Special Report:

LIVING LONG, LOOKING YOUNG

In 1546 AD Lucas Cranach the Elder depicted a Fountain of Youth where old people were carted to a fountain to bathe and become young again. Will recent discoveries of age-controlling genes now make it possible to reverse aging?

Americans confused and easily swayed by advertising claims for anti-aging products.

Here's what you should know about anti-aging strategies

By Bill Sardi

The Baby Boomers are beginning to get wrinkles, wear reading glasses, and experience stiff joints. And they desire anti-aging strategies more than any other generation.

The disclosure by the Federal Trade Commission that US consumers were deceived into purchasing $70 million of one brand of dietary supplement intended to elevate growth hormone levels based on unfounded claims of effectiveness certainly provides evidence Americans are avidly interested in anti-aging strategies, but probably misdirected at the same time. Consumers appear to be easily swayed by advertisements for anti-aging products and not yet astute enough to discern the **difference between longevity and the appearance of youthfulness**.

Longevity is living long, but a person won't necessarily look younger than their age after 100 years of living. Youthfulness is aging without showing

the visible signs of aging, facial wrinkles, hair thinning, need for reading glasses, and stiff joints.

Is it possible to achieve both? There is some promising evidence that both can be achieved. But many adults consider anti-aging to mean efforts to hold onto a youthful appearance, not necessarily living extra long. In fact, it appears **most males are more concerned about loss of hair and impotency than living long. Females are more interested in wrinkle cures, retaining moist skin and thick hair than continuing to remain fertile.**

One of the oldest persons to have lived in modern times is **Kamato Hongo** of Japan. Her birth certificate confirms she was 116 years of age when she died, but the aging spots, wrinkled leathery skin and grey thinning hair visibly demonstrates a person can live very long and look very old. **Longevity is not youthfulness.**

A recent Harris poll found there is a high level of confusion over anti-aging products, especially those used to treat the visible signs of aging. According to the poll:

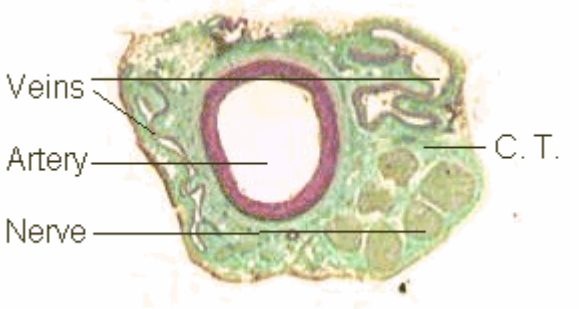
- Most women (72.4 million) and fewer men (14.2 million) have used or are currently using an OTC or prescription product to reduce the visible signs of aging.
- Far fewer women (7.7 million) and men (5.3 million) have had procedures done to reduce their signs of aging.
- About half of the women who have taken these measures think they were at least somewhat successful at reducing their signs of aging.*
- Increased use of products and procedures to reduce the signs of aging is expected in the future: 77.3 million women and 21.3 million men are likely to try some sort of anti-aging product or procedure in the future.

Even Time Magazine got it wrong when it visually displayed the effects of aging on a female face for its cover story on *"How to Live To Be 100 and Not Regret It."* Time Magazine's report talked about remarkable breakthroughs in longevity but failed to show how people how they could still look younger.

Males appear to be more interested in maintaining hair and sexual performance with advancing age than in increasing their lifespan.

Erasing the effects of aging

If there is a molecule that can erase the visible effects of aging it is hyaluronic acid (HA). This molecule is the water-holding molecule of the body. One gram (1000 milligrams) of HA holds up to 6 liters (quarts) of water in the body. No, HA doesn't produce water retention, it gels water so it can fill and puff up the skin and eyes, cushion joints and nerves and moisturize hair and skin. HA looks like jello. HA is the molecule that babies are loaded with. It is the molecule produced abundantly during pregnancy that gives women beautiful skin and thick hair. With advancing age humans produce less HA, plus sun exposure or disease can accelerate loss of HA, and this results in wrinkles, shrinkage of height, shrinkage of the eyes which can result in the premature need for reading glasses, thinning of hair, and loss of cushioning in joint spaces that results in pain and bone wear. Orthopedists and dermatologists attempt to make up for the loss of HA by injecting it into joints and the skin. But a better approach is to boost HA production from within the body, just like it was produced during youth.

