Chiropractic & Alternative Health Srvs.

Presents…

Dr. M. J. Krygier B.A., B.S., D.C.

Thyroid Dysfunction

The Master Gland of the Body

March 7th or 14th , 2012 7:00pm

(Wednesday)

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New anti-aging drug...

Some people grow old gracefully, while others fight and scratch the whole way.

Andy's wife, refusing to give in to the looks of growing old, goes out and buys a new line of expensive guaranteed to make her look years younger.

After a lengthy sitting before the the "miracle" products, she asks her husband - "Darling, honestly, if you didn't know me, what age would you say I am?"

Looking over her carefully, Andy replied,...
"Judging from your skin, twenty;
your hair, eighteen;
and your figure, twenty five."

"Oh, you flatterer!" she gushed. Just as she was about to tell Andy his reward, he stops her by saying...

"WHOA, hold on there sweety!" Andy interrupted.
"I haven't added them up yet!"

Flu Shots: They don't protect the elderly, new data reveals

11 October 2007

Flu shots for the elderly are far less effective than doctors, and governments, like to tell us. In fact, they are incapable of preventing up to half of all deaths from influenza and pneumonia in the elderly, new data suggests.

As it is, government health bodies present the annual flu vaccine as something that every elderly person should have – and yet there is virtually no evidence to support this stridently optimistic approach.

The Cochrane Vaccines Field group first alerted doctors to the ineffectiveness of the standard flu jab when it discovered that it failed to prevent deaths from flu or pneumonia.

Despite this, governments have continued to spend millions of pounds and dollars on an ineffective vaccine, and have misled the public.

The only way of resolving the issue once and for all is to carry out proper trials among the elderly – and that's something nobody will be prepared to do, the researchers fear.

(Source: The Lancet, 2007; 370: 1199-1200).

October – March Offensive Play

Supports Natural killer cell levels in the body. One tsp every day for 3 month's will raise NK cells up to 26 times.

Regulate the Immune system. 6-8 drops/day.

Sterilize the cavities that can be colonized by infectious agents. 10-25 drops/day.

Infectious Disease

The role of vitamin D in the seasonal nature of the flu bears mention. It has been postulated (Bergner et.al.) that the crucial role of D in promoting healthy immunity. The crucial role of vitamin D in the innate immune system was discovered only very recently. Both epithelial cells and macrophages increase expression of the antimicrobial cathelicidin upon exposure to microbes, an expression that is dependent upon the presence of vitamin D. Pathogenic microbes stimulate the production of an enzyme that converts 25(OH)D to 1,25(OH)2D, a seco-steroid hormone. This in turn rapidly activates a suite of genes involved in pulmonary defense. In the macrophage, the presence of vitamin D also appears to suppress the pro-inflammatory cytokines. Thus, vitamin D appears to both enhance the local capacity of the epithelium to produce endogenous antibiotics and at the same time dampen certain destructive arms of the immune response, especially those responsible for the signs and symptoms of acute inflammation, such as the cytokine storms operative when influenza kills quickly.

Leading Cause Of Death

"MaInutrition with resultant immunodeficiency and infection is the world's leading cause of death."

The Merck Manual, 17th Edition, 2000

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Advancing beyond the classic concepts of electroacupuncture, each Asyra session begins by automatically recalibrating the system to the unique parameters of the subject's bioenergetic field. This calibration process – exclusive to Asyra technology -is a cornerstone of Asyra's remarkable accuracy and consistency. Next, Asyra scans thousands of precision, bioenergy waveforms, pinpointing and reporting specific areas of energetic stress and weakness. For each indication, appropriate homeopathic, bioenergetic and nutritive formulas are tested, searching for the perfect match. Asyra not only offers comprehensive recommendations – it also tests the entire therapy plan in real-time for compatibility and harmony - another Asyra exclusive.

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10-15 Minute Test

- Thursday 9:00-4:00
- Friday 9:00-2:15

- Call the office to sign up to be tested @ 248-735-2440

Rodan + Fields

THE AMP MD SYSTEM AND ANTI-AGE REGIMEN WERE FEATURED ON THE NBC TODAY SHOW AS A "MUST HAVE ANTI-AGING PRODUCT FOR

Wrinkle-Free Skin
Support Collagen & Elastin

Foods that slow down wrinkling:

- Eggs
- Beans
- Spinach
- Eggplant
- Asparagus
- Celery
- Nuts
- Olive
- Cherries
- Melons
- Prunes
- Apples
- Pears
- Yogurt
- Tea
- Pure Water

American Journal of Clinical Nutrition: Food Intake & Skin Wrinkling

ACCORDING TO THE CENTER FOR DISEASE CONTROL AND PREVENTION (CDC), THE AVERAGE LIFE EXPECTANCY OF UNITED STATES CITIZENS IS 77.7 YEARS. THAT IS A DRAMATIC INCREASE FROM AN AVERAGE LIFE SPAN OF 47.3 YEARS A LITTLE OVER A CENTURY AGO IN 1900. THIS INCREASE IN LIFE EXPECTANCY IS DUE TO THE SPREAD OF SCIENTIFIC ADVANCES AND MODERN MEDICINE. WITH THIS INCREASE IN YEARS OF LIFE COMES AN INCREASE OF AGE RELATED DISEASES. AS BODIES AGE THE CELLS AND TISSUES CHANGE AND CERTAIN DISEASES ARE MORE LIKELY TO OCCUR.

Drugs for the elderly - Too many 'danger drugs' are being prescribed, and inappropriately

At least one in 10 elderly people is prescribed a drug that they shouldn't be taking, and the true picture may easily be twice as bad. Worse, many of the drugs that are being inappropriately prescribed have a high chance of causing a side effect.

This worrying picture has emerged from a study into drug prescribing for the elderly, based on data from a health insurer in the USA. It included the medical records of over 760,000 people aged over 65 years who were not in hospital.

Researchers from Duke University in North Carolina compared prescription records with a list known as Beers, which itemizes those drugs generally believed to commonly cause side effects in the elderly, and so which should be avoided.

They found that 21 per cent of patients had been prescribed one or more drugs on the Beers list, and prescriptions for amitriptyline and doxepin accounted for 23 per cent of these.

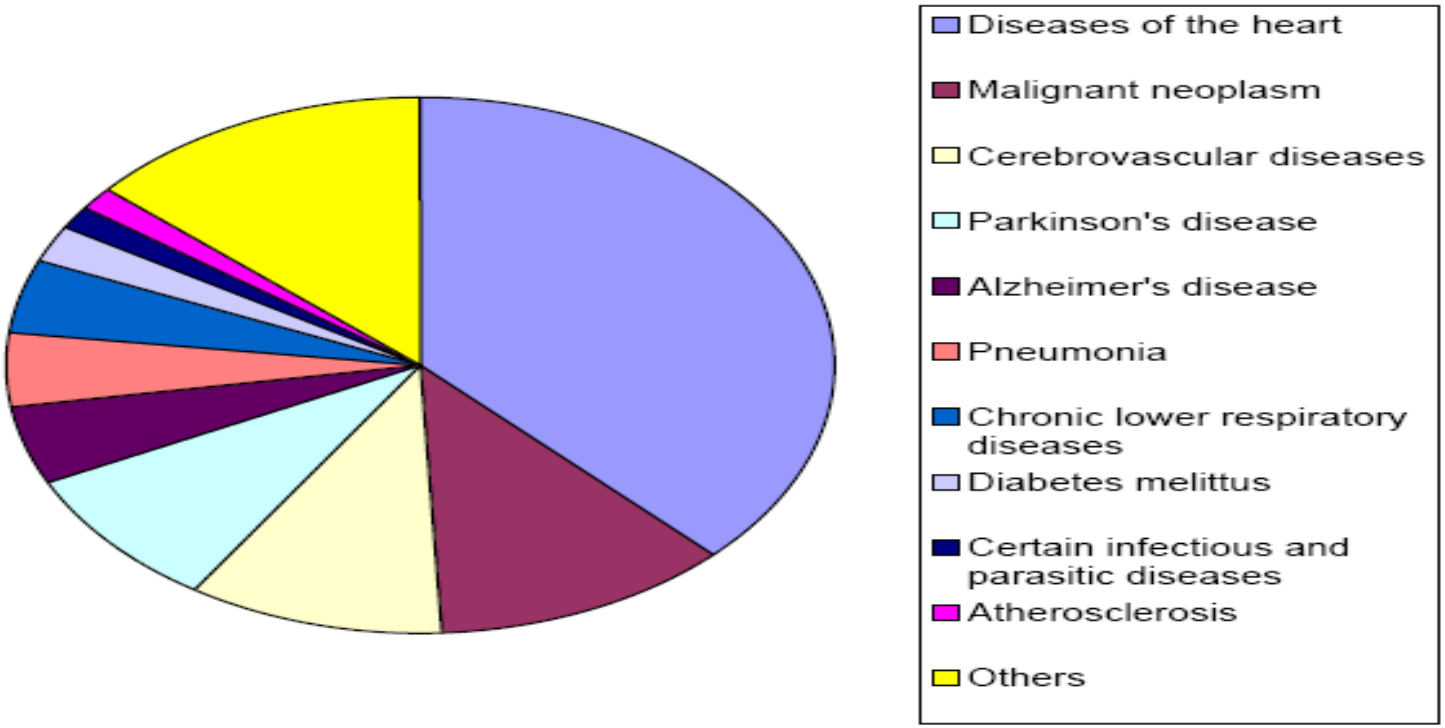
More than 15 per cent of prescriptions were for two drugs on the list, and 4 per cent for three or more drugs on Beers.

