsequent published clinical research study participants taking Bioactive Hyperimmune Milk Protein Concentrate had a significant decrease in systolic and diastolic blood pressure and LDL (bad) cholesterol. This versatile and unique natural ingredient complex targets many age-related challenges and should be an essential part of anyone's anti-aging regimen.

**4.10. Blueberry Concentrate**

***Description***: The common blueberry is among the top antioxidant foods, with a high ORAC value, and wild blueberries are an even more potent antioxidant than standard blueberries. Specifically, blueberries are high in a category of antioxidants called anthocyanins (also found in apples, grapes, blackberries, and red cabbage), and that's what gives blueberries their vibrant color. Anthocyanin studies show the compound can reduce blood clot formation to help ward off heart attacks, as well as improve night vision and slow macular degeneration by strengthening the tiny blood vessels in the eye. When concentrated, even small amounts can deliver great free radical-fighting capacity.

***Anti-Aging Benefits***: The vision-improving capability of blueberry is great for people of all ages. But blueberry's greatest strength appears to be in fighting the inflammation and free radical damage associated with cognitive and memory loss.

> *"When it comes to brain protection, there's nothing quite like blueberries. I call the blueberry 'the brain berry. "*
>
> *-Neuroscientist James Joseph, quoted in Newsweek, June 17, 2002*

*Health* magazine (December 2002) touted blueberries as one of its top 10 "superfoods" because of their amazing anti-inflammatory and protective capabilities that can be achieved with relatively modest intake: 1/2 cup fresh per day, or a supplement containing blueberry concentrate. Studies have shown that blueberry can not only protect memory and reasoning, it can actually help reverse or repair some initial losses.

> *"Besides combating the free-radical damage linked to heart disease and cancer, anthocyanins may boost brainpower -- at least in rats. When fed blueberry extract for nine weeks, elderly rats outperformed a control group at such tasks as navigating mazes and balancing on rotating logs. And when aging rats ate a blueberry enriched diet for four months, they performed as well in memory tests as younger rats. Another blueberry benefit: like cranberries, they seem to fight off urinary-tract infections by preventing E. coli bacteria from adhering to the bladder wall. "*
>
> *-Time Magazine, January 21,2002*

**4.11.Calcium**

***Description***: Calcium is a mineral stored largely in your bones and teeth. In fact, nearly 99% of your calcium store is there. Only 1 % of your calcium is circulating in your blood stream and soft tissues, carrying nutrients and vital neural communications.

***Anti-Aging Benefits***: The current recommended daily allowance for calcium is 1200 grams for men, 1500 grams for women. However, most aging adults get only half that in their diets, so supplementation is a must. Calcium is key to preventing tooth decay and bone loss, and key to reducing the risk of osteoporosis -- a disease that can cause fractures, height loss, and pain. Osteoporosis isn't as

simple as losing density in your bones; it's "skeletal failure," meaning the framework of your body is collapsing. Calcium fortification is one of the few supplements directly known to support new bone growth (osteoblasts) and retard bone destruction (osteoclasts). Additionally, calcium is known to regulate heart rhythm, ease insomnia, and alleviate depression, and its ions carry important nutrients from cell to cell for better nutrition as you age. Many aging people with calcium deficiency report restless or insufficient sleep, and a depressed mood; too often, these symptoms are classified as "normal" aging signs, when in fact, the issue may be as simple as insufficient dietary calcium.

### 4.12. Carrot Fiber

***Description***: Derived from the classic orange carrots, rich in betacarotene and other vitamins, this fiber helps improve digestive, skin, and eye health.

***Anti-Aging Benefits***: Gastrointestinal infections and disorders become increasingly common with age. But studies now show that carrot fiber can prevent the adherence of microorganisms (that cause infection) to the mucosa wall lining of the stomach. [38] Carrot fiber also helps ensure regularity, while providing a Vitamin A and C boost that will strengthen deteriorating vision, improve the color and radiance of your skin, and heighten immunity.

### 4.13. Cat's Claw

***Description***: Cat's claw (Uncaria tomentosa or Una do Gato) is a medicinal plant from the Amazon River basin. Cat's claw contains gluco indole alkaloids that work to battle a host of inflammatory disorders, from arthritis to gastrointestinal disorders to memory loss. It has also become popular as an immunity enhancer, and many people suffering from AIDS/HIV clamor for the supplement to stimulate immune system function.

***Anti-Aging Benefits***: Cat's claw has a wide range of anti-aging benefits as an antioxidant, inflammation fighter, and memory booster. But it appears to achieve all of these benefits via its main strength: as a digestive system supporter. Cat's claw can replenish the healthy bacteria needed for proper, regulated digestion. And because digestion is connected to a host of other issues, from heart health to brain function, it's an essential supplement taken daily between meals. The only caveat to cat's claw is to refrain from taking it prior to an organ transplant, as the herb will stimulate your immune system and may interfere with your acceptance of a new organ.

### 4.14. Chamomile

***Description***: Often called "English" or "Roman" chamomile, this fragrant herb has been used for centuries in aromatherapy treatments, as an essential oil, and even in calming teas. Chamomile grows easily and abundantly and produces a small, white flower with a gentle, woodsy aroma.

***Anti-Aging Benefits***: The rewards of chamomile are many, so creating a simple list of its applications and benefits is difficult. However, a few key strengths stand out, the first being the herb's ability to calm -- particularly to soothe a troubled gastrointestinal system upset by nerves. Chamomile has proven effective in treating ulcers, gas, dyspepsia, diarrhea, and even upset stomach due to motion sickness. As an antioxidant, chamomile works gently to ease spasms, reduce inflammation, and strengthen capillaries (it is an excellent partner to bilberry). As you age, chamomile's ability to support your digestive and nervous systems can provide both comfort and stability.