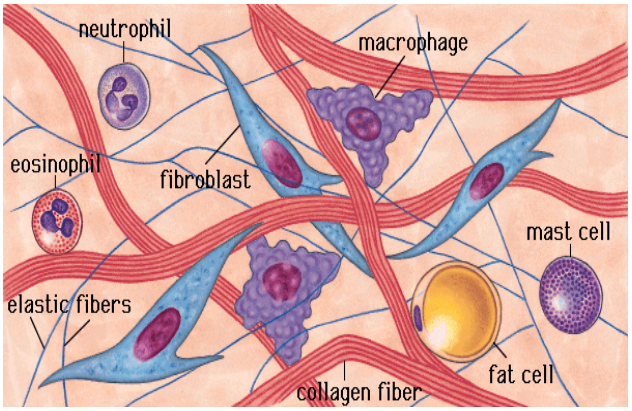


HA resides in the connective tissue (CT) of the body. This is the goo that connects cells. See the diagram above. The goo (shown in green) that fills most of our body is connective tissue (collagen) and HA is produced within the connective tissue by cells called fibroblasts.

Contrary to what physicians often claim, oral HA is absorbed and has been demonstrated to trigger the youthful production of HA by fibroblast cells. Oral HA supplements now abound but have not received proper attention. So far, physicians have stood on the sidelines touting their injectable forms of HA while thousands of Americans have personally discovered the benefits of oral HA.
See the age reversing effects of oral HA for yourself below.

Age reversing effects of oral hyaluronic acid photographically captured. Photo taken in July of 2003

Four months later. Notice the disappearance of fine lines and wrinkles around the eye. (Photos copyright protected)



Hyaluronic acid (HA) is produced by fibroblast cells within connective tissue. Oral HA supplements can activate fibroblasts to produce more HA, like during youth. Contrary to what most doctors say, oral HA is absorbed, though there are differences in molecular weight of various brands of HA. Hyaluronic acid supplements produced synthetically are 2 million Daltons in molecular weight. HA supplements derived from rooster combs are about 500,000 in molecular weight. And HA supplements from chick sternum cartilage are 1500-3000 in molecular weight. The lower the molecular weight, the better the absorption.

Do people really want to live longer lives?

It may be an assumption that people living in developed countries actually want to live longer lives. Some time ago Massachusetts Institute of Technology conducted a poll and asked Americans what technological breakthroughs they desired most. Responding to a list, they picked biodegradable plastic, an automated home, and a driver-less automobile ahead of an anti-aging pill. This is probably because **the public associates a long life with senility, infirmity and handicaps.** For many, their lack of interest in longevity often says they don't want to abandon their lifestyle and food habits.

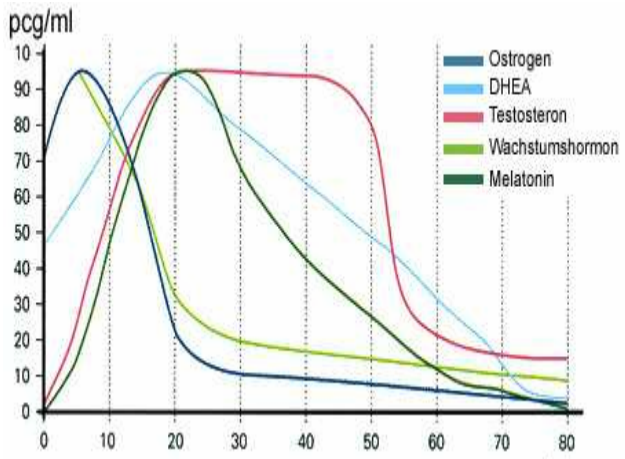
Don't waste your time

Most Americans will be surprised to find that exercise programs and cholesterol control are not effective strategies to promote longevity. So consumers can begin to sort out which strategies are the most promising, the following chart is provided.

