

GEOFFREY GRANT, PH.D.

IT IS NEVER TOO LATE TO REJUVENATE
A HEALTHY LIFE & WELLNESS MEAN LIVING LONGER, HAVING AN INDEPENDENT
LIVING
STATUS & AN EXTENDED PERIOD WITH MORE ENERGY USING NUTRITIONAL
SUPPLEMENTS.

Can you prosper and live long?

Statistically, the rich die young ! FROM Over-indulgence

Most folks with wealth have NO idea how to stay healthy as they age. ! MSA does not have to beat you!
Usually most folks listen to an MD trained about 1970. **Wealth is NOT.. Health !**

If you have NO interest in your well-being as you age, then you get to grow old,
suffer and pass along with your toys and assets, and GOD, if she exists, will bless
you!

A scary thought, but.....! Having money, and means, is the easy part; being and
staying healthy past 75 is a challenge; it requires as much effort as building and
keeping wealth.

We live in the **knowledge** economy AND living long and healthy is
knowledge-based and discipline dependent.

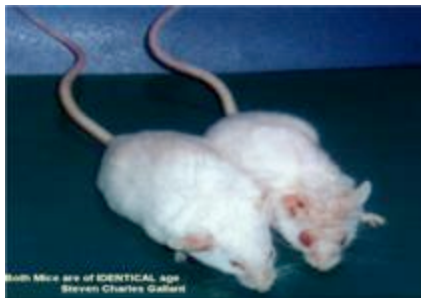
What is AGING ? Multiple System Atrophy [MSA] !

All of your body parts are gradually going to DECAY !

ButDo you have any idea that you can live in health and well-being for 20-30 percent [**14 to 20 years**]
longer just by taking supplements . ?

Of course, soon IF THE PHARMACEUTICAL COMPANIES GET THEIR WAY they will be illegal !

The wealthy have figured out how to accumulate more material availability than 97% of other
people **BUT..** they know little or nothing about staying healthy and living many extra years beyond the
average Joe.



Who would believe that the mice, in the picture, are litter-mates and
brothers ?

One was fed a single supplement that facilitates a 40% longer life in
good health.

His brother grows old and decrepit! dying **on time** like he is
supposed to. !

**! THAT MAY BE YOUR IDEA OF FUN
BUT Not Mine !**

What is the supplement ? See later !

How are your parents doing !

Supplements – often plant derived nutrients- are available that reduce the risk of Alzheimers and
dementia, diseases suffered by **50% of everybody** over 85, 10% past 65 – it's a steep curve. Other
supplements dramatically improve mobility, the brain and overall energy metabolism in old age. Also, the
risk of Cancer, Diabetes and Arthrosclerosis can all be significantly reduced by simple nutrients. The brain
functions - memory and cognitive abilities- are enhanced by taking specific nutritional supplements.
The results are not a pie-in-the-sky-Chinese remedy- they are the result of Western experimental science
that can be supported and reproduced. ! **If you care !**



If not, your results are predictable. ! You get old faster and with more

ailments than necessary AND probably with more pain too.

Can you live long and prosper?

Pat Regnier, Money Magazine senior editor. Sept, 2006

The attached monogram gives a recipe for health, well-being and long-term independent living into extra years of living, and explains the why !

Recipe for Regaining Lifeforce

There are solutions readily available at your nutrition store.

What should a person be taking as nutritional supplements to maintain their health and well-being beyond what is **normally** expected as we age ?

Longevity requires dietary control. All animals live longer and healthier on restricted diets. Human should eat 1500 calories per day or less with long periods of no food. This will improve insulin sensitivity and the body's response to eventual food intake. In animals longevity can also be accomplish by eating every other day and eating as much as they wish.. Easiest and best eat only once a day meals. Very minor snacks at other times.

Antioxidant supplements

Vitamin C	1 gram	Supplement & Antioxidant
Vitamin E	800 units	Supplement & Antioxidant
Alpha-Lipoic Acid	250 mg.	Supplement & Antioxidant
N-Aceyl-L-Cysteine	500 mg.	Supplement & Antioxidant
Selenium	200 microg	Supplement & Antioxidant
Bioflavonoids	500 mg.	DISCUSSED below

Resveratrol, Fisetin, Curcumin. AND/OR Quercetin see text
Plant extracts such as Grape seed extract, Citrus Bioflavanoids, Green Tea extract, are effective ,
generally polyphenol levels in the extracts are undisclosed.

Age depleted nutrients

Glucosamine - 1-2000mg daily especially for athletes over 50

Aging bodies do not make enough to replace tendons, ligaments, cartilage and connective tissue all are derived from Glucosamine and amino sugars.

Vitamin B Complex B vitamins deplete daily must be replenished.

Coenzyme Q10 50-100 mg Energy manufacture component

Chromium Picolinate 200 microg co-factor

L-Carnitine 500 mg. Energy manufacture component

AND/OR

Acetyl -L- Carnitine 1/2 to 1 gram Energy manufacture component

Omega-3-fatty acids- 1-2 grams **replacement of damaged Membranes fish or Flax oil**

Lecithin 1-2 grams **source of choline for membranes repair**
Membranes are destroyed by oxidation damage

REMEMBER the MICE in the Picture -Front Page. ? The supplement is L-Carnosine

L-Carnosine 500 mg **Agent to clean up cells**

Multi-mineral supplement together with a **Colloidal or Ionic mineral solutions** containing 75 trace [rare-earth?] minerals. act as **Co-factors etc.**

DHEA (25-50 mg.)