An accompanying editorial commented: "If even half the number of elderly subjects is taking potentially inappropriate medications, one in 10 of all older persons are receiving a drug that is potentially not appropriate."

Death by underlying or multiple cause, expressed in rates per 100,000 people or in percentage of the total deaths, for the 2001 US population in two age groups: 45-54 years and 85 years of age and older. Source: National Center for Health Statistics, Data Warehouse on Trends in Health and Aging.

	45-54 years old		Over 85 years old	
Cause of death:	**Incidence% of deaths**	**% of deaths**	**Incidence% of deaths**	**% of deaths**
Diseases of the heart	92.8	21.66%	5607.5	37.48%
Malignant neoplasm	126.32	9.48%	1747	11.68%
Cerebrovascular diseases	15.1	3.52%	1485.2	9.93 %
Parkinson's disease	0.1%	0.02%	1312.8	8.77%
Alzheimer's disease	0.2	0.05%	703.2	4.70%
Pneumonia	4.6	1.07%	676.5	4.52%
Chronic lower respiratory diseases	8.5	1.98%	638.2	4.27%
Diabetes mellitus	13.6	3.17%	318.6	2.13%
Certain infectious and parasitic dis.	22.9	5.35%	243.8	1.63%
Atherosclerosis	0.5	0.12%	177.3	1.19%
Others	143.8	33.57%	2050.9	13.71%

Death by underlying or multiple cause, expressed in rates per 100,000 people, as a function of age for the 2001 US population aged 85 and older. Source: National Center for Health Statistics, Data Warehouse on Trends in Health and Aging.



Limiting Stroke Damage

Researchers at the University of Edinburgh have found that the physical position a person is placed in after a stroke can influence the degree of brain damage the person will sustain. They examined and precisely measured both the heart rate and the arterial oxygen content of 129 individuals within 72 hours of suffering a stroke.

A stroke victim's brain will receive more oxygen and suffer less damage if he or she is kept in a sitting position. If for some reason they must be laid down, less damage will result if they are laid on their right side. The phase "sitting is right" will help remember what to do in case of a stroke.

Cerebrovasc Dis 01;12(1):66-72

Chronic Diseases and Health Promotion

Chronic diseases – such as heart disease, stroke, cancer, diabetes, and arthritis – are among the most common, costly, and preventable of all health problems in the U.S.

Chronic Diseases are the Leading Causes of Death and Disability in the U.S.

- 7 out of 10 deaths among Americans each year are from chronic diseases. Heart disease, cancer and stroke account for more than 50% of all deaths each year.1
- In 2005, 133 million Americans – almost 1 out of every 2 adults – had at least one chronic illness.2
- Obesity has become a major health concern. 1 in every 3 adults is obese3 and almost 1 in 5 youth between the ages of 6 and 19 is obese (BMI ≥ 95th percentile of the CDC growth chart).4
- About one-fourth of people with chronic conditions have one or more daily activity limitations.5
- Arthritis is the most common cause of disability, with nearly 19 million Americans reporting activity limitations.6
- Diabetes continues to be the leading cause of kidney failure, non traumatic lower-extremity amputations, and blindness among adults, aged 20-74.7

Four Common Causes of Chronic Disease

Four modifiable health risk **behaviors—lack of physical activity, poor nutrition, tobacco use, and excessive alcohol consumption—are responsible for much of the illness, suffering, and early death related to chronic diseases.**

More than one-third of all adults do not meet recommendations for aerobic physical activity based on the 2008 Physical Activity Guidelines for Americans, and 23% report no leisure-time physical activity at all in the preceding month.[8]

In 2007, less than 22% of high school students[9] and only 24% of adults[10] reported eating 5 or more servings of fruits and vegetables per day.

More than 43 million American adults (approximately 1 in 5) smoke.[11]

In 2007, 20% of high school students in the United States were current cigarette smokers.[12]

Lung cancer is the leading cause of cancer death, and cigarette smoking causes almost all cases. Compared to nonsmokers, men who smoke are about 23 times more likely to develop lung cancer and women who smoke are about 13 times more likely. Smoking causes about 90% of lung cancer deaths in men and almost 80% in women. Smoking also causes cancer of the voice box (larynx), mouth and throat, esophagus, bladder, kidney, pancreas, cervix, and stomach, and causes acute myeloid leukemia.[13]

Nearly 45% of high school students report consuming alcohol in the past 30 days, and over 60% of those who drink report binge drinking (consuming 5 or more drinks on an occasion) within the past 30 days.[14]

A large number of studies provide strong evidence that drinking alcohol is a risk factor for primary liver cancer, and more than 100 studies have found an increased risk of breast cancer with increasing alcohol intake. The link between alcohol consumption and colorectal (colon) cancer has been reported in more than 50 studies.[15]

Causes of Death Among U.S. Adults Aged 65 or Older, 2007

- **Causes of Death Percentage of All Deaths**
- Heart Disease 28.2%
- Cancer 22.2%
- Stroke 6.6%
- Chronic Lower Respiratory Diseases 6.2%
- Alzheimer's Disease 4.2%
- Diabetes 2.9%
- Influenza and Pneumonia 2.6%
- Unintentional Injury 2.2%
- All Other Causes 24.9%
- Source: CDC, National Center for Health Statistics, National Vital Statistics System, 2007.

Physiological And Endocrine Aging

- With Continuation of life all physiological functions gradually decline.
- There is a diminished capacity for protein synthesis, an increase in fat mass, loss of muscle mass and strength and a decrease in bone density.
- Age-related disability is ultimately characterized by frailty:
  - Generalized weakness
  - Impaired mobility and balance
  - Poor endurance
  - Declining cognitive function possibly with visual or hearing impairment.
  - Loss of appetite and weight loss
  - Loss of muscle mass or sarcopenia is an important factor in the process of frailty.

Mechanisms of Aging

- Replicative Senescence Telomere Length
- Mitochondria Dysfunction
- Accumulation of Advanced Glycation End Products (Mixing of Sugar and Proteins)
- Oxidative damage by reactive oxygen species (ROS) and inflammatory damage to tissue.
- Lipofusion
- Detoxification
- Allergies and Intolerances
- Hormone Imbalances
- Decline in Immune System
- Epigenetic abnormalities (Methylation)

Mitochondria (mDNA)

- One of the central features of biological aging is the alternation in mitochondrial function that occurs as a consequence of free radical damage. Mitochondrial DNA controls the majority of the protein synthesis required for ATP generation and is the primary site of oxidative chemistry which can produce mitochondrial DNA mutations. The mDNA is approximately 2000 times more susceptible to oxidative damage than nuclear DNA, because the Mdna is not coated with protein histones and other proteins and does not have adequate repair systems. It follows the decreased efficiency of ATP production dramatically impacts the aging process. In a number of animal species, 30% restrition of calories while maintaining normal nutrient levels can result in as much as 50% increase in life expectancy.

Medication-induced mitochondrial damage and disease

- Since the first mitochondrial dysfunction was described in the 1960s, the medicine has advanced in its understanding the role mitochondria play in health and disease. Damage to mitochondria is now understood to play a role in the pathogenesis of a wide range of seemingly unrelated disorders such as schizophrenia, bipolar disease, dementia, Alzheimer's disease, epilepsy, migraine headaches, strokes, neuropathic pain, Parkinson's disease, ataxia, transient ischemic attack, cardiomyopathy, coronary artery disease, chronic fatigue syndrome, fibromyalgia, retinitis pigmentosa, diabetes, hepatitis C, and primary biliary cirrhosis. Medications have now emerged as a major cause of mitochondrial dam-age, which may explain many adverse effects. All classes of psychotropic drugs have been docu-mented to damage mitochondria, as have stain medications, analgesics such as acetaminophen, and many others. While targeted nutrient therapies using antioxidants or their prescursors (e.g., N-acetyl- cysteine) hold promise for improving mitochondrial function, there are large gaps in our knowledge. The most rational approach is to understand the mechanisms underlying mitochondrial damage for specific medications and attempt to counteract their deleterious effects with nutritional therapies. This article reviews our basic understanding of how mitochondria function and how medications dam-age mitochondria to create their occasionally fatal adverse effects.