### 4.15. Coenzyme Q10 (CoQ10)

***Description***: The liver produces CoQ10 from other coenzymes, and CoQ10 is present in the lipid (fatty) membrane surrounding every body cell. It's responsible for energy production, so it's most highly concentrated in high-energy organs, like the heart. But as we age, the liver's coenzyme levels drop and so does CoQ10, known for its benefits to the immune system, as an energy source, and as an antioxidant. Without sufficient CoQ10, energy production-and hence, life-would stop.

***Anti-Aging Benefits***: A quality CoQ10 supplement helps prevent LDL cholesterol (low-density lipoprotein, "bad" cholesterol) from being attacked, which helps prevent hardening of the arteries (atherosclerosis). More simply put, CoQI0 is a strong guardian against heart disease. Patients working to improve high cholesterol, cardiomyopathy, high blood pressure, and angina often take 150-300 mg daily to bolster their heart health, and many physicians recommend the coenzyme to their coronary artery bypass patients to aid in recovery.[39]

### 4.16. Cranberry

***Description***: The tart, maroon berries from the cranberry bush are well known for their antioxidant and vitamin power. Cranberries are a versatile fruit that can be consumed as a juice, dried, fresh, or frozen, or even in supplement form.

> *One glass of cranberry juice or one ounce of dried cranberries a day will help stave off infection. The compounds found in cranberries prevent certain bacteria from making the foot-like processes that they use to attach to the walls of the urinary tract.*
>
> *--Amy Howell, Ph.D, research scientist at the Marucci Center for Blueberry and Cranberry Research at Rutgers University*

***Anti-Aging Benefits***: Preliminary studies suggest that diets containing fruit and vegetables with high-ORAC values may provide protection against chronic age-related afflictions like loss of coordination and memory. Cranberries score very high on the antioxidant scale at 1750 ORAC units per 100 g (about 3.5 oz.) of fresh fruit.[40]

A recent study also shows the benefits of cranberry in protecting nerve damage due to stroke. The study, conducted at the University of Massachusetts-Dartmouth, tested rat brains for cell death after stroke. Those brains treated with cranberry extract showed 43-49% less cell death than their untreated counterparts.[41]

### 4.17. Cucumber Extract

***Description***: Culled from the famous versatile vegetable, cucumber extract is rich in antioxidants.

***Anti-Aging Benefits***: Cucumber extract is widely used in skin care treatments and works to tighten and smooth aging skin. It cools and refreshes skin immediately and helps improve elasticity over long-term use. Additionally, its antioxidant properties help fight inflammation, even at a cellular level, meaning you stay strong against viral attackers, bacteria, and other weakness.

### 4.18. Cyanocobalamin (Vitamin B-12)

***Description***: Vitamin B-12 is an essential nutrient required for health and growth. Even though we need it in relatively small amounts, without Vitamin B-12 we would die. Vitamin B-12 is found in a variety of foods, including fish, egg yolks, milk, and some cheeses, but not in any vegetables. For this reason, individuals on a vegetarian, fat restricted or macrobiotic diet are especially urged to take a supplement containing Vitamin B-12.

***Anti-Aging Benefits***: Vitamin B-12 is particularly important for a healthy blood supply. As you age, you may become more susceptible to anemia, which is an inadequate supply of red blood cells. As a consequence, you may be easily fatigued, bruise easily, suffer from weakness, or have difficulty recovering from a cut or wound. Vitamin B-12 can help you build a rich, red blood supply that will not only guard against anemia, but can protect you from (or help improve) diseases of the kidney, liver, pancreas, stomach or thyroid.

> *Many people over 60 are deficient in these [B vitamins} basic vitamins. Deficiency of B-12, in particular, can lead to pseudo Alzheimer's Disease symptoms.*
> *-Academy of Anti-Aging Research finding*

### 4.19. Elderberry

***Description***: Elderberry is a rich, reddish-purple fruit that grows both wild and cultivated on dense bushes throughout much of the US. Not only are the berries a tasty treat in pies, jams, and wines, they have long been called "the medicine chest of the common people," for their broad range of immune-boosting benefits and wide accessibility.

***Anti-Aging Benefits***: With the exception of rose hips and black currant, elderberry contains more Vitamin C than any other herb, making it a potent antioxidant. It's high in Vitamins A and B, also, and rich in flavonoids, amino acids, and tannins, all of which work to boost the immune system by fending off inflammation. Elderberry has remarkable skin strengthening benefits, and has been used to fight eczema, rashes, psoriasis, and other conditions often associated with skin aging.

### 4.20. Essential Fish Oils

***Description***: Our bodies need fat to stay healthy and young. The problem is, we center on the wrong kinds of fat. Medical science now embraces essential fatty acids, often called Omega-3 fish oils, as not only a "good" fat, but a critical fat for health and well-being. These essential fish oils, EPA and DHA, are found in marine plankton and fatty fish.

***Anti-Aging Benefits***: Clinical trials have shown that fish oils are effective in the treatment of a host of aging-related diseases, including rheumatoid arthritis, diabetes, ulcerative colitis, heart attack, depression, cancer, and Raynaud's disease. Science first became alerted to the many benefits of fish oils in the 1970s, when a study of Greenland Eskimos showed them to have exceptionally low incidences of heart disease and arthritis, despite a high fat diet. [42]

> *Danish researchers have concluded that fish oil supplementation may help prevent arrhythmias and sudden cardiac death in healthy men. An Italian study of 11,000 heart attack survivors*

*found that patients supplementing with fish oils markedly reduced their risk of another heart attack, stroke, or death.* [43]

One of the best benefits of fish oils is as a "brain booster." Several studies have established a clear association between low levels of Omega-3 fatty acids and depression. Other studies have shown that countries with a high level of fish consumption have fewer cases of depression.