Steroid precursor

DHEA is a precursor of all steroid metabolites and DHEA has been shown to seriously decline in parallel to age. Androgens and Estrogen decline but not as quickly.

Supplementation with DHEA has beneficial effects upon physiology of all tissues, and by itself improves muscle mass (particularly in men) and many other tissues according to a large number of studies

Simple supplementation with 25-50mg of DHEA will adequately raise DHEA to levels found in youth. DHEA functions as a primary anabolic hormone and has been shown to have no side effects at almost any dose levels taken for very extended periods.

Melatonin. –at sleep time.

200 microg ↗ 3 mg.

Revitalization of your cellular energy production by stabilizing sleep cycles **melatonin** (200 mcg. –3 mg.) immediately prior to sleep.

The melatonin supplementation acts to re-enforce normal circadian rhythms of both sleep and cellular metabolism and stimulates the cellular production of Anti-oxidation enzymes. Melatonin amounts often need to be titrated to individual physiology. Often 3 mg. is needed to generate a full nights sleep, but sometimes only 200 mcg, produces desirable affects, and more generates fitful dreams and other effects. Experiment with amount

Often taking **Acetyl carnitine** at sleep time with the melatonin will facilitate sleep patterns. AND is reported to stimulate correct levels of growth hormone secretion an hour or so after sleep begins.

GRACEFULLY AGING ! THERE ARE PROBLEMS WITH THE GOLDEN YEARS. ! THEY SUCK !!

If we are able to maintain our health and well-being very few people would not wish for a longer, happy existence. However, as we get older, THERE IS a loss of lean muscle, strength, bone mass and our once vital energy potential. At the same time body fat increases, the skin wrinkles, disease resistance declines and there is a decline in mental functionality with memory loss and mood changes. Our vital signs begin to dim. Scientific research has shed light on why we age, and how we are able to retard [slow] the process.

Is life fun after 75-80 years old ?

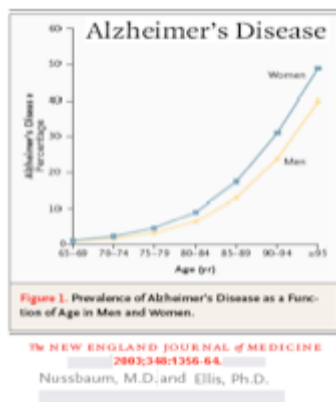
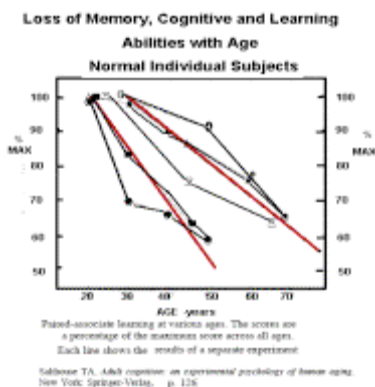
What do you expect ? Will it be worthwhile to live past 80 ?

I ask the question because we may expect to decline physically BUT

in the absence of a mind, life has little value !

AND if you lose your mind you will not be able to answer the question.

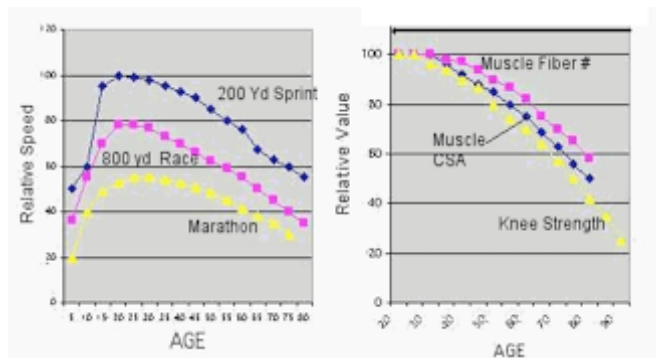
50% of those that survive to 85 years old have symptoms of Alzheimers and dementia.



Memory loss and cognitive ability decline increases exponentially after ~70.

Statistics show- all body parts become fragile and decay rapidly after a biblical lifespan [70 years old]. There is a loss of the brain function, mental and cognitive abilities in some people, [Alzheimer's] While in other people there is loss of muscles [Sarcopenia],

], or bones [Osteoporosis], AND/OR their immune system [Cancers].



The data show there is an expected loss of performance

THE SETS OF GRAPHS ABOVE REFLECT MAN'S PHYSICAL AND MENTAL DECLINE .

!

THESE PROBLEMS ARE GENERATED BY A LACK OF CELLULAR ENERGY PRODUCTION AND LOSS OF THE ABILITY TO MAKE USABLE ENERGY BY THE CELLS OF TISSUES AND ORGANS

HOWEVER, THE PROCESS CAN BE SLOWED and REVERSED !

