

Vitamin Research News

Dedicated to the Scientific Pursuit of Better Health

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The President's Desk

New Anti-Andro Bill Will Criminalize Supplements – and Supplement Users

Last October a new “Anti-Andro Bill” was introduced to the House of Representatives. The bill—H.R. 207—appears to address very serious concerns about the potential use of muscle-building “andro” supplements by teenagers. In reality, H.R. 207 is carefully crafted to bypass current lawful procedures and to restrict the sale of all steroid hormone precursors—including DHEA, 7-Keto DHEA and pregnenolone—to people of all ages.

In fact, as currently written, H.R. 207 would instruct the Attorney General to reclassify all hormone precursor supplements as controlled substances, such as narcotics and other hard drugs.

H.R. 207 is a bad bill, designed to outlaw nutritional supplements—and those that count on them for their health— by hiding under the guise of protecting our children. Passage of this bill would deal a staggering blow to health freedom and, by effectively bypassing the Dietary Supplements Health and Education Act (DSHEA), remove these supplements from FDA oversight and place them—and health consumers—under the control of the DEA. Any citizen possessing these safe and beneficial health supplements will be subject to federal asset forfeiture laws, including the seizure of personal private property.

I urge you to look into this matter for yourself and let your views be heard in Washington before your rights are taken away. Please contact your Congressional Representative and express your views before this bill is passed. For more information, including a form letter and full details on H.R. 207, please check out our “Breaking News” link. And if you want to find out who your Congressional Representative is to send an e-mail letter you can do so by accessing the web site www.house.gov.

Robert Watson
President/CEO

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Mitochondrial Restoration, Part II

D-Ribose and Creatine Increase Mitochondrial Energy Production

by Ward Dean, MD

A series of recent articles in Vitamin Research News have examined aspects of the *Mitochondrial-Free Radical Theory of Aging*, describing how the declining function of mitochondria— the tiny organelles responsible for producing ATP— contribute to aging and the diseases of aging. Additionally, the articles outlined a number of nutritional approaches aimed at restoring functional performance to aging mitochondria to increase their ability

to produce ATP at more youthful levels. Here we present additional substances that are also proven to enhance mitochondrial oxidative phosphorylation and energy production. These include:

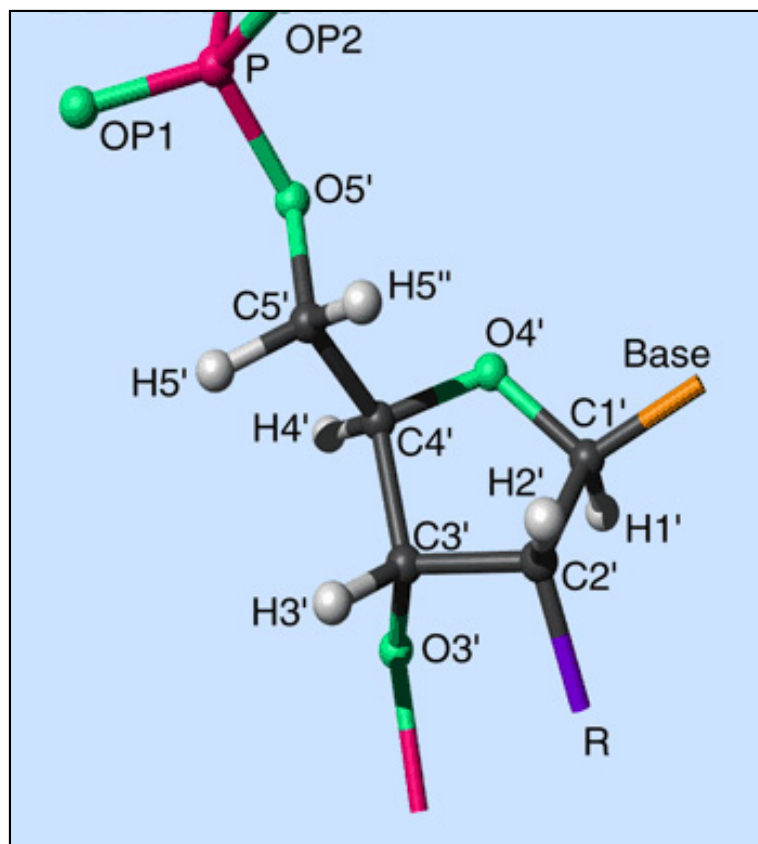
D-Ribose

D-Ribose—Energy-Producing ATP Substrate

Ribose is a naturally occurring 5-carbon sugar produced in the body from glucose (Fig. 1). In addition to serving as the carbohydrate backbone for ribonucleic acid (RNA) and deoxyribonucleic acid (DNA), ribose is also an essential ingredient in the manufacture of ATP. The mitochondria found in high-energy output organs—such as the heart, liver, adrenals, GI tract, brain, muscles and endocrine glands—utilize two methods for building or conserving cyclic nucleotides like ATP, ADP, and AMP.

The first process by which these nucleotides are synthesized is the de novo pathway, in which nucleotides are made “from scratch,” starting with ribose. This is the slower of the two pathways.

The second, faster pathway, is the salvage pathway, in which the mitochondria “pick up the pieces” of ATP metabolites to form new ATP. In this manner ribose enables the cells to quickly and efficiently recycle (i.e., salvage) the end products formed by the breakdown of ATP to form new ATP molecules. Thus, this is known as the salvage pathway of ATP formation.



Ribose is essential for both the salvage and de novo reactions to work. Ribose is formed in the body from glucose, through a process known as the pentose phosphate pathway (Fig. 2). Aside from this relatively time-consuming pathway, there are no foods able to provide enough ribose to rapidly restore ribose levels, should the need arise, as when exercising or working, and especially during a heart attack or stroke.

Restoring Ribose Levels

Scientists have found that oral or intravenous ribose can rapidly restore ribose levels in nerves and muscles. Ribose supplementation can dramatically improve recovery of failing ATP levels during and following acute or chronic anoxia or ischemia. Research has shown that taking ribose has a positive effect on ATP production in all muscle fiber types, especially the heart. Ribose supplementation increases the de novo production of ATP through oxidative phosphorylation by 340 to 430 percent. Ribose also activates the salvage

pathway, causing nucleotides to be revitalized into the manufacture of ATP by over 700 percent.

Ribose and Cardiovascular Diseases

Dr. Wolfgang Pliml and colleagues in Germany, demonstrated that oral administration of ribose is effective in increasing the heart's tolerance to ischemia (reduced blood flow). Twenty patients diagnosed with coronary artery disease completed two treadmill tests on consecutive days to establish pain thresholds for each patient. The researchers then gave each patient 60 grams of ribose per day for three days, and administered another treadmill test. Patients supplemented with ribose were able to walk further before pain symptoms occurred than those given the placebo. (1)

In a second recent study, 12 patients diagnosed with unstable coronary artery disease and congestive heart failure were administered five grams of ribose, three times daily, for three weeks. Evaluation by pre- and post-ribose echocardiogram revealed improvement in many parameters, including stroke volume index, ejection fraction, and left ventricular systolic volume. (2)

Ribose and Athletic Performance

Ribose has also been shown to increase athletic performance. Supplemental (ten grams per day) in young male recreational bodybuilders

resulted in significant increases in muscular strength and total work performance after four weeks, compared with pre-treatment levels. No changes were noted in those using a placebo. (3)

Another study of seven healthy men who performed two sessions of bicycle ergometry to exhaustion at a one-week interval indicated that ribose improved efficiency of energy production, as evidenced by reduction of oxidative stress during vigorous exercise. Prior to the second trial, the subjects ingested seven grams of ribose. Ribose ingestion resulted in a reduction of urinary MDA (an indicator of oxidative stress), and lower heart rates at the same intensity of exercise as compared to the unsupplemented group. (4)

Creatine

Energy Enhancing Supplement

Creatine is an essential, natural substance that is synthesized in the body from three amino acids: glycine, arginine, and methionine. Creatine plays a very powerful role in energy metabolism as a muscle fuel in its role in regenerating ATP.

Operating through the ATP/ADP cycle (Fig. 3), creatine phosphate maintains ATP levels by serving as a reservoir of high-energy phosphate bonds in muscle and nerve tissues. The energy required to rephosphorylate ADP into ATP depends on the amount of phosphocreatine (PCr) stored in muscle tissues. As phosphocreatine is depleted during exercise, energy availability declines due to a loss of ability to resynthesize ATP at the rate required.