Anti Aging Strategy	Est. Additional Years of Life	Drawbacks Side Effects	Appearance of Youth
Diet			
Vegetarian (iron control)	5	Possible nutrient deficiency	--
Calorie restriction	30-50		Leanness
Red wine	30-50	Alcohol, liver	Leanness?
Cholesterol control	0.5	Mental depression, low fertility, bone loss	--
Exercise	1.5	Injury	Leanness
Antioxidants			

Vitamin C (300+ mg)	6 (males)	Negligible	--
Hormones			
Human growth hormone	0	Many	Leanness
Melatonin	Unknown	Sleepiness	Memory and activity
Vitamin D	Unknown		Muscle strength
Collagen Enhancers			
Vitamin C (300+ mg)	6 (males)	Negligible	--
Glucosamine	Unknown		--
Hyaluronic acid	Unknown	Blood pressure rise, bloating, not for autoimmune problems	Youthful skin hair, eyes, joints
Calorie restriction mimics			
Resveratrol	Mimics calorie restriction 30-50	Interference with medications	Youthful skin, dark hair, retained memory, weight loss

Hormones and aging



German anti-aging researchers show how various hormones decline with advancing age.

Can it be assumed that every hormone that declines with age needs to be replaced with a supplement? Estrogen was replaced in women without adequate studies. While estrogen replacement therapy eased symptoms of menopause and delayed bone loss, standardized doses produced a slight increase in the risk for certain cancers and heart disease. But more individualized hormone replacement is expected to be safe and still produce health benefits. Human growth hormone (HGH) replacement is widely promoted, but may increase the growth of existing tumors and produce other side effects. Because so many Americans have tried HGH, it's worthy of further comment.

What about growth hormone?

The promotion of oral growth hormone boosters appears to be a distraction. At $45-60 month they are affordable for many, but based upon questionable evidence. One internet seller of human

growth hormone (HGH) enhancers claims decades of research encompassing over 2000 reports confirms HGH is beneficial for aging adults. But those studies mostly involve injectable HGH, not HGH boosters, and certainly not the particular product being promoted.

A German anti-aging journal (shown left) touts human growth hormone and the importance of maintaining muscle strength. Recent discoveries indicate there may be simpler ways to maintain muscle mass with old age.

The American Association for Anti-Aging Medicine (A4M), a group of physicians, largely promotes anti-aging medicine centered around HGH therapy. There has been considerable criticism of A4Ms promotion of HGH as an anti-aging treatment since there is **no evidence anyone will live longer even if they continually undergo HGH treatment.**

Elmer Cranton MD, provides a case history of a man who benefited from HGH therapy. H.T., a 64 year-old businessman, had been giving himself daily injections of growth hormone for 4 years. In his own words, *"My energy, stamina and sex drive are like a 30-year-old. Muscle tone is fantastically improved. My waist went from 42 inches to 34 and I went from 29 percent fat to 12 percent. I look in the mirror in the morning and can't believe that guy is me—it looks like me when I was 30. The palsy in my hand is gone, and my skin went from tissue-thin to youthful."*

The point here is that this man was using injectable HGH, not the oral HGH enhancers, and at a cost of about $4000 per year! This isn't for everybody. In fact, Dr. Cranton says adults need to be tested to see if growth hormone levels are low and then prescribed HGH.

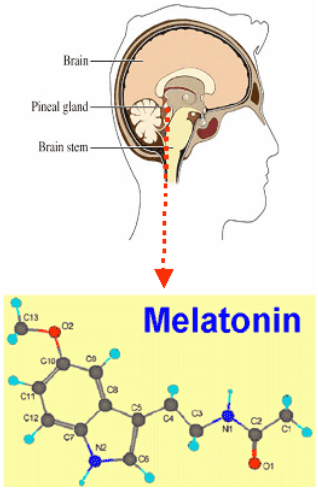
Dr. Cranton says early use of high-dose HGH produced side effects such as carpal tunnel syndrome, decreased glucose tolerance (increased tendency to diabetes), breast enlargement (even in males), and fluid retention. Using the lower, currently recommended doses, those side effects are not seen, says Dr. Cranton. But remember now, this is for the physician-monitored injectable HGH.