You need, and can, to do something about it

Most visible declines are seen in the Cardio-vascular [heart attacks, stroke etc], physical performance and the immune systems [allowing Cancers to grow], but it happens slowly in ever tissue of the body.

What is happening ? What can we do about it ?

THERE IS AN ALTERNATIVE !

And large changes can be accomplished by nutritional supplements !

First you should understand the cause of aging !

As you age the body's *cellular energy* metabolism is shutting down. !

Energy production is critical in each cell of the body. *Each cell must make its own energy molecules.*

We fuel our cells with fats and carbohydrates but fuel must be converted to cellular energy molecules.

Aging is a failure of this energy production –conversion process.

A most common outward and visible sign is the pot bellied appearance of aging men. This is due to the storage of fat that is normally burned and/or converted to cellular energy in the young, but instead, in old age, is stored in the abdomen. The body's cells are losing the functionality of their energy making apparatus; the mitochondria.

As cells become unable to make energy molecules the body's systems [cells, tissues, and organs] begin a process of decay until they can no longer function adequately. If a critical system reaches this stage – the event becomes terminal.

The Leading Causes of Deaths tell use which systems are critical. Heart and cardio-vascular disease, Stroke (brain) and Cancer account for most of all deaths. Cancers are a failure of the regulation and energy metabolism of the cells of the immune system that throughout life protect us from infections and the cells that grow out of control. Additionally, after 80 the data show that one half of all survivors suffer from Dementia and Alzheimers and the rate increases with inevitable death. This means the brain is unable to make its own cellular energy. Dementia and Alzheimers are an epidemic that affects more people than HIV-AIDs or any other condition –it is synonymous with aging.

All of these conditions are the consequence of defective cellular energy metabolism within an organ, but there is a remedy.! See the information below and believe it

<>

Effects of a supplement !! <>

Teaching Old Dogs New Tricks

Adapted from Benjamin V. Treadwell, Ph.D. `Juvenon, inc.

After middle-age, your learning abilities are challenged, even frustrated. Your children or grandchildren can plop down in front of any new electronic device, turn it on and use every feature as if born with the knowledge, but YOU can no longer learn that quickly.

The mental quickness of all mammals declines as they get older, this includes humans, mice, rats and dogs. So why does our mind and learning ability change ?

Remember all the energy you had as a child, less after the teen years, and even less at thirty and beyond? The earliest noticeable effects seem to be less physical and mental energy. The decline affects all organs of the body but is especially noticeable in the musculoskeletal system, [speed, strength and endurance] and the central nervous system [learning, memory, cognition and reaction time.]

Mental decline, with age, happens in all animals!. Research on aging has shown this is due to a decline in cell energy production caused by a gradual deterioration of the mitochondria. The mitochondria are tiny cellular structures (several hundred per cell) that contain the machinery to convert food (carbohydrates, fats, amino acids) into specific chemical energy, ATP, usable by the cell. Each cell must make its own supply of usable energy as ATP !

The cell uses this chemical energy, ATP, for all cellular tasks including synthesis of proteins, macromolecules, membranes and cellular structures, as well as in the removing cellular debris, maintaining and repairing/replacing damaged cellular constituents [such as DNA and proteins] and important cell regulation reactions. These activities are required to maintain cell functionality, prevent mutations and the accumulation of damaged molecules produced by exposure to normal oxidation reactions, chemicals and/or the sun's UV irradiation.

As the mitochondria slowly deteriorate with age, they are not replaced in enough quantity and don't produce as much energy. Therefore, we move and think/learn more slowly, due to lower energy production !.

Research from Bruce Ames (University of California, Berkeley) and Tory Hagen (Linus Pauling Institute, Oregon State University) support the theory that age-impaired mitochondria can be responsible for slower learning.

Researchers using old and young rats, isolated mitochondria from older animals and found a significant decrease in energy production. However, after the older rats were fed **acetyl-L-carnitine and alpha lipoic acid** for a two- to three-week period, their mitochondria produced energy almost as efficiently as the mitochondria of young animals and these treated, older rats also demonstrated improved learning ability.

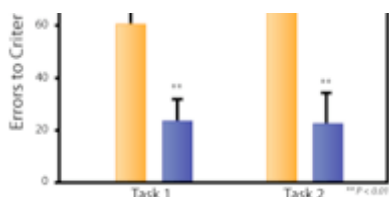
Improving Canine Thinking.

Investigation has extended the research to dogs with declining learning ability [7-8 years of age]. The results [published in the September 2007 FASEB Journal] showed improving mitochondrial health produces more energy in the brain for learning and memory. In this study, two groups of dogs, 7.6 to 8.8 years old, were fed twice a day. One group ate food containing 5 mg of alpha lipoic acid and 12.5 mg of acetyl-L-carnitine per pound (based on the dog's weight) the other group fed a placebo. After an initial five days on this diet, a two-month testing period started, with and without the supplements..



Less Errors with supplements.

The results show a reversal of the age-associated learning impairments when the dogs received the acetyl-L-carnitine and alpha lipoic acid enriched diet. This dog data and those



on rats, support the theory that learning and memory in aging animals are improved when brain cells produce more energy and mitochondrial health is stimulated. Human studies are underway.