Additionally, a high intake of fish oils has been linked to a significant decrease in age-related memory loss and cognitive function impairment and a lower risk of developing Alzheimer's disease. A recent study found that Alzheimer's patients given an Omega-3-rich supplement experienced a significant improvement in their quality of life. [44]

### 4.21. Evening Primrose Oil

***Description***: Evening primrose is a small yellow wildflower (*Oenothera biennis*), that has been used medicinally for centuries. The oil, pressed from the seed, is rich in linoleic acid, an essential fatty acid. "Essential" means that we have to consume the nutrient because the body does not produce it. These polyunsaturated fats are good fats, unlike the saturated fats that contribute to heart disease. Evening primrose oil also supplies another fatty acid, known as gammalinolenic acid (GLA). [45]

***Anti-Aging Benefits***: Evening primrose oil has been shown to help ease the discomfort of rheumatoid arthritis as it reduces joint inflammation. Additionally, if you struggle with a GLA deficiency, taking evening primrose oil will help you fight two severe skin conditions: eczema and psoriasis. And because GLA declines as we age, many will face these conditions, as well as other GLA-deficiency related problems, including menopausal problems. Evening primrose has long been touted as a remedy for menopause symptoms, including alleviating breast pain, bloating, cramps, and the depression and/or mood swings that can accompany fluctuating hormone levels.

### 4.22. Folic Acid (Vitamin B-9)

***Description***: Part of the B-vitamin class that includes Vitamins B-6 and B-12, Vitamin B-9 is water soluble so any excess is eliminated from your body quickly without any negative side effects.

***Anti-Aging Benefits***: Folic acid is of critical importance to women of child-bearing age, as it is directly correlated with fighting spina bifida and other neural tube and brain birth defects. But folic acid is also a powerful vitamin to help slow the aging process, too. One of the chief concerns of aging people is their heart health. And elevated levels of the chemical marker homocysteine are tied to development of cardiovascular disease. Increased homocysteine levels become increasingly common with age, and many patients and doctors alike are concerned with how to lower homocysteine to non-threatening levels. That's where folic acid enters the picture. By taking the recommended daily allowance of folic acid in a supplement (400 mg daily), you can reduce homocysteine levels and protect your heart.

*Folic acid deficiency is the most common vitamin deficiency in America.*

Like other B vitamins, folic acid protects you from anemia and can also support your immune system to ward off canker sores and susceptibility to food poisoning or intestinal parasites. When used with pantothenic acid, Vitamin B-9 will even help delay the graying of hair and will also help your skin look healthier.

### 4.23. Ginkgo Biloba

***Description***: The gingko is a hearty flowering tree cultivated in Chinese gardens since ancient times. It's rich in flavonoids and has long been used to treat minor skin ailments including sunburn, sores, and freckles. Common uses also include short-term memory enhancement and alleviation of menstrual-related discomfort.

***Anti-Aging Benefits***: Gingko biloba is fast gaining praise as a memory enhancer. But its abilities go beyond boosting short-term memory. In research, the supplement has been shown to build a variety of cognitive functions that often decline with age, including alertness, attention, reaction times, vigilance, even the alleviation of depression. A recent Australian study indicates that gingko biloba can improve speed of information processing, working memory, and executive processing. [46] Gingko biloba may even be able to stabilize Alzheimer's disease or slow the progression of dementia. A 1998 study at the Oregon Health Sciences University found 3-6 month treatments using the supplement helped improve cognitive function in Alzheimer's patients, and a recent Yale study also found that the supplement may boost the effectiveness of antipsychotic drugs patients often must take, while reducing the drugs' negative side effects. While gingko biloba studies are still new and there is much to be learned, it's clear that this powerful, natural supplement has beneficial brain properties, and it's best to begin supplementation early before cognitive loss or disease sets in.

### 4.24. Ginseng

***Description***: Ginseng is a powerful root largely cultivated in the Americas, with the scientific name "*Panax Quinquefolium*."It's a mild herb long used in Chinese medicine for its restorative, calming, and preventive capabilities.

***Anti-Aging Benefits***: Ginseng is called an "adaptogen" because it helps the body adapt and strengthen, and it restores health. It is a natural way to boost sustainable energy, alertness, attention, and responsiveness-without any side effects of drug stimulants like shakiness, irritability, or dependence. As you age, ginseng can also support your cardiovascular health by keeping your cholesterol low, improving your heart's capacity, and warding off arrhythmia. Ginseng is also recommended for lowering stress and improving your mental outlook.

### 4.25. Grape Seed Concentrate

***Description***: Grape seed extract is a natural plant substance high in oligometric proanthocyanidins (OPCs) and polyphenols. OPCs and polyphenols help fight oxidation by preventing free radical damage, and they also support healthy circulation. Grape seed is largely powerful because it stays in the body much longer than many other vitamins and antioxidants (which are flushed quickly from the body in urine). On average, grape seed extract stays in the body for up to three days, making it almost twenty times as potent as Vitamin C.

***Anti-Aging Benefits***: OPCs were first discovered decades ago as one of the nutrients that helped sailors avoid deficiency disorders while at sea. The mysterious diseases, like scurvy and rickets, had caused agonizing and widespread death until the introduction of fresh fruits into sailors' diets. OPCs, along with other nutrients, were a key to fighting these deficiencies. Grape seed is also known to have a protective effect on the heart, because it can help prevent the formation of arterial plaque, which can

cause cardiac disease. Grape seed is also one of the few nutrients that can penetrate the "brain barrier," taking its powerful antioxidants to the brain to protect nerve tissue and brain cells and prevent them from deteriorating with age. In your 30s and 40s, it is recommended to consume a daily dose of 50 mg of grape seed. However, as you age, you'll need more to see grape seed concentrate's important benefits. Increasing your daily dosage to 200 mg for adults over age 50 is recommended.