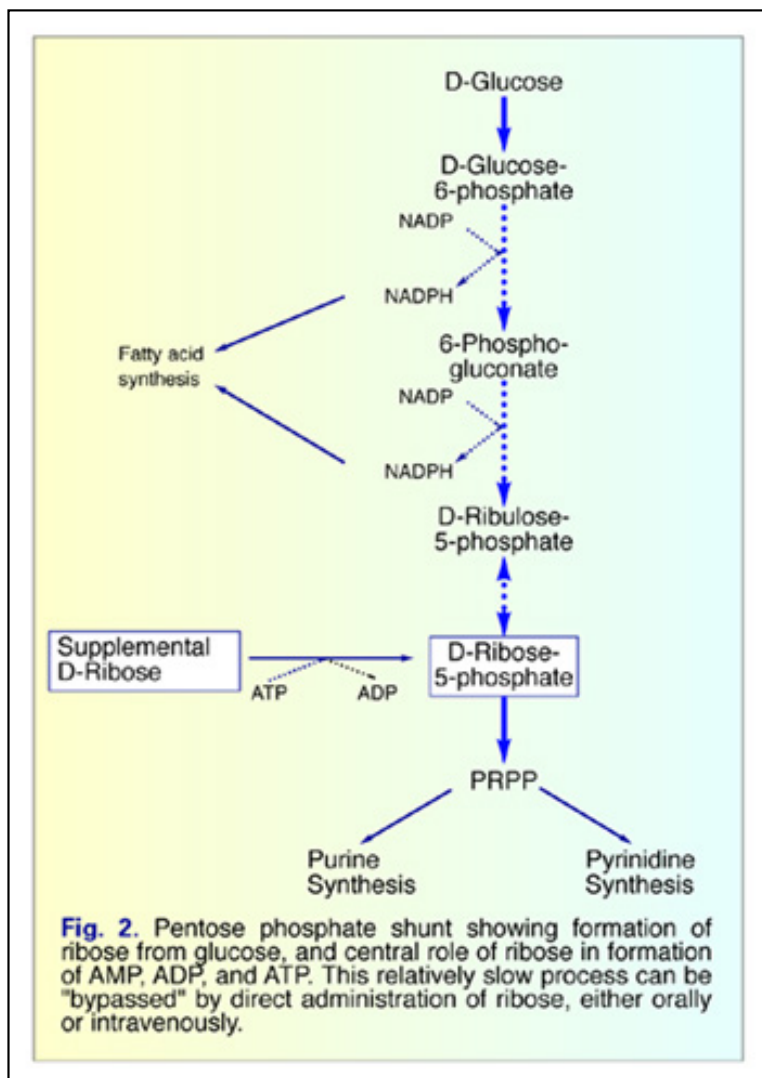


Fig. 2. Pentose phosphate shunt showing formation of ribose from glucose, and central role of ribose in formation of AMP, ADP, and ATP. This relatively slow process can be "bypassed" by direct administration of ribose, either orally or intravenously.

While scientists have been aware of creatine since 1832, it was not tested as a performance-enhancing nutrient until 1943, when researchers learned that creatine supplementation extended the cycling times of athletes. (5) This nearly-forgotten, single, isolated report languished in the medical literature for over 50 years. Recently, however, a number of studies have corroborated this early study, showing that creatine enhances both strength and endurance in athletes. In one study, creatine was given to 25 football players who had reached a plateau while undergoing a weight-training program. After 28 days of supplementation with creatine, researchers measured a 41 percent increase in "lifting volume" (sum of all lifts). (6)

Another five-week study of 42 football players also showed gains in strength and mass. (7) as did a study of 29 women who took supplemental creatine for ten weeks. (8) Some researchers have shown strength gains with as little as five to seven days of supplementation. (9,10)