Adapted from Benjamin V. Treadwell, Ph.D. Juvenon, inc.

So you can improve the energy metabolism of your brain and it will affect your memory, thinking and moods.

If Acetyl-L-carnitine and alpha lipoic acid improve brain function- do they help other organs, tissues and/or physical performance?

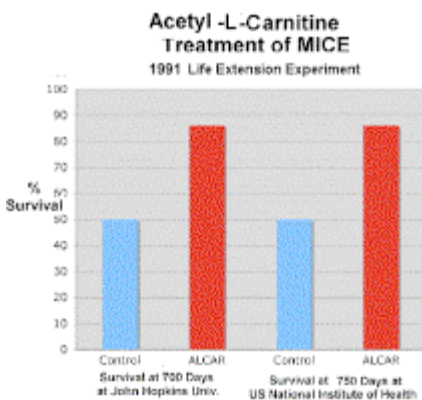
The most visible signs of decline are seen in the Cardio-vascular [heart attacks, stroke etc], physical performance and the immune systems [allowing Cancers to grow]. It happens slowly in ever tissue of the body.

The declines follow similar but not necessarily parallel courses.



Research has demonstrated that old animals will regain a youthful level of oxygen consumption, activity and general mobility by having their diets supplemented with acetyl-L-carnitine and/or N-butyl-hydroxylamine - both are able to improve mitochondrial energy production in as little as a month on the supplements.

THEREFORE, your activity level and general well-being will be improved with acetyl-L-carnitine and/or carnitine alone.



As an aside. Before the US Federal government announced they were in trouble with Social Security they funded a project to test acetyl-L-carnitine and its affect on lifespan.

When the initial results came out [published 1991] the funds were quickly cut off

!

NO WONDER. The results are still un-refuted in the literature [today 2007] and show that in two different locations -one being at the National Institutes of Health when 50% of untreated animals had died 85% of the animals receiving acetyl-L-carnitine where still alive and well. The feds apparently expect you to die On time - if everyone does they need do little with the Social Security problem. Canada does not allow sale of acetyl-L-carnitine as a supplement.

It's a nice thought that taking acetyl-L-carnitine will improve your overall health, your mind, physical performance and even help you survive longer. Acetyl-L-carnitine will actually rejuvenate your cellular energy metabolism and give you a new lease on life.

Acetyl-L-carnitine and Alpha Lipioc Acid are available in nutrition stores.

The effects of Acetyl-L-carnitine are real, your energy metabolism and your health and well-being will benefit.

However, other compounds, not so readily available, [and not approved by the FDA] have been shown to improve mitochondrial energy metabolism and to extend lifespan through a related mechanism.

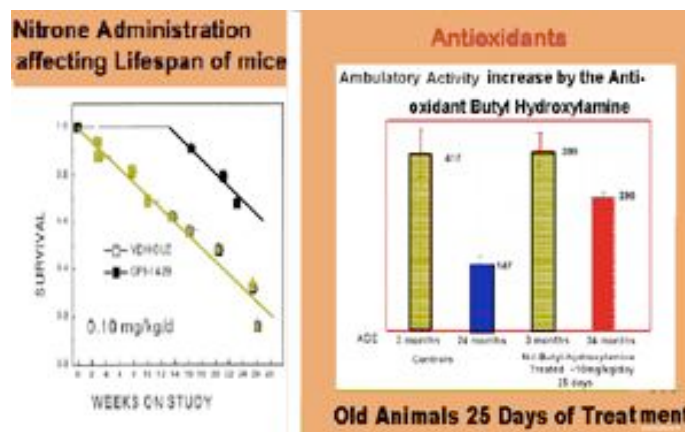
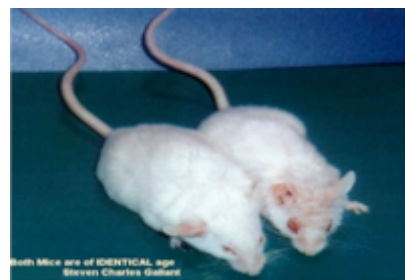


FIGURE. Effect of Nitrones on lifespan and mobility.

A group of compounds called Nitrones are anti-oxidants and several different ones improve health and extend lifespan. The active derivative of the Nitrones has been shown to be N-alkyl

Hydroxylamine which, when fed to animals, like Acetyl-L-carnitine, improves aerobic metabolism and increased the mobility of older animals.



Can you slowdown the aging of skin and the organs in other ways ?

Definitely YES. With **CARNOSINE**.

CARNOSINE is considered one of the premier ANTI-AGING compounds.

The mouse are littermates-brothers. the one in good health, was given a single dipeptide known as Carnosine

[beta-alanyl-L-histidine]. -Not related to Acetyl-L-carnitine.

The healthy animal lived 40% longer than his sibling.

Carnosine has been shown to allow cells in culture to grow and divide 20 to 50% more times than untreated cells. In the genetically modified animals-mice it has been shown to improve and delay all outward and visible signs of the aging. And based on the fact that treated animals live longer its internal tissues must be better also. This is likely because the carnosine allows normal tissue stem cells to grow and proliferate many more generations hence prolonging the period that the tissue can repair and maintain itself. Carnosine has been shown to prevent and reverse glycation, the process of cross-linking the cell's macromolecules and that promotes such things as tissue and skin aging.