### 4.26. Green Tea Extract

***Description***: Asian green tea is a mild, delicate tea produced from the same leaves that yield dark or black tea (the processing for the two teas is different; green tea is less processed). Green tea may be taken either as a liquid or in capsule supplement form. It is rich in a variety of health-promoting compounds, including polyphenols (including catechins, a most potent polyphenol with powerful antioxidant capability), theanine (an amino acid known for producing a calming effect in the brain), and flavonoids (which protect against infection).

> *Results of studies on tea conducted in humans so far are intensely suggestive but still preliminary. Results of studies conducted in animals -- who wouldn't normally be drinking green tea at all -- are formidable and highly satisfying to anyone who would like to achieve phytonutrient-driven cancer prevention. They have demonstrated that the poly phenols in green tea give mice protection against all stages of cancer: tumor initiation, tumor promotion, and tumor progression.*
>
> *- Dr. Michell Gaynor, author of "Dr. Gaynor's Cancer Prevention Program"*

***Anti-Aging Benefits***: Green tea extract appears to have strong protective capabilities. By supplementing with green tea, you can improve your resistance to food-borne illnesses, infections, bacterial and viral diseases, and even bolster your resistance to bruising. Additionally, green tea is a powerful cancer fighter. In a variety of animal studies, the tea has been shown to inhibit cancer cell growth in the stomach, esophagus, colon, liver, and pancreas.

### 4.27 Guar Gum

***Description***: Guar gum is a dietary fiber cultivated from legumes.

***Anti-Aging Benefits***: Guar gum provides a safe, gentle way to support your digestive health and maintain bowel hygiene as you age. Specifically, the fiber softens and moistens waste matter to keep you regular, and to prevent blockages or painful "lumps" from accumulating in your colon. It provides bulk in the bowel, which reduces hunger and also helps balance your glucose levels (key to fighting the insulin resistance that is a precursor to type 2 diabetes). Additionally, guar gum may be a more beneficial fiber even than oat fiber, long thought to be the "king" of fibers. A 1991 study comparing the efficacy of both oat fiber and guar gum in reducing cholesterol (plasma triglycerides) levels in adult men and women participants showed that guar gum was "significantly more effective" in reducing total cholesterol.

### 4.28. Hawthorne

***Description***: Hawthorne is an herb that produces a hard berry. The berry's concentrate is often used in teas and concentrates, and it has not been shown to have any toxicity risks.

***Anti-Aging Benefits***: Far and away, hawthorne's primary benefit is as a heart tonic. Although many other herbs provide a more potent heart-friendly action, hawthorne singularly provides nourishing and replenishing benefits. Hawthorne subtly dilates the coronary arteries, allowing blood to flow more consistently and smoothly. It also improves the energy of the heart muscle itself, so each contraction pumps with greater efficacy. It can also help normalize arrhythmia without medication.

**4.29 Inulin**

***Description***: Common in natural plants like chicory, inulin is a low calorie, water-soluble complex carbohydrate (fiber). It is a member of the "fructan group" of carbohydrates, known to have a positive effect on probiotic creation. Probiotics are living micro-organisms which promote colonic flora, necessary for bowel health.

***Anti-Aging Benefits***: Inulin stimulates the growth of "friendly" intestinal bacteria, which supports good colon and digestive health. This friendly bacteria is absolutely critical to maintain energy, immune strength, and digestive health -- but it is easily killed by consumption of antibiotics, or an overgrowth of yeast (candida) caused by eating too much sugar and processed foods. Candida causes more than just digestive problems; it can also spark a host of food allergies, open you to infections and viruses, and even destroy enzymes necessary to support life processes and slow aging. Inulin helps healthy bacteria to flourish and keeps your digestive system balanced and free radical damage to a minimum.

**4.30. Ivy**

***Description***: Ivy is an evergreen climber native to damp woods areas in Europe. It should not be confused with poison ivy, which grows abundantly in North America. Active constituents include traces of the alkaloid "emetine," known to help reduce the mucus in lungs (which may help eliminate a cough or improve an asthma attack).

***Anti-Aging Benefits***: Ivy is believed to help improve breathing, including wheezing due to bronchitis, asthma, and congestion due to colds and coughs. Ivy is also increasing in popularity for its anti-inflammatory abilities, particularly in the skin. It's commonly used to soothe and build dry, rough, damaged old skin and help it look newer.

**4.31. L-Arginine**

***Description***: L-arginine is an amino acid present in the proteins of all life forms. It is classified as a semi-essential or conditionally essential amino acid, which means that under normal circumstances the body can synthesize sufficient L-arginine to meet physiological demands. There are, however, conditions where the body cannot, and you need to supplement; these conditions include aging, trauma (including recent surgery), sepsis, and burn recovery. Additionally, L-arginine detoxifies the body of ammonia and can also stimulate the pituitary release of growth hormone and the pancreatic release of insulin.

***Anti-Aging Benefits***: L-arginine is the building block for nitric oxide, a crucial substance that increases blood flow. In fact, the 1998 Nobel Prize in Physiology or Medicine was awarded for the discovery of the relationship between L-arginine and nitric oxide. Why is this connection so important? Because the implications on heart health care are so profound. L-arginine supplementation can reduce plaques in the coronary arteries-meaning it will not only help prevent heart disease, it can actually reverse it if you already have the disease! It also reverses endothelial dysfunction, enhances wound healing, prevents

the genesis of tumors, and improves cardiovascular and pulmonary functions, helping you breathe more easily and your heart beat more efficiently.

**4.32. L- Proline**

***Description***: L-Proline is an amino acid that is a major building block of the stability proteins collagen and elastin.