Keywords: Antioxidant / Coenzyme Q10 / L-carnitine / Lipoic acid / Mitochondria
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Acquired conditions in which mitochondrial dysfunction has been implicated

- Diabetes [3,10,11]
- Huntington's disease [12]
- Cancer [3], including hepatitis-C virus-associated hepatocarcinogenesis [13]
- Alzheimer disease [12] Parkinson's disease [12] Bipolar disorder [14, 15] Schizophrenia [15]
- Aging and senescence [3, 16–19]
- Anxiety disorders [20] Nonalcoholic steatohepatitis [21]
- Cardiovascular disease [10], including atherosclerosis [22] Sarcopenia [23]
- Exercise intolerance [24]
- Fatigue, including chronic fatigue syndrome [25, 26], fibromyalgia [27,28], and myofascial pain [28]

Alcoholism medications Disulfiram (Antabuse®)

Analgesic (for pain) and anti-inflammatory Aspirin, acetaminophen (Tylenol), diclofenac (Voltaren®, Voltarol®, Diclon®, Dicloflex® Difen and Cataflam®), fenoprofen (Nalfon®), indomethacin (Indocin®, Indocid®, Indochron E-R® Indocin-SR®), Naproxen (Aleve®, Naprosyn®)

Anesthetics Bupivacaine, lidocaine, propofol

Angina medications Perhexiline, amiodarone (Cordarone®), Diethylaminoethoxyhexesterol (DEAEH)

Antiarrhythmic (regulates heartbeat) Amiodarone (Cordarone)

Antibiotics Tetracycline, antimycin A

Antidepressants Amitriptyline (Lentizol), amoxapine (Asendis), citalopram (Cipramil), fluoxetine (Prozac,

Symbyax, Sarafem, Fontex, Foxetin, Ladose, Fluctin, Prodep, Fludac, Oxetin, Seronil, Lovan)

Antipsychotics Chlorpromazine, fluphenazine, haloperidol, risperidone, quetiapine, clozapine, olanza-

pine

Anxiety medications Alprazolam (Xanax®), diazepam (valium, diastat)

Barbiturates Amobarbital (Amytal®), aprobarbital, butabarbital, butalbital (Fiorinal®, hexobarbital

(Sombulex®), methylphenobarbital (Mebaral®), pentobarbital (Nembutal®), phenobarbital (Luminal®), primidone, propofol, secobarbital (Seconal®), Talbutal®), thiobarbital

Cholesterol medications Statins – atorvastatin (Lipitor®, Torvast®), fluvastatin (Lescol®), lovastatin (Mevacor®,
Altocor®), pitavastatin (Livalo®, Pitava®), pravastatin (Pravachol®, Selektine®, Lipostat®), rosuvastatin (Crestor®), simvastatin (Zocor®, Lipex®) bile acids – cholestyramine (Ques-tran®), clofibrate (Atromid-S®), ciprofibrate (Modalim®), colestipol (Colestid®), colesevelam (Welchol®)

Cancer (chemotherapy) medications Mitomycin C, profiromycin, adriamycin (also called doxorubicin and hydroxydaunorubicin and included in the following chemotherapeutic regimens – ABVD, CHOP, and FAC)

Dementia Tacrine (Cognex®), Galantamine (Reminyl®)

Diabetes medications Metformin (Fortamet®, Glucophage®, Glucophage XR, Riomet 1), troglitazone, rosiglitazone, buformin

HIV/AIDS medications AtriplaO, Combivir®, Emtriva®, Epivir® (abacavir sulfate), EpzicomO, Hivid® (ddC, zalcitabine), Retrovir® (AZT, ZDV, zidovudine), Trizivir®, Truvada®, Videx® (ddI, didanosine), Videx® EC, Viread®, Zerit® (d4T, stavudine), Ziagen®, Racivir®

Epilepsy/Seizure medications Valproic acid (Depacon®, Depakene®, Depakene syrup, Depakote®, depakote ER, depakote sprinkle, divalproex sodium)

Mood stabilizers Lithium

Parkinson's disease medications Tolcapone (Tasmar®, Entacapone (COMTan®, also in the combination drug Stalevo®)

Journal American Medical Association July 2003

A low fat diet high in soy protein, fiber, nuts and plant sterols was found to be just as effective in lowering cholesterol and C-Reactive Protein as a commonly prescribed medication.

Vitamin E, Borage Oil, Fish Oil, DHEA, Vitamin K and Nettle Leaf Extract can lower C-Reactive Protein.

Diets low in arachidonic acid, omega-6 fatty acids, saturated fats, high glycemic food and overcooked food can suppress inflammatory factors in the body.

Key nutrients required for proper mitochondrial function [9, 60]

Required for the TCA cycle	(i) Iron, sulfur, thiamin (vitamin B1), riboflavin (vitamin B2), niacin (vita-min B3), pantothenic acid (vitamin B5), cysteine, magnesium, manganese, and lipoic acid
	Synthesis of heme for heme-dependent enzymes in the TCA cycle require several nutrients, including iron, copper, zinc, riboflavin, and pyridoxine (vitamin B6) [60]
	Synthesis of L-carnitine requires ascorbic acid (vitamin C).
Required for PDH complex	Riboflavin, niacin, thiamin, pantothenic acid, and lipoic acid
Required for ETC complexes	Ubiquinone (CoQ10), riboflavin, iron, sulfur, copper
Required for shuttling electrons between ETC complexes	Ubiquinone, copper, iron

Early medical detection and treatment is available, but the effectiveness of this in actually preventing heart attacks is questionable according to a study that was published in the journal ***Circulation***.

In this study, Dr. Lewis Kuller reviewed the medical records of 326 individuals who had received medical examinations within the six month period before they died from a sudden heart attack. Eighty-six of the 326 examinations were done within the *seven day period prior to death from heart attack*. **Not a single one of the 326 heart attacks had been predicted by the physicians.**

Early Markers: Cardiovascular Risk : Clotting factors

- Lipoprotein associated PLA2
- C-Reactive Protein
- Lipoprotein (a)
- Fibrinogen
- Homocysteine
- Iron
- Ferritin
- HbA1c
- Lipid Panel
  - HDL cholesterol
  - LDL cholesterol
  - Triglycerides

Early Biomarkers

- Estrogen 2/16 Ratio
  - Estriol
  - Estradiol
  - Estrone
- Testosterone
- Cortisol Levels
- Vitamin D
- DHEA
- Pregnenolone

- Sept. 2, 2008 – Just a few months ago, researchers identified senior citizens as a group that tended to have levels of vitamin B6 that are consistently too low. **The same research center released a new study today showing that a deficiency of B-vitamins may cause cognitive impairment. Mice with a deficiency of three B-vitamins - folate, B12 and B6 - developed cognitive dysfunction in the study.**
- Metabolic impairments induced by a diet deficient in three B-vitamins - folate, B12 and B6- caused cognitive dysfunction and reductions in brain capillary length and density in our mouse model," says Aron Troen, PhD, the study's lead author. **"The vascular changes occurred in the absence of neurotoxic or degenerative changes.“**
- Troen, who is an assistant professor at Tufts University's Friedman School of Nutrition Science and Policy, explains, **"Mice fed a diet deficient in folate and vitamins B12 and B6 demonstrated significant deficits in spatial learning and memory compared with normal mice."**

Researchers at the Jean Mayer USDA Human Nutrition Research Center on Aging (HNRCA) at Tufts University used an experimental model to examine the metabolic, cognitive, and microvascular effects of dietary B-vitamin deficiency. Their findings appear in the August 26, 2008 issue of Proceedings of the National Academy of Sciences (PNAS).

Vitamin B12 deficiency in the elderly.