Carnosine improves eyesight, skin condition, the immune system and general overall appearance.

It is not surprising that CARNOSINE is considered one of the premier ANTI-AGING

compounds.

CARNOSINE is also readily available in nutrition stores.

AGING HAPPENZ with the progress of time. !

The process called Epigenesis is a theory in biology that states that an organism develops to adulthood under genetic control, and that different genes express themselves at various stages of development, like when, for instance, new genes activate at puberty while other genes turn off. After maturity repair and maintenance genes are active to sustain life into old age. However, repair and maintenance activity eventually decays and the body's systems decline.

During the past decade it has been shown that certain genes involved in maintaining the body can be re-activated with positive effect. This research is ongoing and the center of much interest.

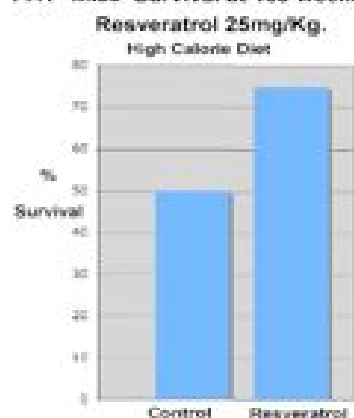
Bioflavonoids. Most are available in nutrition stores throughout the USA.

This very diverse classification of compounds, isolated from plants, has been shown to activate groups of mammalian genes and to elicit dramatic effects on energy metabolism, various age-related diseases and lifespan.

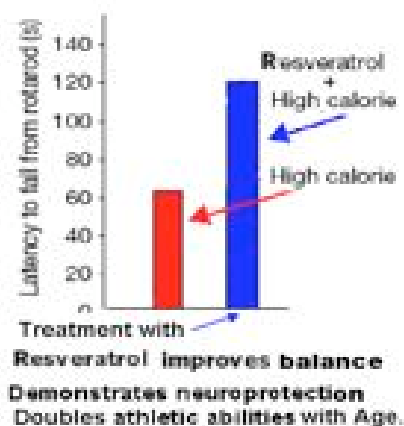
They function by acting at a genetic control level rather than simply becoming involved within the cellular processes or a particular set of reactions. For example, genes are actually activated that increase the mitochondrial numbers and activity, thereby stimulating healthier cells and tissues.

The most studied group of bioflavonoids are the polyphenols. Several are presently under intensive research and include **curcumin** [the active components in the spice turmeric], **the catechins** [contained in green tea], **resveratrol** [the active ingredient in red grapes] and **fisetin** [from various fruit such as strawberries].

FAT Mice-Survival at 100 weeks



MICE on a Texan Diet



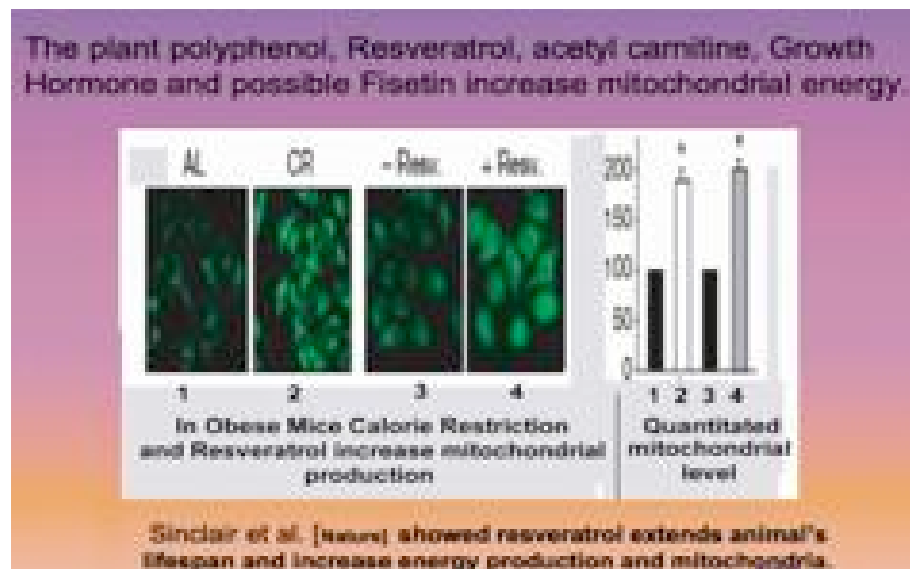
Recently, Resveratrol has been given the most active publicity because it has been shown to extend the lifespan of evolutionarily distant species including yeast, worms, insects-flies, vertebrate fish and most recently mice. [Nov, 2006]. The mice were made obese with a high calorie diet that shortens their expected lifespan. -See adjacent figure.

More importantly, the quality of life in the resveratrol treated mice and fish was maintained and improved. Also, in both mice and fish the motor skills and motor activity was significantly increased.