***Anti-Aging Benefits***: L-proline can help prevent the buildup of dangerous fatty deposits in your arteries that can lead to heart arrack and stroke. It works by reducing lipoprotein-A (apo(a)) amounts in your blood. Lipoprotein-A is a form of cholesterol known as the "killer" molecule, which has a sticky envelope around it. This apo(a) is thought to be ten times more dangerous than LDL (bad) cholesterol. On the helpful side, this cholesterol acts like plaster to repair cracks in the inner walls of arteries. Bur the negative side is much greater: Ultimately, the fats clog the arteries and they can be tenacious and stubborn to eliminate, even with drugs, diet, and improved exercise. L-proline has the ability to neutralize the stickiness of the apo(a) molecules, thus making their presence in the blood less dangerous. The supplement can also break up existing fatty deposits and strip them from the arterial wall.

As an added benefit, L-proline improves skin texture by aiding in the production of collagen and reducing the loss of it through the aging process. Stimulating wound healing in the same way that glycine and L-arginine do, L-proline may help certain types of wounds resistant to healing, particularly burns. L-proline also helps in the healing of cartilage and strengthening of joints, tendons, and the heart muscle. It works with Vitamin C to promote healthy connective tissue.

**4.33. L- Taurine**

***Description***: This sulfur-rich amino acid is highly concentrated in the muscles and central nervous system, particularly the brain and heart. It is a powerful antioxidant that is abundant in a healthy adult. Women are more likely to be L-taurine deficient than men, as the hormone estradiol may suppress L-taurine production/synthesis.

***Anti-Aging Benefits***: L-taurine is a potent antioxidant known to have powerful restorative abilities with the heart. Specifically, L-taurine can lower blood pressure and cholesterol levels, both serum cholesterol as well as triglycerides. It can even mitigate the damage of a high fat diet on your heart. Supplemental L-taurine may decrease the tendency to develop potentially lethal abnormal heart arrhythmias after heart attacks, and people with congestive heart failure have responded favorably to L-taurine, showing improved cardiac and respiratory function.

In addition to its primary benefits as a heart health agent, L-taurine slows aging in a variety of other ways. It helps balance blood sugar stability much like insulin does. Diabetes increases the body's need for Ltaurine; conversely, supplementing with L-taurine can reduce a diabetic's demand for insulin.

L-taurine helps to stabilize cell membranes, which can lead to younger-looking, softer skin cells. It also helps the movement of vital nutrients including potassium, sodium, calcium, and magnesium in and out of cells. This helps generate nerve impulses to keep reaction time and fine motor skills sharp.

### 4.34. L-Tyrosine

***Description***: L-tyrosine is a direct precursor to thyroxine, a primary thyroid hormone, as well as adrenaline and nor-adrenaline. In simpler terms, this means that although L-tyrosine doesn't create these substances, its presence is an indicator that they will be produced by the body, and it can help stimulate the production of them. Thyroxine has been found to increase metabolic rate and control growth rate. L-tyrosine is a necessary amino acid in the production of neurotransmitters including epinephrine, norepinephrine, and dopamine. L-tyrosine also appears to have a mild stimulatory effect on the central nervous system.

***Anti-Aging Benefits***: L-tyrosine is a remarkable aid to the adrenal system, providing needed support to your aging thyroid and pituitary gland. It helps the body produce and synthesize thyroxine. Patients with a thyroxine deficiency have symptoms including excess weight gain, cold hands and feet, and decreased basal metabolism. L-tyrosine has been found to assist in optimizing thyroid hormone levels, increased mood, concentration, and productivity. Tyrosine is particularly helpful if you have fatigue, depression, sleep disorders, low sex drive, and/or anxiety.

### 4.35. Niacin

***Description***: Niacin is a Vitamin B complex. Its main function is in metabolic pathways, especially those involved in making energy for the body. It is also useful in the making of fatty acids. A deficiency in niacin results in pellagra. Signs of the disease include inflammation of the skin, diarrhea, dementia, dermatitis, and hallucinations. Niacin can be found in mushrooms, wheat bran, tuna, chicken, and peanuts, and you will need more as you age.

***Anti-Aging Benefits***: Niacin is also called Vitamin B3, and like all B complex vitamins, it is important for converting calories from protein, fat, and carbohydrates into energy. But it also helps the digestive system function and promotes a normal appetite and healthy skin and nerves, which are especially important as you age.

Although the recommended daily allowance for niacin in adults is only 15-20 mg, larger doses -- sometimes more than 1,000 mg per day -- have also been shown to reduce LDL cholesterol (the "bad" cholesterol) and triglycerides and raise HDL cholesterol (the "good" cholesterol that prevents hardening of the artery walls).

### 4.36. Plant Sterols S

***Description***: Plant sterols are the "healthy fats" found in such plants as soybeans and almonds. These sterols have been shown to lower cholesterol.

> *People who want to reduce their cholesterol through diet may see better results by including low-fat foods having added sterols.*
>
> *-Floyd P. Horn, Administrator, Agricultural Research Service*

This means that adding "good" fats may actually speed the cholesterol-lowering benefits of a low-fat diet!

***Anti-Aging Benefits***: Cholesterol is a huge issue as we age. High cholesterol is a warning sign of disease to come: hypertension, atherosclerosis, heart disease, and more. Too often, people turn to drugs (a symptom-masker, not a cure) to regulate cholesterol or eliminate all fats from their diets in an effort to drop cholesterol. But a number of studies show that including fat -- provided it's plant sterols -- can actually do the job better, faster, and longer. For example, a series of studies on high-cholesterol patients showed lowered total and LDL cholesterol -- by 15% -- when given three daily doses of plant sterols! [47]

Look at the table below. It shows how you can reduce your LDL using a variety of methods -- for example, losing ten pounds may lower LDL 58%; reducing saturated fat to less than 7% of overall daily calories can reduce LDL 8-10%, and so on. But look at the benefit of increasing your intake of plant sterols. Just two grams per day can reduce LDL cholesterol from 6-15%! That's a huge benefit for a relatively small lifestyle/ dietary change.