Abstract

Vitamin B12 deficiency is estimated to affect 10%-15% of people over the age of 60, and the laboratory diagnosis is usually based on low serum vitamin B12 levels or elevated serum methylmalonic acid and homocysteine levels. **Although elderly people with low vitamin B12 status frequently lack the classical signs and symptoms of vitamin B12 deficiency, e.g. megaloblastic anemia, precise evaluation and treatment in this population is important. Absorption of crystalline vitamin B12 does not decline with advancing age. However, compared with the younger population, absorption of protein-bound vitamin B12 is decreased in the elderly, owing to a high prevalence of atrophic gastritis in this age group. Atrophic gastritis results in a low acid-pepsin secretion by the gastric mucosa, which in turn results in a reduced release of free vitamin B12 from food proteins. Furthermore, hypochlorhydria in atrophic gastritis results in bacterial overgrowth of the stomach and small intestine, and these bacteria may bind vitamin B12 for their own use.** The ability to absorb crystalline vitamin B12 remains intact in older people with atrophic gastritis. The 1998 recommended daily allowance for vitamin B12 is 2.4 micrograms, but elderly people should try to obtain their vitamin B12 from either supplements or fortified foods (e.g. fortified ready-to-eat breakfast cereals) to ensure adequate absorption from the gastrointestinal tract. Because the American food supply is now being fortified with folic acid, concern is increasing about neurologic exacerbation in individuals with marginal vitamin B12 status and high-dose folate intake.

Annu Rev Nutr. 1999;19:357-77

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"The B-vitamin-deficient mice also developed plasma homocysteine concentrations that were seven-fold higher than the concentrations observed in mice fed a normal diet," adds Troen.

Homocysteine is produced by the breakdown of a dietary protein called methionine. B-vitamins, including folate, vitamin B12, and vitamin B6, are required to convert homocysteine back to methionine, thereby reducing the blood concentration of homocysteine.

Studies have linked elevations in plasma homocysteine with an increased risk for cognitive impairment.

The elevated levels of homocysteine that were associated with vascular cognitive impairment in the mice in the study are comparable to the levels that are associated in older adults with an increased risk for Alzheimer's disease and cerebrovascular disease, the latter of which manifests with conditions such as stroke and atherosclerosis, according to Irwin Rosenberg, MD, director of the Nutrition and Neurocognition Laboratory at the HNRCA.

B-Complex Deficiency Syndrome will not be found in any medical diagnosis textbook and that is misfortunate since this condition is rampant in America.

Medical Texts including Biochemistry (Kleiner and Orten), Principles of Biochemistry (White, Handler, Smith and Stetton), Textbook of Medicine (Cecil) and Rehabilitation Through Better Nutrition (Tom Spies, MD)

- Weakness & Fatigue
- Indigestion
- Poor Appetite
- Neuralgia and neuritis
- Craving for sweets
- Muscular Soreness
- Headache
- Insomnia
- Dizziness
- Nervousness
- Instability
- Forgetfulness
- Vague Fears
- Uneasiness
- Rage
- Hostility
- Depression
- Anxiety
- Apprehension

BCDS symptoms seen before any laboratory tests would be positive.

Early Stages of B3 Deficiency

- Anorexia
- Muscular Weakness
- Exhaustion
- Sever Depression
- Irritability
- Anxiety and Apprehension
- Distraction
- Morbid Fears
- Confusion
- Dizziness

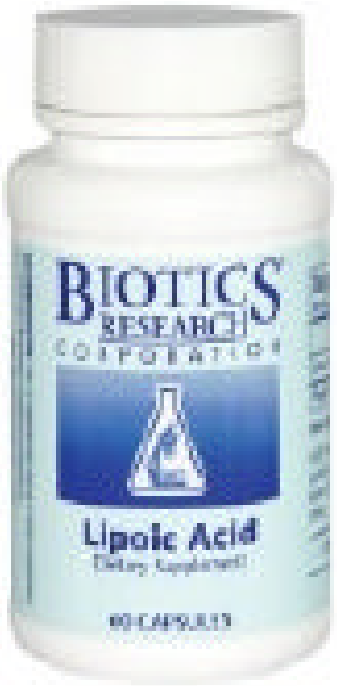
Early deficiency of B-Complex

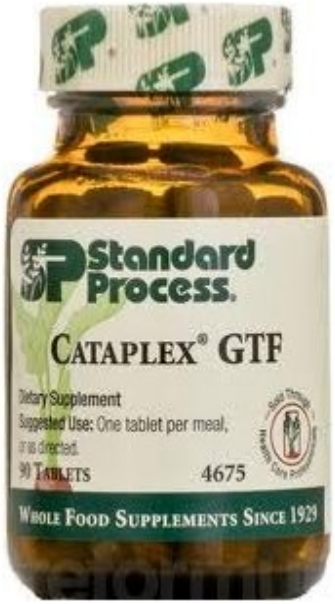
- Nervousness
- Mental Confusion
- Hypochondria
- Acoustic hallucinations
- Noise Sensitivity
- Impaired Intellect
- Hostility
- Rage

First and most common complaint of people suffering from BCDS That is depression and the tendency to cry without reason. The second and most classic symptom of BCDS is “A Constant Feeling That Something Dreadful is About To Happen.

B-Complex Deficiency Syndrome

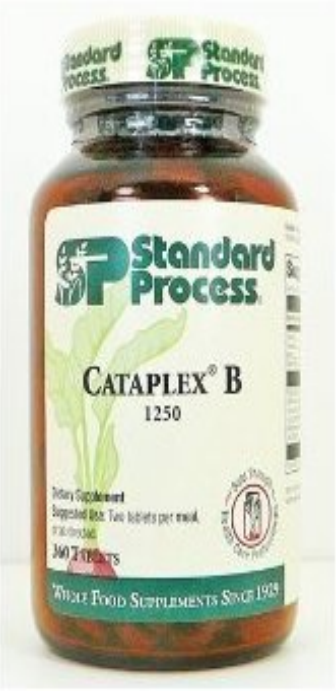
Lipoic Acid: 2/2x day





Cataplex GTF: 3/2x day

Cataplex B: 3/2x day



Getting Old Jokes

- You don't remember being absent minded I’m getting so old that my friends in heaven will think I didn’t make it.
- Your little black book only contains names ending in M.D.
- Your secrets are safe with your friends because they can't remember them either.
- I used to hate weddings, all the old ladies would prod me and say 'you'll be next !' They soon stopped that, when I started saying it to them at funerals!
- You finally got your head together, now your body is falling apart.
- You find yourself beginning to like accordion music.
- You're sitting on a park bench and a Boy Scout comes up and helps you cross your legs.
- At cafeterias, you complain that the jello is too tough.
- One of the throw PILLOWS on your bed is a hot-water bottle.
- It takes a couple of tries to get over a speed bump.
- You notice that you are using words like “whippersnapper”,”scalawag” and “by-cracky”.
- YOUR SOCIAL SECURITY number only has three digits.
- If God wanted me to touch my toes, He would have put them on my knees.
- The waiter ask how you'd like your steak and you reply, "Pureed."
- At parties you attend, the prime topic of choice is "regularity."
- At the breakfast table you hear "snap, crackle, pop" and you're not eating cereal.
- You realize that a stamp costs more than movie (picture show) did when you were a kid.

Press Release: 2009-10-05

The Nobel Assembly at Karolinska Institutet

has today decided to award

The Nobel Prize in Physiology or Medicine 2009

jointly to

Elizabeth H. Blackburn, Carol W. Greider and Jack W. Szostak

for the discovery of

"how chromosomes are protected by telomeres and the enzyme telomerase"

Telomeres delay aging of the cell.

- Scientists now began to investigate what roles the telomere might play in the cell. Szostak's group identified yeast cells with mutations that led to a gradual shortening of the telomeres. Such cells grew poorly and eventually stopped dividing. Blackburn and her co-workers made mutations in the RNA of the telomerase and observed similar effects in *Tetrahymena.* In both cases, this led to premature cellular ageing – senescence. In contrast, functional telomeres instead prevent chromosomal damage and delay cellular senescence. Later on, Greider's group showed that the senescence of human cells is also delayed by telomerase. Research in this area has been intense and it is now known that the DNA sequence in the telomere attracts proteins that form a protective cap around the fragile ends of the DNA strands.

Herb: Astragalus Plant compound is a Telomerase activator called TA-65.

- Astragalus 1:2
- *Astragalus contains triterpenoid saponins, flavonoids, sterols and other compounds that serve as a tonic with ability to:*
- ***restore and enhance the body's immune system***
- ***support healthy adrenal and digestive function***
- ***maintain healthy cardiovascular function***
- ***promote a healthy physical, mental and emotional response to every day stressors*** Δ
- **Amount per Serving%DVCalories10**
- **Astragalus root 1:2 extract from *Astragalus membranaceus* root 2.5 g**
- **5 mL†† Daily Value (DV) not established.**
  Other Ingredients: *Purified water and 25% alcohol. Please consult the product packaging label for the most accurate product information.*

The Green Theory of Aging

- This theory proposes that aging is the result of macromolecular damage that has accumulated as a result of toxic metabolic by products.
- A primary determinant of lifespan is therefore the efficiencies of either the removal of these toxic products, including phase1/2 metabolism or the repair of macromolecular damage.