The therapeutic potential of resveratrol extends even further as it is effective against numerous, disparate diseases including esophageal, breast, and liver cancers [14,15] oral herpes [16] chronic obstructive pulmonary disease (COPD) [17] and hyperlipidemia [18]. It is unknown if these actions are due to turning genes back on that protect the cells and

tissues.

Mice studies show results on longevity at 5–25 mg/kg body weight, a dosage acceptable for animals and humans as a nutraceutical supplement but for pharmaceutical purposes a higher potency would be more desirable.



How does resveratrol produce these great effects?

Among its several actions Resveratrol turns on the genes that are responsible for the manufacture of mitochondria and thereby facilitates the cell to return to a state of youthful energy production. When more energy is available all cellular processes work better and are able to clean up cell debris and

provide energy for regulatory processes. Lack of cellular energy is probably the root molecular cause of AGING. Life's weakest link.

RESVERTROL IS READILY AVAILABLE IN NURTITION STORES But also can be purchased from UTTX, inc. by emailing ggrant@uta.edu 100 capsules. 50% Resveratrol 500mg. each \$30.00

Fisetin. Flavonoids are readily available from plant sources, **Fisetin** shows a great efficacy in promoting nerve cell differentiation and in protecting nerve cells from oxidative stress-induced death. Oxidative damage is one of the proposed causes of human dementia. Fisetin has several classic properties of neurotrophic factors. Fisetin induces cellular structural changes that underlie the development of long-term memory. This ability was recently confirmed using biochemical, electrophysiological, and behavioral assays that confirm fisetin can stimulate pathways that lead to memory enhancement. Fisetin increases nerve cell survival, nerve cell differentiation AND enhances long-term memory.

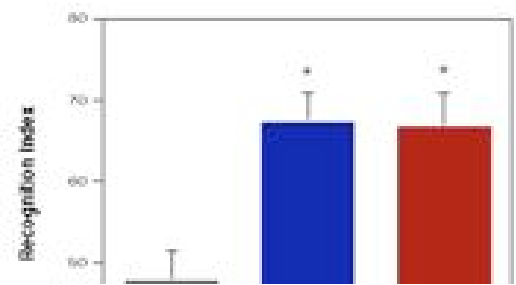
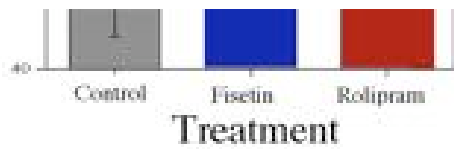


FIGURE 1: Fisetin Promotes Long Term Object Recognition Memory In Mice.
 Mice were treated with fisetin (25 mg/kg) orally or rolipram (0.1 mg/kg) administered i.p.. After one hour they were trained in object recognition test consisting of two identical objects in a black box. One day [24 hrs] later they were placed back in the same box with the familiar object and a novel object. The difference in time spent exploring each object during the test trial was

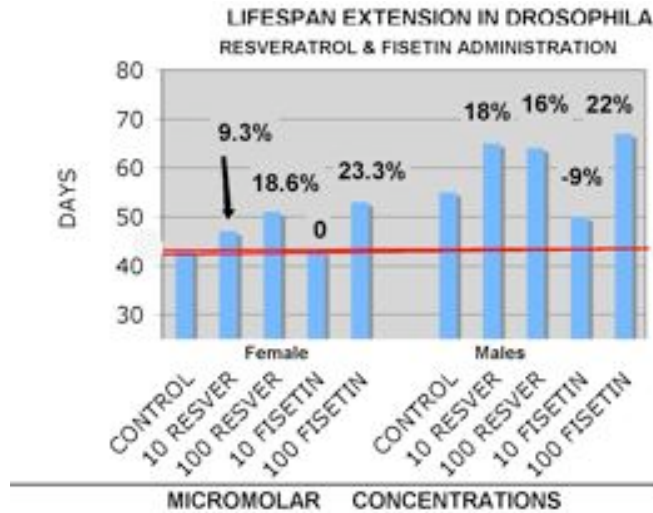


used as an index of object recognition and memory retention.

Experiment done by Psycogenics, Inc., New York. Modified from PNAS 2006

stimulate memory

Rolipram is a Drug used pharmaceutically to



As an added interesting observation Fisetin also increases lifespan. [In flies]. Although it has not yet been reported for mammals it works to improve the health of insects and increases their lifespan as well as or better than Resveratrol.

Fisetin IS **NOT** READILY AVAILABLE But can be purchased from UTTX, inc. by emailing ggrant@uta.edu 100 capsules. 50% Fisetin 500mg. each \$30.00