**Approximate and Cumulative LDL Cholesterol Reduction Achievable By Dietary Modification**

| Dietary Component | Dietary Change | Approximate LDL Reduction |
|---|---|---|
| ***Major*** | | |
| Saturated fat | <7% of calories | 8-1 0% |
| Dietary cholesterol | <200 mg/day | 3-5% |
| Weight reduction | Lose 10 lbs | 5-8% |
| ***Other LDL-lowering options*** | | |
| Viscous fiber | 5-10 grams/day | 3- 5 % |
| Plant stero/sranol esters | 2g/day | 6-15% |
| ***Cumulative estimate*** | | 20-30% |

To better depict how plant sterols can protect you from cholesterol damage, consider this analogy: your body is a thriving city. All of the metropolitan areas (your organs) are served by a vast freeway system (your digestive tract). The freeway carries food and energy to the areas, but it also carries cholesterol. If that cholesterol exits the freeway, it can build up in organs and tissues and cause serious damage. That's where plant sterols come in. They effectively block the "off ramps" so that cholesterol is forced to stay in the digestive tract where it's eliminated without injuring body systems. When you consume sufficient plant sterols, you effectively run cholesterol out of town!

### 4.37. Policosanol

***Description***: This mix of alcohols derived from sugar cane is known to reduce LDL cholesterol and fight atherosclerosis, the narrowing of blood vessels due to plaque buildup. It works synergistically with grape seed concentrate, resveratrol, and quercetin.

**Policosanol Study:**

> *Those patients taking 10 mg of policosanol daily for two years had an 18% reduction in total cholesterol and a 25% reduction in LDL cholesterol. The doctors involved in the study were also encouraged to report that HDL cholesterol levels had risen by 21 %.* [49]

***Anti-Aging Benefits***: Policosanol is a strong heart-health supporter. It consistently lowers total cholesterol (when supplemented over time), but without any of the negative side effects of cholesterol-lowering drugs. Additionally, rather than merely masking the symptoms, policosanol actually helps improve heart health by improving circulation, reducing arterial plaque buildup, and enhancing oxygen flow to vital body systems.

### 4.38. Pyridoxine (B-6)

***Description***: Pyridoxine, also known as Vitamin B-6, is a water-soluble vitamin that requires constant replenishment because the body cannot store it. Like other B-complex vitamins, it is essential to converting protein into energy for the body to use. It's also a co-factor in the production of red blood cells and regulates blood pressure by managing blood vessel diameter.

***Anti-Aging Benefits***: Pyridoxine is a great ally for your heart. Not only does it help blood pressure and spur the production of healthy red blood cells, it also works with folic acid to reduce homocysteine levels. Why is this important? Because homocysteine is a marker for heart disease, and people with chronically high levels of homocysteine have a much higher incidence of heart attack, stroke, atherosclerosis, and other cardiomyopathic conditions.

### 4.39. Quercetin

***Description***: Quercetin (pronounced kwer-CEE-tin) is a leading flavonoid. Flavonoids are commonly found in fresh fruits and vegetables, and their antioxidant power is known for fighting inflammation (and inflammation-related diseases), heart disease, and cancer.

***Anti-Aging Benefits***: Like other flavonoids, quercetin is a reckoning force in heart health as you age. Because it is an anti-inflammatory, quercetin keeps inflammation from causing the diseases we often associate with aging, including arthritis, diabetes, cancer, and Alzheimer's disease. But the supplement also offers a host of other appealing anti-aging benefits, including boosting your skin, circulatory, and tissue strength to limit varicose veins, sores, and bruises. It has a synergistic effect with Vitamin C that enhances the power of both supplements, so the two should be taken together.

> *"Quercetin really seems to shine in the area of allergies and asthma. Allergic reactions occur when some foreign protein (chemical, pollen, undigested food particle, etc.) enters the bloodstream and triggers the release of histamine and serotonin, which cause coughing, breathing difficulties, clogged sinuses, skin eruptions, etc. Quercetin stabilizes the walls of the*

*cells that contain histamine and serotonin (mast cells and basophils) and prevents the release of these chemicals. Quercetin, at doses of 1 ,500 to 2,000 mg daily, can often prevent the horrible symptoms associated with allergies. "*

*-Dr. David G. Williams, ProHealth Network*

### 4.40. Reishi Mushroom

**Description**: Reishi is a polypore mushroom that grows on the ground or on the sides of trees. It is high in ganoderic acid, amino acids, and a variety of vitamins and minerals. Ganoderic acid is known to neutralize free radicals and has a strong anti-tumor capacity.

***Anti-Aging Benefits***: Reishi provides strong support for two critical body systems: circulatory and immune. As an immune enhancer, reishi mushroom supplements can slow tumor growth and prevent new growth. This speaks directly to the mushroom's strength as an anti-inflammatory, which means it can also be effective at controlling a host of inflammation-related problems, specifically Alzheimer's disease, diabetes (through stopping insulin resistance), and heart disease.
It supports heart health by maintaining a consistent flow of oxygen rich blood through dilated arteries. It helps th,e blood carry nutrients more quickly and effectively to all body organs and tissues.

### 4.41. Resveratrol

***Description***: Resveratrol is a naturally occurring phytoalexin -- a chemical substance produced by plants in defense against infection by microorganisms "Phyto" means "Plant" and "alexin" is from the Greek word "protect." Resveratrol is thought to have protective properties -- not only in plants but for humans as well. It has been associated with a reduced incidence of cardiovascular disease and cancer. Resveratrol occurs most abundantly in the skins of red grapes.