Better than HGH?

Recent discoveries reveal that an array of amino acids and vitamin D may allay age-related loss of muscle mass. A recent report describes **vitamin D as *"an authentic strength preserving hormone."*** Older adults exhibit improved balance and fewer falls when their diet is supplemented with vitamin D. [Molecular Aspects Medicine 26:203-19, 2005] Supplemental **amino acids have also been found to prevent or reverse loss of muscle** among aged or bedridden subjects. [Curr Opin Clin Nutr Metab Care 8:408-14; J Clinical

Endocrinology Metabolism 89:4351-8, 2004]

What about this hormone?



Melatonin is a hormone that the public probably recalls is a sleeping aid and time zone synchronizer for jet lag. It is secreted in the pineal gland at the base of the brain during sleep (eye closure triggers its production).

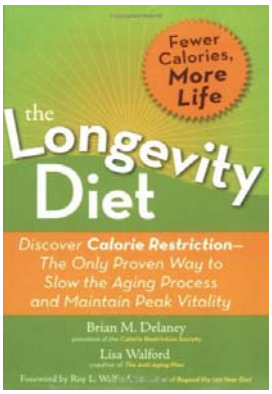
Melatonin plays an important role in aging and prolongation of life span. [Annals NY Academy Science 1035: 216-30, 2004] Melatonin may retard brain aging. [Annals NY Academy Science 1035: 197-215, 2004] Melatonin provides a lesson about healthy aging. Sleep is an important part of health and longevity.

It's odd that growth hormone is promoted so widely and little is said about melatonin's profound anti-aging effects.

Is an anti-aging pill possible?

A 2002 report published in Scientific American magazine said an anti-aging pill is possible now that researchers have mapped the entire human genome and have discovered single genes that control the rate of aging. A couple of gene families are FOXO and SIRTUIN. Sirtuin 1, a DNA repair gene, has gained considerable attention because it is the gene involved in producing the beneficial effects of calorie restriction, which is an unequivocal longevity intervention.

What about fasting?



You don't need an expensive anti-aging discovery to activate the Sirtuin 1 anti-aging gene. All a person need do is eat less food. The modern version of fasting to live longer is **calorie restriction.** To be accurate, fasting is little or no food and calorie restriction (CR) is measured-calorie living (~1200-1500 calories per day). **Brian M Delaney, president of the Calorie Restriction Society, and Lisa Wolford**, have combined to author an intriguing description of how to limit calories for longevity rather than just for weight control in their new book ***The Longevity Diet***. The book is worth the read, especially when you learn even short periods of CR works. A recent mathematical analysis caused researchers to claim that CR wouldn't produce more than a 7 percent increase in lifespan in humans. But their math doesn't add up. The entire population of Japan consumes about 1000 less calories per day than western societies and has the longest life expectancy. In fact, in a couple of decades

some experts predict life expectancy in Japan will exceed 100 years!

Japanese adults living in the island prefecture of Okinawa traditionally eat fewer calories (~1200-1700 per day) and there is a concentration of centenarians there. CR works, it's just not likely to be adopted by many. But adoption of CR strategies will likely to add years of healthy living to the human lifespan. Now, for the rest of humanity that does not have the discipline or willpower to practice calorie restriction, a pill that mimics calorie restriction is at hand.