Curcumin

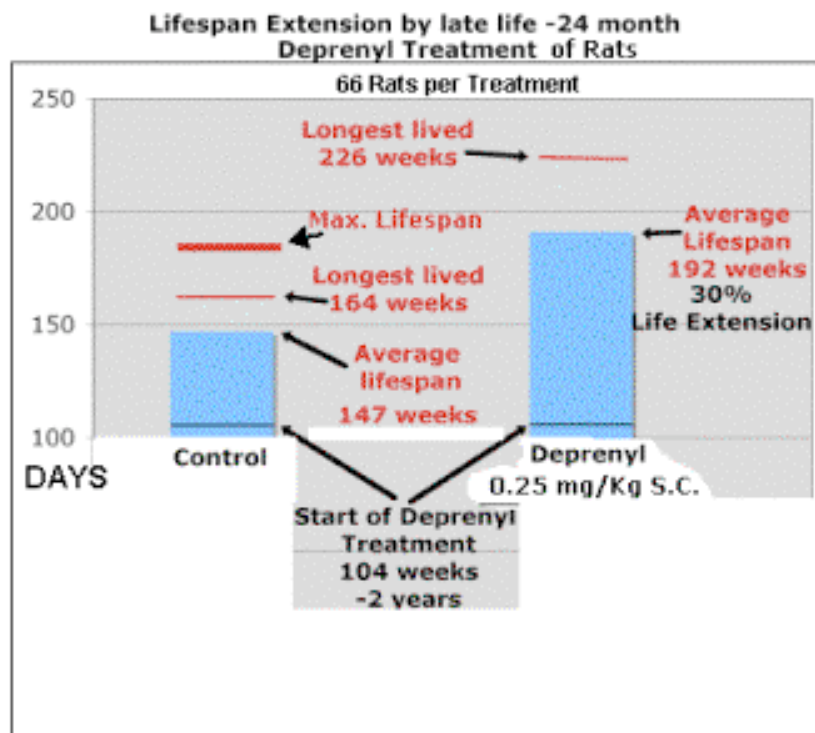
Curcumin is **the major ingredient of the curry spice, turmeric**, that **has a long history** as a **food preservative** and in **herbal medicine in India**. It is **anti-inflammatory and** is an **anti-cancer drug**. It retards the growth specific types of malignant cells such as breast and colon cancer. Recently [2006] researchers at **UCLA** have **shown that curcumin greatly reduced the** Alzheimer's **[AD] amyloid plaque burden and inflammation in a mouse model for** AD. Atamna [12] has shown that curcumin interferes with specific reactions of β -Amyloid peptides within the cell. Additionally, Curcumin shows remarkable effects in the prevention of rheumatoid arthritis and osteoporosis

CURCUMIN IS READILY AVAILABLE IN NURTITION STORES But ALSO can be purchased from UTTX, inc. by emailing ggrant@uta.edu **100 capsules. 95 % CURCUMIN 500mg. each \$30.00**

Can you think of any reason why you would not take supplements that show no negative side effects and produce such significant effects. How much time have you got to wait for your government to approve them, especially when the president's chief medical advisor has been quoted as saying that the feds will not support any research that does not allow us to "die-on-time". I wonder why they support any therapeutic research !

Novelty concoctions that extend lifespan and "improve" health.

Selegiline (l-deprenyl, Eldepryl™ or Anipryl™ [veterinary]) is a DOPAMINE stimulant blocking breakdown of the NERVE TRANSMITTER, DOPA. It is considered a drug and is used for the treatment of early-stage Parkinson's disease and senile dementia.

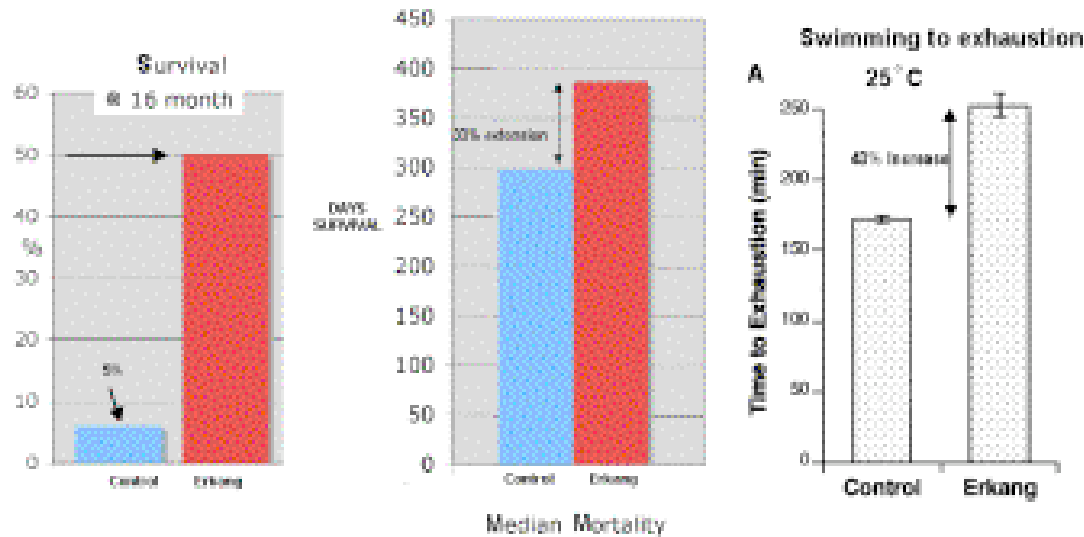


As the figure shows low doses of Deprenyl will actually extend lifespan. It is controversial in that it is a prescription drug that has l-methamphetamine, associations but is not considered as an active drug in that regard.