Broad spectrum detoxification: the major longevity assurance process regulated by insulin/IGF-1 signaling?

Our recent survey of genes regulated by insulin/IGF-1 signaling (IIS) in Caenorhabditis elegans suggests a role for a number of gene classes in longevity assurance. Based on these findings, we propose a model for the biochemistry of longevity assurance and ageing, which is as follows. Ageing results from molecular damage from highly diverse endobiotic toxins. These are stochastic by-products of diverse metabolic processes, of which reactive oxygen species (ROS) are likely to be only one component. Our microarray analysis suggests a major role in longevity assurance of the phase 1, phase 2 detoxification system involving cytochrome P450 (CYP), short-chain dehydrogenase/reductase (SDR) and UDP-glucuronosyltransferase (UGT) enzymes. Unlike superoxide and hydrogen peroxide detoxification, this system is energetically costly, and requires the excretion from the cell of its products. Given such costs, its activity may be selected against, as predicted by the disposable soma theory. CYP and UGT enzymes target lipophilic molecular species; insufficient activity of this system is consistent with age-pigment (lipofuscin) accumulation during ageing. We suggest that IIS-regulated longevity assurance involves: (a) energetically costly detoxification and excretion of molecular rubbish, and (b) conservation of existing proteins via molecular chaperones. Given the emphasis in this theory on investment in cellular waste disposal, and on protein conservation, we have dubbed it the green theory.

Mech Ageing Dev. 2005 Mar;126(3):381-7.

Hormesis

- The term hormesis was originally coined by toxicologists to describe an agent that has a stimulatory effect at low doses, but is toxic at high doses.
- Recently the concept of hormesis has been adopted by the fields of biology and medicine to portray the beneficial adaptive response of cells and organisms to moderate stress.
- Moderate Stress promotes health, well being and mental and physical performance.

Hormesis

- Hormesis is probably the universal tonic and perhaps the true elixir of youth.
- Moderate levels of exercise promote excellent health, whereas excessive levels are debilitating and can lead to overtraining.
- There are countless examples from experimental models:
- Mild 34C shock protected fruit fly larvae against a long 0 C shock
- Mild hypoxia can increase the lifespan of the roundworm (C. elegans) and can induce cross tolerance to other types of stress.

Hormesis

- Mild to Moderate stress has been found to:
  - Increase resistance to other stressors
  - Delay behavior aging
  - Increase longevity

Hormesis: Biomolecular Mechanisms

- How can exposure to low levels of toxins or other stressors have beneficial effects?
- The answer lies in the defense molecules the body calls upon in response to threats.
- Once rallied, these molecules not only deal with the immediate threat but also increase resistance to other threats. They can even repair existing damage.
- These molecular defense agents include heat shock proteins (HSPs), sirtuin1, growth factors and cell kinases.

Hormesis: SIRT1

- SIRT1, senses cellular stress and activates multiple genes that code for protective proteins such as antioxidants and cell membrane stabilizers.

Hormesis: HSP

- Besides SIRT 1 another “bodyguard”, HSP’s are produced when cells are exposed to heat & cold, reactive oxygen species, infections & inflammation, shifts in PH, changes in nutritional status, heavy metals, environmental toxins & general psychological stress.
- Heat shock proteins job is to protect other proteins from damage by binding to them and shielding them from attack.

The New Scientist 2008; 199 (2668): 36-39

Heat Shock Proteins

- HSP play an important role in the conservation & maintenance of protein homeostasis, the cellular stress response and aging
- Under normal conditions HSP:
  - Regulate the folding of newly formed proteins
  - Regulate the re-folding of denatured proteins
  - Regulate degradation of damaged proteins via proteosomes or lysosomes
  - Suppression of aggregate formation by diabled proteins.

Mechanisms Ageing and Development,2003; 124: 55-69

Heat Shock Proteins

- Protein Transport across intracellular membranes
- Regulation of apoptosis
- Regulation of cytoskeleton organization
- Regulate immune system function.
  - *Immune cell activation*
  - *Antigen presentation*
  - *Stressed or damaged cell recognition*
  - *Tumor recognition*
  - *Activation of complement cascade*
  - *Cofactor in cortisol activation*

Heat shock Proteins

The heat shock response declines in aging cells and becomes weaker with aging.

Nerve Tissue
Skeletal and Cardiac muscle tissue
Liver tissue

Calderwood SK, Murshid A, Prince T. The Shock of Aging: Molecular Chaperones and the Heat Shock Response in Longevity and Aging- A Mini –Review Gerontology 2009: 55:550-558

Adaptogens, Hormesis and Longevity

- The repeated administration of adaptogens gives rise to an adaptogenic or stress-protective effect in a manner analogous to repeated physical exercise, leading to prolonged state of non-specific resistance to stress and increased endurance and stamina under extreme conditions.
- Animal experiments have shown that adaptogens increase the release of HSP72 under stress.

Adaptogens and HSP

- Serum HSP Increase 2.8 times in mice forced to swim.
- Serum HSP Increased 6 times in mice given a combination of Rhodiola, Eleuthero and Shisandra extracts at human equivalent doses (1g/150lb body weight/day) for 7 days.
- Serum HSP increase 13 times in mice given herb combo and forced to swim.
- The time to exhaustion, when swimming, Increases 7 times, from 3 to 21 mins, in mice taking the herb comb.

Panossian A, Wikman G, Kart P, Asea A. Adaptogens exert a stress-protected effect by modulation of expression of molecular chaperones. Phytomedicine. 2009 Jun;16(6-7);617-22

Rhodiola and Depression

- A standarized extract of Rhodiola anti-depressive in patients with mild to moderate depression when administered in dosages of either 340 or 680 mg/day over a 6 week period.
- Depression, insomnia, emotional instability and somatization, but not self esteem, improved significantly following treatment.
- Energy Level Increased
- Up-regulation of HSP70
- Improved cortisol sensitivity

Physiological and Endocrine Aging

- The two most important clinical changes in endocrine activity involve the pancreas (insulin resistance) and the thyroid (declining T3)
- Menopause and andropause (declining testosterone in the male) occur
- Dehyroepiandrosterone (DHEA) and its sulfate (DHEAS) decline gradually with age, adrenopause
- Growth hormone (GH) and Insulin-Like growth factor 1 (IGF-1) decline, “somatopause”

Functional requirement of p23 and Hsp90 in telomerase complexes.

- **Abstract**
- Most normal human diploid cells have no detectable telomerase; however, expression of the catalytic subunit of telomerase is sufficient to induce telomerase activity and, in many cases, will bypass normal senescence. We and others have previously demonstrated in vitro assembly of active telomerase by combining the purified RNA component with the reverse transcriptase catalytic component synthesized in rabbit reticulocyte extract. Here we show that assembly of active telomerase from in vitro-synthesized components requires the contribution of proteins present in reticulocyte extracts. We have identified the molecular chaperones p23 and Hsp90 as proteins that bind to the catalytic subunit of telomerase. Blockade of this interaction inhibits assembly of active telomerase in vitro. Also, a significant fraction of active telomerase from cell extracts is associated with p23 and Hsp90. Consistent with in vitro results, inhibition of Hsp90 function in cells blocks assembly of active telomerase. To our knowledge, p23 and Hsp90 are the first telomerase-associated proteins demonstrated to contribute to telomerase activity.

Genes Dev. 1999 Apr 1;13(7):817-26.

•Department of Cell Biology and Neuroscience, University of Texas (UT) Southwestern Medical Center, Dallas, Texas 75235 USA.

Phytochemicals and Hormesis

- Plants need to protect themselves against, herbivores, bacteria, fungi, viruses and hazardous environmental changes. This has lead plants to concentrate defensive chemicals in their most vulnerable parts eg leaves, flowers, roots and bark.
- Like moderate exercise or CR, many of these poisons also exhibit hormetic properties, being harmful at high doses yet beneficial at low doses.

Phytochemicals and Hormesis

Many phytochemicals that we consume in our diet are believed to be hormetic:

- Ferulic acid from tomatoes, sweet corn, rice
- EGCG from Green tea
- Curcumin from Tumeric
- Sulforafane and isothiocyanate from cruciferous vegetables

Recent research supports this and has highlighted a number of biomolecular pathways that are involved.

Phytochemicals and Hormesis

- An important defensive signaling pathways in animals is the Nrf2/ARE pathway.
- Nrf2/ARE regulates the expression of Phase 2 detoxifying enzymes and antioxidants in response to noxious stimuli.