Creatine Increases Strength and Energy in Older Adults

Because older people have lower levels of energy-producing muscle phosphocreatine, (11) researchers examined creatine to see if supplementation could help seniors overcome this deficit. Subsequent studies have demonstrated that supplemental intake of creatine can effectively increase the available "pool" of creatine stored in muscles and enhance the capacity of older subjects to produce phosphocreatine. In 1998 Smith and colleagues administered creatine to younger (average age, 30) and older (average age, 58) men and women, and then tested their ability to perform a leg exercise. Both older and younger subjects experienced increased muscular endurance. In addition, the phosphocreatine resynthesis rate (PCr) of the older subjects was restored to that of youthful adults (Fig. 4) . (12)

Also in 1998, Rawson and colleagues at the University of Massachusetts demonstrated that five days of creatine administration to a group of older men resulted in a small increase in lean body mass, and a slight improvement in exercise performance. (13) This short study was followed up by a larger (20 male subjects, ranging in age from 60-82) and longer (30 days) study in which the subjects were first given a loading dose (20 grams per day) for ten days, followed by four grams of creatine per day for 20 days. (14) At the end of the study, six of the ten creatine users reported an increased feeling of muscle strength or less difficulty performing daily activities. Five subjects demonstrated an increase in body mass, three showed an increase in arm strength, and four demonstrated reduced leg fatigue. One subject increased in all three measures. The authors concluded modestly that creatine might have a beneficial effect on reducing muscle fatigue.

Scientists at the University of Saskatchewan conducted a double blind study of the effects of creatine and a

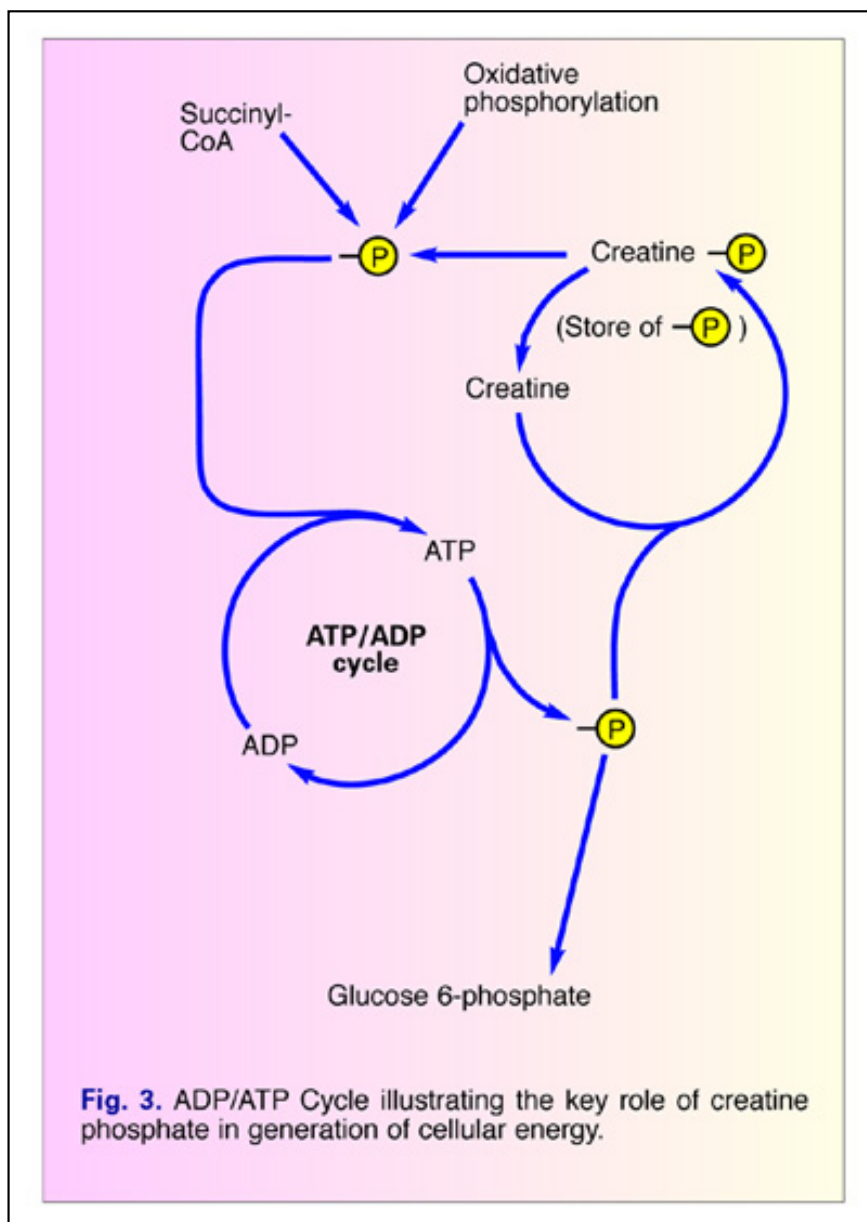


Fig. 3. ADP/ATP Cycle illustrating the key role of creatine phosphate in generation of cellular energy.