***Anti-Aging Benefits***: Resveratrol, like grape seed concentrate, is a powerful force in the "French Paradox" -- the cardiovascular health of the French despite a diet high in fats and carbohydrates. Resveratrol is a potent antioxidant, even exceeding the effectiveness of Vitamin C in fighting free radical damage. It has a known ability to reduce platelet aggregation -- the root of atherosclerosis, or plaque buildup in the arteries that can lead to heart attack, stroke, or high blood pressure. Resveratrol has also been tested as a cancer fighter. It has been shown to both stop tumor initiation as wellas slow (or reverse!) the growth of existing tumors. It slows tumor growth by inhibiting the COX-2 enzyme that causes the inflammation that ultimately leads to tumor stimulation. [50] To achieve optimal cancer and heart disease-fighting benefits, 200-600 mg daily is recommended.

### 4.42. Retinol

***Description***: Retinol is pure, active Vitamin A, one of the few compounds with a small enough molecular structure to penetrate the outer layers of the skin to repair deep skin tissue. Retinol is also called "performed" Vitamin A, because it can be used immediately and fully by the body.

***Anti-Aging Benefits***: As you age, "cell turnover," or the process of new skin production and exfoliation to remove old skin, begins to slow. The result is dull, dry skin with large visible pores. Sun damage and blotchiness will also become more apparent. Retinol encourages cell turnover to keep skin cells dewy, young, and new. Studies show that retinol will even keep skin cells "plumper," making skin more moist and smooth. In just four weeks of consistent daily use, you can expect to see fine lines easing. In only twelve weeks of retinol use, most patients report visible reductions in wrinkles.

Now extrapolate what retinol does for skin cells to your other cells. For example, we already know that Vitamin A and the carotenes (retinol's relatives) support eye health. That's because these nutrients, as retinol, help cultivate healthy cell production-in your skin, eyes, organs, and tissues. Supplementing with retinol is a great way to ensure you are replenishing your cell supply with youthful, balanced, hydrated cells that will deliver the vigor you need and the beauty you want as you age.

### 4.43. Selenium

***Description***: A nutritional trace element, selenium is a by product of copper. The nutrient is the essential cofactor of the antioxidant enzyme glutathione, which is receiving a great deal of attention as an anti-aging remedy. As adults age, their glutathione levels drop, and selenium appears to bolster production. Without it, aging adults may see thyroid and cardiovascular dysfunction.

***Anti-Aging Benefits***: Selenium can mimic the action of insulin, meaning it can help keep your blood glucose levels stable and stave off your developing type 2 diabetes. In laboratory studies, selenium mediated a number of insulin-like actions such as stimulating glucose uptake and regulating metabolic processes including glycolysis, gluconeogenesis, fatty acid synthesis, and the pentose phosphate pathway. [51] And if you already have diabetes, selenium can slow secondary complications of diabetes such as neuropathy, retinopathy, and cataracts. Additionally, selenium is a top free radical scavenger, so it fights diseases like osteoarthritis, cancer, and heart disease. Several research reports indicate the inverse relationship between higher blood levels of selenium and mortality from cancer including lung, colorectal, prostate, and skin cancer. [52]

### 4.44. Vinpocetine

***Description***: Vinpocetine is chemically related to, and derived from, vincamine, an alkaloid found in the periwinkle plant. Vinpocetine was introduced into clinical practice in Europe more than two decades ago for the treatment of cerebrovascular disorders and related symptoms. Experiments with vinpocetine indicate that it can dilate blood vessels, enhance circulation in the brain, improve oxygen utilization, make red blood cells more pliable, and inhibit aggregation of platelets. Vinpocetine even has antioxidant properties.

***Anti-Aging Benefits***: The herb's greatest strength is in cognitive improvement, specifically memory enhancement and minimization of the effects of dementia that are related to atherosclerosis. Because vinpocetine improves circulation, researchers believe that the herb improves blood flow to the brain and thereby strengthens function. In a 1991 test in Guildford, England, researchers administered vinpocetine to patients suffering from mild to moderate dementia. The placebo-controlled, randomized double-blind trial included 203 participants who received doses of either 10 mg vinpocetine three times a day, 20 mg doses of vinpocetine three times a day, or placebo three times a day. There were no clinically relevant side effects reported. Statistically significant cognitive improvements were found in favor of active treatment groups compared to placebo. The patients on 10 mg performed slightly better than those on 20 mg, so it's clear that "more isn't always better," as is the case with many supplements; it's important to get the right amount of the right supplement.

In a different test, a double blind clinical trial, vinpocetine was shown to offer significant improvement in elderly patients with chronic cerebral dysfunction. Forty-two patients received 10 mg vinpocetine three times a day for 30 days, then 5 mg three times a day for 60 days. Matching placebo tablets were

given to another 40 patients for the 90-day trial period. Patients on vinpocetine scored consistently better in all cognitive evaluation.

**Vitamin C (see Ascorbic Acid)**

### 4.45. Vitamin D

***Description***: This fat-soluble vitamin is essential to the absorption of calcium, which is key to the development and maintenance of healthy bones and teeth. Vitamin D also helps to maintain adequate levels of phosphorus. It is primarily found in dairy foods, fish, and oysters.

***Anti-Aging Benefits***: Vitamin D helps your body use calcium; without the vitamin, calcium may pass through your body without creating benefit for bones and teeth. Most adults, particularly women, will need to supplement their diets with Vitamin D in order to protect themselves from osteoporosis and to keep teeth, joints, skin, and ligaments strong.

### 4.46. Vitamin E

***Description***: A powerful antioxidant, Vitamin E helps in the formation of red blood cells and in the body's use of Vitamin K. It can be found in a variety of foods including corn, nuts, seeds, olives, spinach, and other green leafy vegetables.

***Anti-Aging Benefits***: Vitamin E specifically attacks LDL cholesterol's formation of plaques along the arterial wall. As such, it's one of the most powerful protectors your heart can have. A number of clinical trials and studies consistently show that high Vitamin E intake can reduce the occurrence of myocardial infarction, stroke, and other heart-related diseases. As an example, in the Nurses' Health Study, researchers concluded that among 83,234 middle-aged women who participated in the study, there was a 40% reduced risk of coronary artery disease for those who took Vitamin E supplements compared to those who did not. [53]

Although the link between cancer prevention and Vitamin E supplementation is not as strong as the heart link, researchers believe the strong antioxidant power of Vitamin E is a legitimate defense against cancer, as well as a variety of other age-related complications.