Modulation of Nrf2/ARE pathway by food polyphenols: a nutritional neuroprotective strategy for cognitive and neurodegenerative disorders.

- Data from our and other laboratories have previously demonstrated that curcumin, the yellow pigment of curry, strongly induces heme-oxygenase-1 (HO-1) expression and activity in different brain cells via the activation of heterodimers of NF-E2-related factors 2 (Nrf2)/antioxidant responsive element (ARE) pathway. Many studies clearly demonstrate that activation ofNrf2 target genes, and particularly HO-1, in astrocytes and neurons is strongly protective against inflammation, oxidative damage, and cell death. In the central nervous system, the HO system has been reported to be very active, and its modulation seems to play a crucial role in the pathogenesis of neurodegenerative disorders. Recent and unpublished data from our group revealed that low concentrations of epigallocatechin-3-gallate, the major green tea catechin, induces HO-1 by ARE/Nrf2 pathway in hippocampal neurons, and by this induction, it is able to protect neurons against different models of oxidative damages. Furthermore, we have demonstrated that other phenolics, such as caffeic acid phenethyl ester and ethyl ferulate, are also able to protect neurons via HO-1 induction. These studies identify a novel class of compounds that could be used for therapeutic purposes as preventive agents against cognitive decline.

Molecular neurobiology 2011;44(2):192-201

Calorie Restriction and Aging

- Over 2000 research articles have been published, with a universal knowledge that dietary or Calorie Restriction by 20 to 40 % is proven to extend lifespan by up to 50%. No other theory has such a profound and consistent effect.
- Life span is important but what's just as important as reduction in morbidity that takes place.
- At advanced ages CR animals are more youthful looking, highly active and display inquisitive behavior just like the young animals.
- Calorie restriction is not fully understood by researchers but believe that the term hormesis is responsible for CR acting as a moderate stressor.

Calorie Restriction and Aging

- At advanced ages CR animals are more youthful looking, display inquisitive behavior and are highly active, just like much younger animals.
- In other words CR adds ”life to years” as well as “years to life”
- The exact way that CR works to extend youthfulness and lifespan is not fully understood, but several researchers have proposed that it is due to hormesis, with CR acting as a moderate stressor.
- A strong advocate of the hormesis hypothesis for CR is Prof David Sinclair, an Australian scientist working at Harvard on Aging research.
- Hormesis hypothesis links many of the diverse observations about CR from experimental models
- Pathways involved are a hardwired survival mechanism to enhance the chance of survival during stress and reduced food availability.
- He proposed that this very basic survival mechanism should be and is regulated by a few genes- the sirtuins, SIRT1 to 7

- Sirtuin proteins are increased in CR and regulate a multitude of metabolic effects.
- Since phytochemicals can cause hormetic responses and may act as environmental signals to shift into survival mode ahead of an environmental decline, Sinclair's team investigated whether simple phytochemicals might increase sirtuins.
- Resveratrol was found to both a potent activator in vitro and in vivo.

- In yeast cells, resveratrol was found to mimic CR by stimulating SIR2 (the yeast equivalent of SIRT1) increasing DNA stability and extending life span.
- Resveratrol significantly increased the survival of mice fed a high calorie diet and caused favorable physiological changes to CR.
- Lifespan has been extended in other species by resveratrol.

Resveratrol and Aging

- Pharmacological activities of resveratrol.
  - Antioxidant
  - Anti-inflammatory
  - Antiplatelet
  - Antidiabetice
  - Antiviral
  - Cardioprotective
  - Neuroprotective
  - Regulation of lipoprotein metabolism

Resveratrol and Antiaging

- In cancer resveratrol is known to affect all three discrete stages of carcinogenesis: Initiation, Promotion, Progression.
- Polygonum cuspidatum is the traditional Chinese and Japanese herb used for joint pain and disease of the heart and blood vessels which contain the highest levels of resveratrol.
- Maximum daily dose TCM dose approx 30g/day (150mg)

Additional SIRT1 Activators

- Silymarin and its components are active component or SIRT1 pathway.
- Isoliquiritigenin from Licorice has 55% of the activity of reserveratrol in vitro and is abundant in Licorice extracts.

Li LH, WU SI LJ, Tashiro et al. J Asian Nat Prod Res 2007; 9(3-5): 245-252
Zhou B, Wu LJ, Li LH et al. J Pharmacol Sci 2006; 102(4):387-395
Howitz KT, Bitterman KJ, Cohen HY et al. Nature 2003; 425(6954):191-196

Baltimore Longitudinal Study: Other CR Mimetic Strategies

Three key biochemical changes are observed in CR primate experiments:

- Reductions in body temperature- reflects benefits of lower metabolism and better oxidative control
- Lower Plasma insulin-less AGEs and other favorable metabolic effects
- Higher in DHEAS- reflects a sparing effect on the adrenals.

Metaformin, a drug that promotes insulin sensitivity has
prolonged lifespan in rodent models and reflects biochemical
changes similar to CR

Adaptogens and DHEA

- After oral administration of 6g of Korean Red Ginseng for 30 days to postmenopausal women, DHEAS was increased by around 13%.
- Ashwaganda significantly increased DHEAS by 30% in the placebo-controlled clinical trial.

Silymarin and Insulin Resistance

- Silymarin (200mg 3x/day) for 4 months exerted a beneficial effect on glycemic profile in relatively well-controlled patients with type 2 diabetes (on medication)
  - HbA1c Decreased 13%
  - Fasting Blood Glucose Decreased 15%
  - Total cholesterol Decreased 12%
  - LDL-cholesterol Decreased 11%
  - Triglycerides Decreased 25%

Calorie Restriction, Insulin Sensitivity, Detoxification, Lipofusion, Inflammation, Antioxidant

Overall Supplement Support

Take 2-4 Tablets Daily

*HerbaVital contains five efficacious herbs: Polygonum cuspidatum (containing resveratrol), Pine Bark, Korean Ginseng, Ginkgo, and Milk Thistle, which when combined support all aspectsof the aging process.**

Associate Professor Kerry Bone and MediHerb's team of clinical and research experts have combined current research and over 75 years of clinical experience to develop HerbaVital. MediHerb's extensive testing and guaranteed quantities of essential ingredients ensure every bottle of HerbaVital contains a premium, efficacious product.

Eight Placebo Controlled Clinical Trials for Ginkgo biloba L. for cerebral insufficiency.

12 symptoms:

1. Difficulties in concentration
2. Difficulty in memory
3. Absentmindedness
4. Confusion
5. Lack of energy
6. Tiredness
7. Decreased Physical Performance
8. Depressive mood
9. Anxiety
10. Dizziness
11. Tinnitus
12. Headaches

Indication	Total # of Patients	Dosage (mg/day)	Duration	Result
Cerebral Insufficiency	99	150	12 weeks	**(8 of 12)** **72% improvement vs.** **8% placebo**
Cerebral Insufficiency	209	150	12 weeks	**(8 of 12)** **71% improvement vs.** **32% placebo**
Tinnitus Dizziness Hearing Impairment	100	160	3 months follow up at 13 months	**Improvement or cure in 50% of patients after 70 days and 119 days in patients on placebo**
Cerebral Insufficiency	166	160	12 months	**3m 10% vs. 4%** **6m 16% vs. 4%** **9m 15% vs. 8%** **12m 17% vs. 8%**
Vertigo Syndrome and Associated symptoms	670	160	3 months	**47% of Ginkgo patients symptom free vs. 18% for placebo treated patients. Significant improvement intensity, frequency and duration of the vertigo.**
Cerebral Insufficiency	96	112	12 weeks	**Conc. 54% vs.19%** **Mem. 52% vs. 17%** **Anxiety 48% vs. 17%** **Dizzy 61% vs. 23%** **Head 65% vs. 24%** **Tinnitis 37% vs. 12%**
Cerebral Insufficiency	58	160	6 weeks	**Significant Difference for 11 of 12 symptoms 4-6wks**
Mild Idiopathic cognitive Impairment	54	120	12 weeks	**Significant difference on cognitive test battery**

IL-2 increases human telomerase reverse transcriptase activity transcriptionally and posttranslationally through phosphatidylinositol 3'-kinase/Akt, heat shock protein 90, and mammalian target of rapamycin in transformed NK cells.

- J Immunol. 2005 May 1;174(9):5261-9.

- Kawauchi K, Ihjima K, Yamada O.
- **Source**
- Department of Medicine, Daini Hospital, Tokyo Women's Medical University, Arakawa-ku, Tokyo, Japan.