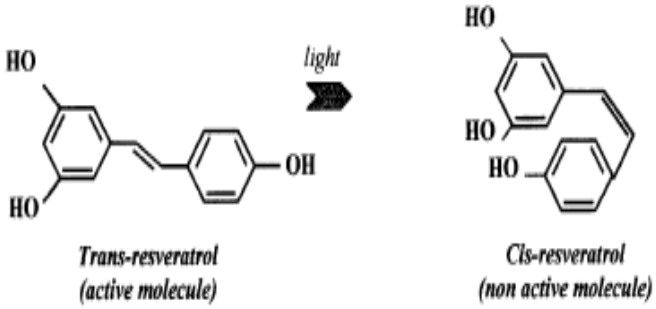
Calorie restriction mimics

Don't want to change your diet, stop smoking, or exercise? Just want to take a pill that will erase the effects of aging and counter the adverse effects of a bad diet as well as poor health habits. Have we got a pill for you!

Researchers at Harvard Medical School discovered calorie restriction wasn't the only way the **Sirtuin 1 gene** can be switched on. A small molecule found in grapes, mulberries and peanuts called **resveratrol**, but more concentrated and preserved in red wine, can pass through cell membranes and into the cell nucleus to activate the Sirtuin 1 gene. It would now be theoretically possible to take a red wine pill and achieve the benefits of calorie restriction without depriving oneself of food. This is exactly what the French do every day, and they live, on average, about 25-45 percent longer in wine-growing districts!

But unfortunately, the promise of red wine anti-aging pill has been dismissed by investigators that resveratrol, once consumed, is not biologically available. But published studies indicate the liver metabolizes resveratrol to preserve it for up to 9 hours in the human body.

Widely circulated news reports of resveratrol's lack of bioavailability may have been intentionally spread by competing pharmaceutical interests since this molecule is available as an economical dietary supplement. . [J Pharmacology Experimental Therapy 302:369-73, 2002; Drug Metabolism Disposition 32: 1377-82, 2004]



However, resveratrol supplements may fail to realize their potential, not because of a lack of bioavailability, but because their contents are subject to degradation by light, oxygen and heat. Scientific studies reveal that exposure to environmental factors can alter resveratrol from its active (*trans)* form to its far less active (*cis*) form in dietary supplements unless special measures are employed to protect these molecules during encapsulation. [Journal Agriculture Food Chemistry 44: 1253-57,

1996; J Chromatography B Biomed Sci Applications 21;702:103-10, 1997]

Special encapsulation methods, such as the use of opaque, airtight capsules, must be employed to produce resveratrol pills that will reliably activate the Sirtuin 1 gene.

Three Super Centenarians Had One Thing In Common – They Drank Wine

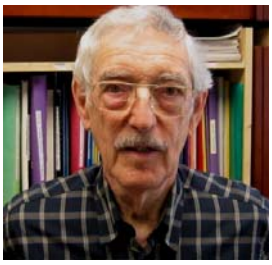
Antonio Todde of Sardinia (115 years), Jean Calment of France (122 years) and the Queen Mother of England (100 years- outlived one of her daughters by 30 years) were all red wine drinkers. The fact is, a person who drinks red wine will live, on average, far longer than a person who abstains from alcoholic beverages. It's not the alcohol, it's a molecule called resveratrol that is concentrated and preserved in a wine bottle that is attributed to super longevity.

There are three major geographical concentrations of centenarians in the world, one in Okinawa where CR is practiced, and the other two in the wine-growing districts of France and the Italian isle of Sardinia. These are live demonstrations of the involvement of the Sirtuin 1 gene in promoting human longevity.

It needs to be said that human trials of red wine pills have yet to be published. All studies to date have been conducted in lab dishes or animals. However, there are many human studies that confirm unusual health properties from the consumption of red wine. Studies also show that these same health benefits are achieved when alcohol-free wine is consumed. This provides further evidence that resveratrol in wine is a key molecule involved in longevity.