## 5. Conclusion

If you've just finished reading this manuscript, congratulations: you're "Age Wise!" This means that regardless of your 'chronological age today, you now know how to manage your biological aging the smart way: providing your body with the right nutrients it needs in the right amounts each day to slow the aging process, so you can fully enjoy the years ahead.

As you learn more about supplementation as a way to slow aging, we suggest you keep this A-Z reference handy so you can refer to it often. Additionally, remember that as you select quality supplements, ensure you purchase reputable products from a company you know and trust-one that conforms to the highest manufacturing standards using only pure, potent nutrients. It does make a difference!

Now you can make a difference -- in your own life and those around you, when you share this important medical news. Rediscover your youth and hold on to it longer. It's easy with these "Age Wise" recommendations!

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## 6. Healthy Aging Formula Description

Extracted from: http://my.waiora.com/products/item1001-HAF.php#steps

**The Most Unique Anti-Aging Supplement on the Market.**

Waiora's HEALTHY AGING FORMULA uses a proprietary blend of natural ingredients to help reduce the effects of aging by naturally replenishing key compounds that decline with age. It has been scientifically formulated to help promote healthy joints, accelerate weight loss when dieting and exercising, and support healthy immune and cardiovascular function.*

**A Powerful Combination of Ingredients**

As we age, not only are there visible signs of aging, but significant changes are taking place internally. From birth to 20 years of age, our hormone levels rise, contributing to increased metabolism, a high libido and a healthy immune system. But as we get older and our bodies and organs begin to age, these levels decrease, slowing our metabolism, lowering our libido, reducing our mobility, and making us vulnerable to illness and disease. Healthy Aging Formula provides support for these and other age-related concerns.*

This supplement contains 3-BETA, a patented, proprietary compound normally found in our bodies, which declines as we age. Replacing this key metabolite helps to maintain lean muscle mass and accelerate weight loss, promotes a healthy immune system, and supports heart and cardiovascular function.* Healthy Aging Formula also contains Bioactive Hyperimmune Milk Protein Concentrate, a unique blend of proprietary ingredients, proven to support normal joint function. It is the first supplement to contain both of these powerful ingredients which makes it one of the most unique anti-aging formulas available.

Key Benefits

- Replenishes key compounds that decline with age.*
- Supports joint health and mobility.*
- May significantly enhance most weight loss programs.*
- Promotes a healthy cardiovascular system.*
- Reduces bad cholesterol.*
- Helps maintain healthy blood pressure.*

- Builds up your immune system.*

** A legally required disclaimer: These statements have not been evaluated by the Food and Drug Administration. These products are not intended to diagnose, treat, cure or prevent any disease.*

## Frequently Asked Questions

**Q**. *What is 3 Beta-acetoxyandrost-5-en-7, 17-dione?*
**A**. 3 Beta-acetoxyandrost-5-en-7, 17-dione (3-BETA), is a natural substance produced by the body in our adrenal glands. Scientists and physicians believe 3-BETA plays an important role in up-regulating key thermogenic enzymes in the body, thereby enhancing resting metabolic rate.

**Q**. *Is 3-BETA a new compound?*
**A**. This naturally-derived metabolite was discovered in human urine in 1958. There have been more than 50 years and $60 million invested in research and 175 patents developed on 3-BETA.

**Q**. *What is the difference between 3-BETA and DHEA?*
**A**. 3-BETA is a natural metabolite that is produced in the body from DHEA. Research scientists at the University of Wisconsin isolated the metabolite of the DHEA and developed a method to produce it. Like DHEA, the levels of 3-BETA decline with age. 3-BETA is chemically distinct from DHEA and they are two completely different chemical entities. After 3-BETA is derived from DHEA, it cannot convert back to DHEA in the body. 3-BETA unlike DHEA cannot convert to other steroid hormones in the body.

**Q**. *Is 3-BETA an anabolic steroid?*
**A**. No. 3-BETA is not an anabolic or an androgenic steroid. Unlike DHEA, it does not convert to testosterone or other anabolic steroids in the body. Research has shown that 3-BETA is not able to interact with the androgen receptor in the body, thereby assuring that it has no ability to produce androgenic or anabolic effects in the body.

**Q**. *Is 3-BETA natural?*
**A**. We call 3-BETA "the most natural" of natural products. This is because it is naturally found in everyone's body. By taking 3-BETA, you are simply putting back something that declines as we age.

**Q**. *Is it safe?*
**A**. Yes. 3-BETA does not have any known side effects. It has been put through very rigorous testing to insure that it is safe.

**Q**. *What does Bioactive Hyperimmune Milk Protein Concentrate do?*
**A**. Bioactive Hyperimmune Milk Protein Concentrate is a patented, clinically proven, unique milk protein concentrate with bioactive compounds. This unique product has been shown in published clinical trials to significantly decrease temporary joint pain and stiffness and significantly improve mobility and range of motion.

**Q**. *How does Bioactive Hyperimmune Milk Protein Concentrate work?*

**A**. Bioactive Hyperimmune Milk Protein Concentrate works by making the "tight junctions" of the blood vessels even tighter. This action interrupts the cycle of inflammation, reducing pain, increasing mobility and expediting joint recovery.

***Q***. *Bioactive Hyperimmune Milk Protein Concentrate works by making the "tight junctions" of the blood vessels even tighter. This action interrupts the cycle of inflammation, reducing pain, increasing mobility and expediting joint recovery.*

**A**. Yes. Healthy Aging Formula is 90% lactose free.