- **Abstract**
- Human telomerase activity is induced by Ag receptor ligation in T and B cells. However, it is unknown whether telomerase activity is increased in association with activation and proliferation of NK cells. We found that telomerase activity in a human NK cell line (NK-92), which requires IL-2 for proliferation, was increased within 24 h after stimulation with IL-2. Levels of human telomerase reverse transcriptase (hTERT) mRNA and protein correlated with telomerase activity. ERK1/2 and Akt kinase (Akt) were activated by IL-2 stimulation. LY294002, an inhibitor of PI3K, abolished expression of hTERT mRNA and protein expression and abolished hTERT activity, whereas PD98059, which inhibits MEK1/2 and thus ERK1/2, had no effect. In addition, radicicol, an inhibitor of heat shock protein 90 (Hsp90), and rapamycin, an inhibitor of the mammalian target of rapamycin (mTOR), blocked IL-2-induced hTERT activity and nuclear translocation of hTERT but not hTERT mRNA expression. hTERT was coimmunoprecipitated with Akt, Hsp90, mTOR, and p70 S6 kinase (S6K), suggesting that these molecules form a physical complex. Immunoprecipitates of Akt, Hsp90, mTOR, and S6K from IL-2-stimulated NK-92 cells contained telomerase activity. Furthermore, the findings that Hsp90 and mTOR immunoprecipitates from primary samples contained telomerase activity are consistent with the results from NK-92 cells. These results indicate that IL-2 stimulation induces hTERT activation and that the mechanism of IL-2-induced hTERT activation involves transcriptional or posttranslational regulation through the pathway including PI3K/Akt, Hsp90, mTOR, and S6K in NK cells.

DHA plays a critical role during pregnancy and infant development, old age, for mental conditions and perisomal disorders.

- Maintains membrane fluidity and function, regulating cellular receptors.
- Facilitating normal growth and cognitive development
- Participating in development, composition and function of the central nervous system.

Effects of Omega-3 Fatty Acids

Cardiovascular & Inflammation

- Suppressing AA for anti-inflammatory.
- Decreasing triglycerides, Increase HDL's.
- Preventing Arrythmia's/ stablize heart rhythm.
- Producing Anti- thrombotic effects
- Inhibits coagulation
- Promotes vasodilation.

A 50% reduction in risk of primary cardiac arrest is associated with consumption of as little as 5.5g fish oils/week.

Double blind study of male and female patients taking 3.2g EPA and 2.2g DHA per day:

Inhibited Leukotriene generation by 50%

Significantly suppressed neutrophil chemotaxis.

Atherosclerosis

Autopsies performed by medical doctors revealed that the degree of atherosclerosis present in coronary arteries was inversely proportional to the amount of DHA in adipose (fatty) tissue.

Stroke

Women in the highest quartile for fish and omega-3 EFA intake reduced the risk for stroke by 72% and for thrombotic infarction by 67%.

No relationship with fish oil and hemorrhagic stroke.

Brain and Fish Oil

- Deficiencies in EPA, DHA, total omega-3 fatty acids and lower omega-3/omega-6 ratio are found in patients with Alzheimer's disease's, other dementia's and in cognitive impairment associated with aging. Low serum DHA is a significant risk factor for development of Alzheimer's disease and has been linked to depression.
- JAMA in 2007 showed how people's telomeres shorten in people with coronary artery disease, those with the greatest intake of EPA and DHA fish oil had the longest telomeres and those with the lowest intake had the shortest telomeres.
- In 2003,The Rotterdam Study found that ingesting fish or taking supplemental fish oil once week was associated with a 60% reduction in dementia.

Docosahexaenoic Acid (DHA)

- Highest Levels found in Brain (Frontal Cortex)
  - Nerve Tissue (Eye neural membranes)
- Heart (Blood Pressure, Heart Rate abnormalities, Endothelial Dysfunction)
  - Testies

There are 22 studies showing that ALA is not readily converted to DHA and EPA is not converted to DHA in vivo studies.

Brain Wave Accelerator: DHA

- At the international Scientific Conference in Barcelona, Spain an investigator named K. Myanaga reported his research on studying fish oil on the speed of a particular brain wave “p-300”. This brain wave is closely related to the learning and memory processes. In 26 normal healthy volunteers the transmission of this wave was significantly faster after taking the DHA supplement and not EPA.

Brain and EFA's

- Essential Fatty acids up 45% of fatty acids in synaptic membranes, can influence related steps to neurotransmitter synthesis release and overall activity. Low fatty acids result in decreased synthesis of dopamine and improper storage of newly synthesized dopamine. A breakdown of membranes due to structure change from EFA deficiency is associated with schizophrenia.

Optimal EFAs

ALA

EPA

DHA

GLA

Fish Oil

Flax Oil

Borage Oil

Recommended Dosage:
4-6 per day

The Lancet, in 2005 exposed the crisis of dementia globally.

- 24.3 million people suffer from dementia today.
- 4.6 million new cases of dementia occur every year, or one new case every 7 seconds.
- On a global scale, the number of people affected by dementia will double in 20 years– to roughly 8.1 million by 2040.

- Studies suggest that approximately 500,000 Americans between the ages of 55 and 64 suffer from cognitive impairment conditions like Alzheimer's disease and dementia. Since these conditions are known to develop over 30 years the statistics reinforce that cognitive decline may begin earlier than most realize. This underscore the urgent need for even younger age groups to launch preventive brain health regimens as early as possible– to both optimize mental performance now and preserve peak mental performance in the future.
- The significance of this global dementia epidemic cannot be overemphasized. Dementia has been found responsible for 11.2% of years lived with disability in people aged 60 and older—even more than stroke (9.5 %), musculoskeletal disease (8.9%) and all forms of cancer (2.4%).

Neurogenesis in the adult human hippocampus

The genesis of new cells, including neurons, in the adult human brain has not yet been demonstrated. This study was undertaken to investigate whether neurogenesis occurs in the adult human brain, in regions previously identified as neurogenic in adult rodents and monkeys. Human brain tissue was obtained postmortem from patients who had been treated with the thymidine analog, bromodeoxyuridine (BrdU), that labels DNA during the S phase. Using immunofluorescent labeling for BrdU and for one of the neuronal markers, NeuN, calbindin or neuron specific enolase (NSE), ***we demonstrate that new neurons, as defined by these markers, are generated from dividing progenitor cells in the dentate gyrus of adult humans. Our results further indicate that the human hippocampus retains its ability to generate neurons throughout life.***

Nature Medicine **4, 1313 - 1317 (1998) doi:10.1038/3305**

Phosphatidylserine (PS)

- The Delwaide Trial found that dementia patients who received 300mg of PS daily for six weeks showed significant improvement in many aspects of daily living
- The Italian Multicenter Study of Dementia found that patients who were most severely afflicted with dementia experienced statistically significant benefits from PS supplementation. Remarkably, these patients continued to improve even three months after they discontinued taking PS.
- A 1992 trail conducted by Dr. Tom Crook and an international support team found that PS delivered significant benefits to Alzheimer's patients, helping them remember names, daily events and even events from past weeks.
- A 1993 multicenter double-blind trial found that PS helped memory, learning, motivation and awareness in elderly patients.

PS and Specific Functions

- PS is a brain-energizing nutrient, empowering neurons to “fire” with electrical impulses that make the brain function.
- PS stimulates production of Acetylcholine, which may enable the brain to send impulses with speed and efficiency.
- PS is a life supporting phospholipids. Phospholipids are involved in the mobilization of fats, which make-up two thirds of the brain’s structure.
- PS communicates with the immune system to enable a quick disposal of brain cells that are shutting down.
- PS is the primary raw material for neurogenesis- the creation of new brain cells.

Mental & Circulation Support

Ginkgo Forte: Take 2-4 tablets For dementia, cerebral insufficiency, attention issues, stroke, memory & cognitive performance, high altitude or hypoxia.

Phosphatidylserine: Take 2 capsules 2x day. Increase acetylcholine, Reduce cortisol, increase dopamine concentration and short term memory loss, enhance nerve growth factor, increase myelin sheath repair.

L-Carnitine treatment reduces severity of physical and mental fatigue and increases cognitive functions in centenarians: a randomized and controlled clinical trial.

Centenarians are characterized by weakness, decreasing mental health, impaired mobility, and poor endurance. L-Carnitine is an important contributor to cellular energy metabolism.

OBJECTIVE:

This study evaluated the efficacy of L-carnitine on physical and mental fatigue and on cognitive functions of centenarians.