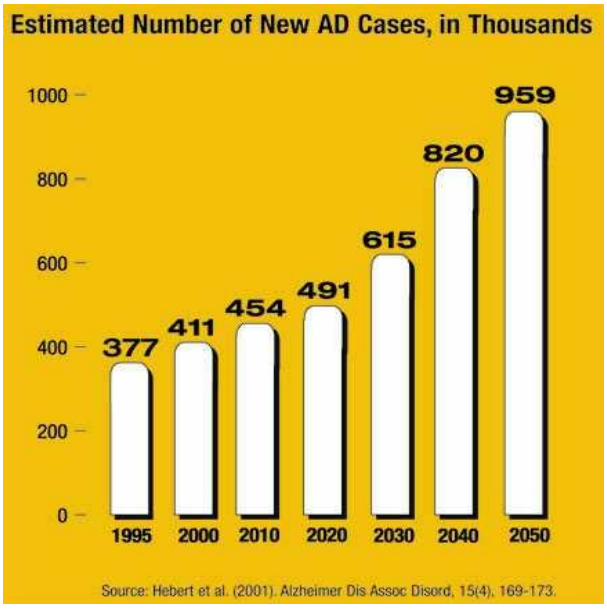
Take action, before you forget!

There is little question, with the prolonged lifespan of Americans, there will be a dramatic rise in age-related brain diseases. There are effective strategies at hand, but most are not being fully utilized. Most Americans will live into their eighth decade of life, but suffer with avoidable short-term memory problems in their latter years. Huperzine, folic acid, vitamin B12, vitamin E, melatonin, rice bran extract, lipoic acid and carnitine are among the most promising natural molecules to stave off the memory lapses of advanced age.



Wine may have been the first actual anti-aging potion. But probably **Dr. Bruce Ames** of the University of California at Berkeley lays claim to the first modern validated anti-aging prescription. His

combination of **lipoic acid and carnitine** in aged lab animals reversed the effects of aging, improving memory and physical performance. [Annals N Y Academy Science 1033:108-16, 2004] Dr. Ames sells his patented combination of lipoic acid and carnitine at juvenon.com. So far, there has been no stampede for this product. This is just further evidence the public is misguided when it comes to anti-aging supplements.



More life extenders

Is fish oil another life extender? Researchers at the University of Texas report that mice given omega-3 fish oil live about 40% longer (345 vs. 242 days) compared to mice on a standard lab diet. [Journal Nutrition 131: 2753-60, 2001]

A joint team of researchers in Spain and Argentina report that high-dose vitamin E in aged mice increased their median lifespan by 40% and maximal lifespan by 17%. The vitamin E dosage was equivalent to 1200-2000 mg in humans. [Am J Physiology: Regulatory Integrative Comparative Physiology *0: 8342004, 2005*] These are not humans studies, however human longevity studies are nearly impossible to conduct as they require subjects to participate for their entire lifetime.

Many promising longevity molecules

There are many promising natural non-prescription anti-aging molecules available as dietary supplements. Many are identified in this report. But consumers are not likely to distinguish them from the products now being hyped in the dietary supplement arena.

Walk into a health food store these days you are likely to be confronted with signs talking about hoodia, a yet unproven weight loss herb; penta water, a bottled water with no proven health benefit; Tibetan goji berries (re-named wolfberries) selling for $25 a pound; or noni juice, a beverage promoted for its enzyme action for which there is scant evidence of any health benefits. Remarkable breakthroughs involving vitamin D, resveratrol, folic acid, alpha lipoic acid, carnitine, are often overshadowed in today's health food store.

Another strategy for long life

Longevity researchers often cite 120 years as the optimal human life span. Various diseases and conditions cut short this potential. A defensive strategy would be to avoid any diseases or conditions that are known to shorten the human lifespan.

For example, according to some recent reports, alcoholism is said to take 30 years off of a person's life, smoking tobacco about 8 years and obesity 2-5 years.

The North Carolina State Center for Health Statistics recently compiled the following ranking of factors that influence *"years of potential life lost"* (YPLL). Birth defects and sudden infant death take more years away because they occur at the beginning of life. Cancer, heart disease, diabetes, liver disease cut life short in the latter years.