CHINESE Herb mixture

Another reported life extension remedy is a complex CHINESE Herb mixture, called ERKANG. The data below says it works and also improves exercise stamina. I would presume it contains many of the polyphenols previously discussed.

Wu et al. *J.Ethnopharmacology* 61, [1998] 153



Mice fed Erkang Recipe starting at 5 months
11 animals per group

Composition of Erkang

Crude medicinal plants	Ratio (g)
Root of <i>Panax ginseng</i> C. A. May	3.0
Rhizome of <i>Atractylodes macrocephala</i> Koidz.	3.0
Sclerotium of <i>Poria cocos</i> (Schw.) Wolf	3.0
Root of <i>Glycyrrhiza uralensis</i> Fischer	1.5
Root of <i>Angelica sinensis</i> (Oliv.) Diels	3.0
Rhizome of <i>Ligusticum chuanxiong</i> Hort.	3.0
Root of <i>Paeonia lactiflora</i> Pall.	3.0
Root of <i>Rehmannia glutinosa</i> (Gaertn.) Libosch.	3.0
Root of <i>Astragalus membranaceus</i> (Fisch.) Bge.	3.0
Bark of <i>Cinnamomum cassia</i> Presl.	3.0
Meat of <i>Coix lachryma jobi</i> L.	5.0
Pileus and stipe of <i>Polyporus umbellatus</i> (Pers.) Fr.	3.0
Root and bark of <i>Acanthopanax gracilistylus</i> W.W. Smith.	3.0
<i>Cordyceps sinensis</i> (Berk.) Sacc. and the larval remains of <i>Hepialus varians</i> Staudinger.	3.0

AGAIN the Recipe for Regaining Lifeforce

There are solutions readily available at your nutrition store.

What should a person be taking as nutritional supplements to maintain their health and well-being beyond what is **normally** expected as we age ?

Longevity requires dietary control. All animals live longer and healthier on restricted diets. Human should eat 1500 calories per day or less with long periods of no food. This will improve insulin sensitivity and the body's response to eventual food intake. In animals longevity can also be accomplished by eating every other day and eating as much as they wish.. Easiest and best eat only once a day meals. Very minor snacks at other times.

Antioxidant supplements

Vitamin C	1 gram	Supplement & Antioxidant
Vitamin E	800 units	Supplement & Antioxidant
Alpha-Lipoic Acid	250 mg.	Supplement & Antioxidant
N-Acetyl-L-Cysteine	500 mg.	Supplement & Antioxidant
Selenium	200 microg	Supplement & Antioxidant
Bioflavonoids	500 mg.	DISCUSSED ABOVE

Resveratrol, Fisetin, Curcumin. AND/OR Quercetin see text

However, plant extracts such as Grape seed extract, Citrus Bioflavonoids, Green Tea extract, will work , except that polyphenol levels are undisclosed.

Age depleted nutrients

Glucosamine - 1-2000mg daily especially for athletes over 50

Aging bodies do not make enough **Glucosamine** to replace tendons, ligaments, cartilage and connective tissues all are derived from Glucosamine and amino sugars.

Vitamin B Complex B vitamins deplete daily must be replenished.

Coenzyme Q10 50-100 mg Energy manufacture component

Chromium Picolinate 200 microg co-factor

L-Carnitine 500 mg. Energy manufacture component

AND/OR

Acetyl -L- Carnitine 1/2 to 1 gram Energy manufacture component

Omega-3-fatty acids- 1-2 grams **replacement of damaged Membranes fish or Flax oil**

Lecithin 1-2 grams **source of choline for membrane repair Membranes are destroyed by oxidation damage**

REMEMBER the MICE in the Picture –Front Page.

L-Carnosine 500 mg **Agent to clean up cells**

Multi-mineral supplement together with a **Colloidal or Ionic mineral solutions** containing 75 trace [rare-earth?] minerals. **Co-factors etc.**

DHEA (25-50 mg.) Steroid precursor

DHEA is a precursor of all steroid metabolites and DHEA seriously declines in parallel to age.

Androgens and Estrogen decline but not as quickly.

Supplementation with DHEA has beneficial effects upon physiology of all tissues, and by itself improves muscle mass (particularly in men) and many other tissues according to a large number of studies

Simple supplementation with 25-50mg of DHEA will adequately raise DHEA to levels found in youth. DHEA functions as a primary anabolic hormone and has been shown to have no side effects at almost any dose levels taken for very extended periods.

Melatonin. –at sleep time.

200 microg ↗ 3 mg.

Revitalization of your cellular energy production by stabilizing sleep cycles **melatonin** (200 mcg. –3 mg.) immediately prior to sleep.

The melatonin supplementation acts to re-enforce normal circadian rhythms of both sleep and cellular metabolism and stimulates the cellular production of Anti-oxidation enzymes. Melatonin amounts often need to be titrated to individual physiology. Often 3 mg. is needed to generate a full nights sleep, but sometimes only 200 mcg, produces desirable affects, and more generates fitful dreams and other effects. Experiment with amount

Often taking **Acetyl carnitine** at sleep time with the melatonin will facilitate sleep patterns. AND is reported to stimulate growth hormone secretion an hour or so after sleep begins.