DESIGN:

This was a placebo-controlled, randomized, double-blind, 2-phase study. Sixty-six centenarians with onset of fatigue after even slight physical activity were recruited to the study. The 2 groups received either 2 g levocarnitine once daily (n = 32) or placebo (n = 34). Efficacy measures included changes in total fat mass, total muscle mass, serum triacylglycerol, total cholesterol, HDL cholesterol, LDL cholesterol, Mini-Mental State Examination (MMSE), Activities of Daily Living, and a 6-min walking corridor test.

RESULTS:

At the end of the study period, the levocarnitine -treated centenarians, compared with the placebo group, showed significant improvements in the following markers: total fat mass (-1.80 compared with 0.6 kg; $P < 0.01$), total muscle mass (3.80 compared with 0.8 kg; $P < 0.01$), plasma concentrations of total carnitine (12.60 compared with -1.70 mumol; $P < 0.05$), plasma long-chain acylcarnitine (1.50 compared with -0.1 micromol; $P < 0.001$), and plasma short-chain acylcarnitine (6.0 compared with -1.50 micromol; $P < 0.001$). Significant differences were also found in physical fatigue (-4.10 compared with -1.10; $P < 0.01$), mental fatigue (-2.70 compared with 0.30; $P < 0.001$), fatigue severity (-23.60 compared with 1.90; $P < 0.001$), and MMSE (4.1 compared with 0.6; $P < 0.001$).

CONCLUSIONS:

Our study indicates that oral administration of levocarnitine produces a reduction of total fat mass, increases total muscular mass, and facilitates an increased capacity for physical and cognitive activity by reducing fatigue and improving cognitive functions.

Am J Clin Nutr. 2007 Dec;86(6):1738-44

L-Carnitine Deficiency

In the absence of adequate L-Carnitine, fatty acids cannot gain entry into the mitochondria for energy production. The deficiency can cause:

1. Weakness and Fatigue
2. Accelerated glycolysis which causes hypoglycemia.
3. Elevated Triglycerides in the blood stream, heart and liver.
4. Cardiac Irregularity
5. Slowing of gastrointestinal motility which may lead to anorexia, nausea and constipation.

In many cases these problems can be corrected through L-Carnitine supplementation. Other Research indicates the supplemental L-Carnitine may be beneficial in enhancing immune function, reversing alcohol-induced liver damage and some cases male fertility.

Although L-Carnitine is produced in the liver and kidneys from amino acids **lysine and methionine**, there are instances when the body's supply of L-Carnitine may become deficient and supplementation would be indicated. These conditions include:

- Genetic defects in absorption, excretion and transport of L-Carnitine.
- Diets low in L-Carnitine or dietary deficiency of the amino acids lysine and methionine.
- Dietary deficiency of Vitamin C required for L- Carnitine synthesis or increased need for vitamin C as seen in cancer patients.
- Elevated Triglycerides
- Heart Problems
- Kidney Failure
- Possibly some types of obesity.

L-Carnitine and Cardiovascular Health

- L-Carnitine is essential to healthy cardiovascular function. Myocardial deficiency has been associated with chronic heart failure and acute myocardial infarction. In the absence of adequate L-Carnitine the body is unable to transport cholesterol and triglycerides for metabolism. The results is a significant rise in the serum levels of these two substances as well as accumulation of triglycerides in the blood stream, heart and liver.
- Research has also shown L-Carnitine to raise blood levels of protective HDL which aids in the removal of LDL cholesterol.

L-Carnitine Benefits Hypoglycemia, Obesity and Weight Loss Programs

- In animal studies, L-Carnitine has been shown to stimulate brown fat thermogenesis. Low levels of brown fat thermogenesis have been associated with obesity. L-Carnitine has also been shown to spare glucose and accelerate fat metabolism which is also beneficial in weight control as well as in suppressing hypoglycemia.

L-Carnitine Prevents Free Radical Production

- Since most free radicals are generated in the mitochondria and the important nutrients Vitamin A, Vitamin D, Vitamin E, Vitamin F, Vitamin K and Beta-carotene are fat soluble, they require L-Carnitine as a trans mitochondrial carrier to prevent oxidation and free radical production. Free radicals are high energy chemical substances with one unpaired electron that react in an indiscriminate fashion with sites of high electron density, such as double bonds in polyunsaturated fatty acids and unsaturated rings in nucleic acids which make up DNA and RNA and electron regions of proteins. Free radical reactions in mammalian systems have been intimated to be responsible for such diverse physiological processes as inflammation, aging, drug-induced damage, alterations in immunity, cancer and potentially leading to cardiovascular disease.

Carnitine Disorder Awareness Stressed, Eisenberg, Medical Tribune, November 15,1990;4

- One thousand infants each year are born with a metabolic carnitine deficiency. Half the infants born with carnitine deficiency die rapidly from misdiagnosed for a variety of syndromes such as Reyes syndrome, Sudden Infant Death Syndrome and Influenza. Pathologists usually diagnose the syndrome. Infants with reflux were assessed and out of 20, 17 were found to have fatty acid dysmetabolism. Upon supplementation with carnitine the vomiting stopped. Carnitine deficiency results from the inability to obtain carnitine from red meats and milk. Carnitine is responsible for the oxidation of long chain fatty acids which can manifest as elevated triglycerides. Hypoglycemia, lethargy, Congestive Heart Failure and neurologic disturbances are seen in serious deficiency. Lethargic infants with poor muscle tone and weakness should be suspected of carnitine deficiency is present.

L-Carnitine Supplementation Can Boost Athletic Performance

L-carnitine supplementation can increase L-carnitine levels in muscles and boost athletic endeavor, United Kingdom researchers have found after a 30-year search to locate the optimum L-carnitine delivery mechanism to the musculature.

L-carnitine, a vitamin-like nutrient, occurs naturally in the human body and is essential for turning fat into energy.

Writing in the *Journal of Physiology*, the researchers from the School of Biomedical Sciences at the University of Nottingham Medical School said a combination of L-carnitine and carbohydrates delivered the measurable increase and concomitant athletic boost.

"This is the first demonstration that human muscle total carnitine (TC) can be increased by dietary means and results in muscle glycogen sparing during low-intensity exercise (consistent with an increase in lipid utilization) and a better matching of glycolytic, PDC and mitochondrial flux during high-intensity exercise, thereby reducing muscle anaerobic ATP production," they wrote. "Furthermore, these changes were associated with an improvement in exercise performance."

The researchers emphasized the dual metabolic effect of the L-carnitine supplementation at both low and high-intensity exercise levels, which led to a decrease in anaerobic energy production and a decrease in muscle lactate accumulation. Participants also registered lower perceived exertion as well as increased work output.

Lead researcher Professor Paul Greenhaff said the findings were "very exciting" and a demonstration of evidence-based nutrition, which was "rare in the sports nutrition market." He continued, "Most of the studies to date have been heart-based, not skeletal muscle. These findings should spur a fresh round of research in this area."

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L-Carnitine & Acetyl-L-Carnitine

L-Carnitine: 1 teaspoon/day Elevated Blood Fats, Cardiac Stress, Liver degeneration and cirrhosis, unable to lose weight, muscle fatigue, senile dementia, reduced muscle mass, low sperm motility.

Acetyl-L-Carnitine: 3 capsules/ day geriatric depression, dementia, HIV infection, diabetic neuropathy, cognitive impairment by alcoholism or ischemia.

Nutrient Depleting Drugs

The damage takes place slowly, over time, and it can be addressed, but only if you know about it. Here is a partial list of medications that can deplete your body of essential nutrients:

ACE inhibitors deplete zinc.

- Acid reducers deplete B12 and calcium.
- Antibiotics deplete Lactobacillus acidophilus, Bifidobacteria bifidum, and other good bacteria; vitamins B1, B2, B3, B6, B12, and K; biotin; and inositol.
- Aspirin depletes folic acid, iron, potassium, and vitamin C.
- Benzodiazepines deplete vitamin B12 and CoQ10.
- Beta-blockers deplete CoQ10.
- Corticosteroids deplete calcium, folic acid, magnesium, potassium, selenium, vitamin C, vitamin D, and zinc.
- Estrogens deplete magnesium, omega-3 fatty acids, vitamin B1, and zinc.
- Famotidine and other H2-blocking drugs deplete calcium, folic acid, iron, vitamin B12, vitamin D, and zinc.
- Glucophage depletes vitamin B12.
- NSAIDS deplete folic acid.
- Oral contraceptives deplete vitamin C, vitamin B2, folic acid, magnesium, vitamin B6, vitamin B12, and zinc.

For more information, see Ross Pelton et al., Drug-Induced Nutrient Depletion Handbook, 1999-2000 (Hudson, Ohio: Lexi Comp, 1999

Drugs are accelerating the decline in the general health and mental capacities of the elderly.