Table 1: Rank by YPLL for Total Population
North Carolina Resident Deaths, 2000

	Cause	YPLL	# of Deaths	Avg YPLL per Death	Rank on # of Deaths
	All Causes	*1,181,176*	*71,732*	*16.5*	
1	Cancer	259,318	15,747	16.5	2
2	Heart Disease	254,914	19,649	13.0	1
3	Unintentional MV Injuries	65,943	1,635	40.3	9
4	Cerebrovascular Disease	62,794	5,692	11.0	3
5	Other Unintentional Injuries	48,644	1,833	26.5	7
6	Chronic Lower Respiratory Disease	47,992	3,695	13.0	4
7	Perinatal Conditions	45,474	602	75.5	15
8	Suicide	34,847	952	36.6	12
9	Diabetes Mellitus	32,091	2,078	15.4	5
10	Homicide	29,960	652	46.0	14
11	Pneumonia & Influenza	21,065	1,936	10.9	6
12	Chronic Liver Disease & Cirrhosis	18,297	784	23.3	13
13	Birth Defects	18,052	305	59.2	17
14	HIV	17,505	462	37.9	16
15	Nephritis/Nephrotic Syn/Nephrosis	17,481	1,311	13.3	10
16	Septicemia	14,711	1,047	14.1	11
17	Alzheimer's Disease	13,272	1,725	7.7	8
18	SIDS	7,182	95	75.6	18
	All Other Causes	*171,632*	*11,532*	*14.9*	

State Center for Health Statistics, North Carolina, Report No. 130, February 2002

For more information about oral hyaluronic acid, refer to the book
HOW TO LIVE 100 YEARS WITHOUT GROWING OLD, by Bill Sardi.
For more information about resveratrol and red wine pills, refer to the book
THE ANTI AGING PILL by Bill Sardi
Booth books are available at
www.naturalhealthlibrarian.com

Disclosure: Bill Sardi has a financial interest in hyaluronic acid and red wine pills.

Summary: Anti-aging strategies

Decline or Loss of Function of Human Tissues and Organs Due to Aging Copyright Bill Sardi 2005			
Loss of	Medical term	Drugs	Natural Remedies
Hair (male baldness)	Androgenetic alopecia	Minoxidil (Rogaine) Finasteride (Propecia)	Saw Palmetto berry; hyaluronic acid, resveratrol
Hair (female hair loss)	Menopausal alopecia	Estrogen replacement	Flaxseed lignans; oral hyaluronic acid, resveratrol
Muscle	Sarcopenia	Human growth hormone	Amino acids, vitamin D, resveratrol
Bone	Osteoporosis	Estrogen replacement Bisphosphonates include: Actonel (risedronate) Fosamax (alendronate) Aredia(pamidronate) Zometa (zoledronate) Skelid (tiludronate) Bondronate(ibandronate) Bonefos/Ostac(clodronate)	Flaxseed lignans, resveratrol, fermented soy, other plant estrogens
Collagen	Atherosclerosis/ Arteriosclerosis (arterial collapse), arthritis	No drug adequately addresses the problem of arterial collapse; only statin anti-cholesterol drugs are prescribed	Vitamin C, proline, lysine
Hyaluronic acid (HA)	Wrinkles, hair loss, glaucoma, floaters, arthritis,	Skin & hair: facial peels, topical skin and hair rejuvenators, face lifts, botox injections. Eyes: medications. Joints: Anti-inflammatory drugs, collagen and HA injections	Oral hyaluronic acid, glucosamine, chondroitin,
Brain cells (working memory)	Alzheimer's	Acetylcholinesterase inhibi donepezil, rivastigmine, tacrine	Huperzine, folic acid, vitamin B12, acetyl L carnitine, lipoic acid, resveratrol
Heart muscle strength	Heart failure (weak left ventricle) or low ejection fraction	Digitalis. Also diuretics (water pills), beta blockers, calcium blockers, ACE inhibitors, others	Coenzyme Q10, taurine, carnitine, resveratrol
Impotence	Erectile dysfunction	Viagra, Cialis	Resveratrol, high-dose arginine, ginseng