weight training program in men over 70. They demonstrated a significant advantage of creatine over placebo in terms of increased lean body mass, reduction in body fat, and increased muscular strength, and endurance. (15)

Cardiovascular Benefits of Creatine

Creatine is not just of benefit to athletes. In a study of older men (ranging from 43 to 70 years) suffering from chronic heart failure, researchers noted improvements in exercise performance and increased muscle creatine and phosphocreatine levels after ten days' ingestion of 20 grams of creatine each day. (16)

In Italy, physicians administered six grams of creatine each day to 13 patients hospitalized with congestive heart failure. After four days, they noted a reduction in heart size, reduced vascular resistance, and increased ejection fraction—all indicators of improved heart function. (17)

Neuroprotective Effects of Creatine

In a review article, Tarnopolsky concluded that creatine monohydrate supplementation results in an increase in skeletal muscle total and phosphocreatine concentrations, increased fat-free mass, and enhanced high-intensity exercise performance in young healthy men and women. (18) He also noted "neuroprotective effects, which have been proposed to be of benefit in Parkinson's disease, Alzheimer's disease, ALS, and after ischemia." He concluded that creatine appeared to have potential to attenuate age-related muscle atrophy and strength loss, as well as to protect against neurodegenerative disorders.

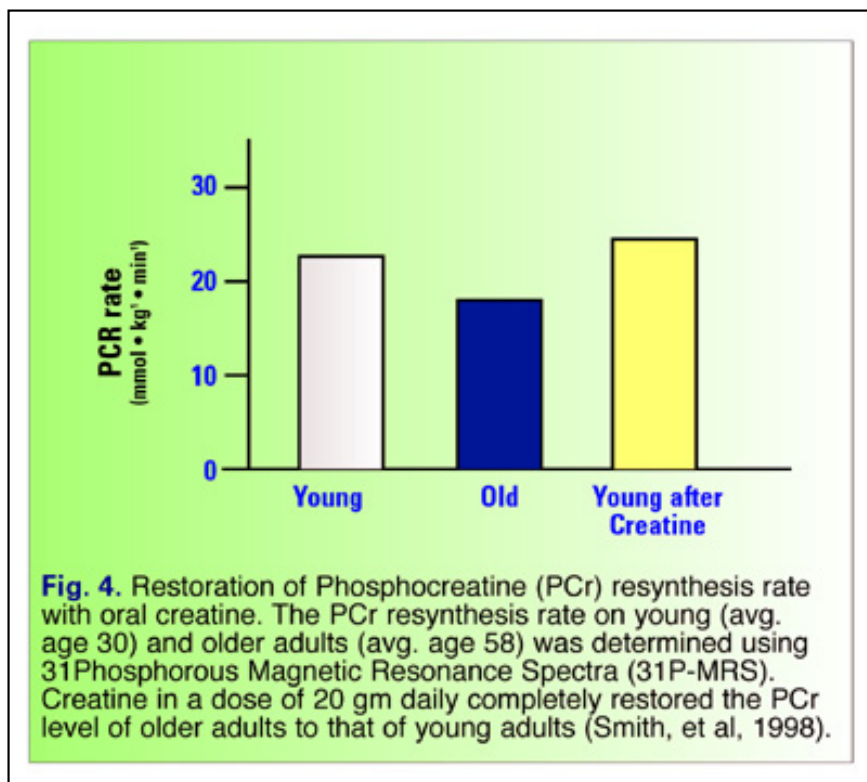
Shortly after Tarnopolsky's review, FDA granted "orphan drug status" to creatine as a treatment for patients with amyotrophic lateral sclerosis (Lou Gehrig's disease), based on creatine's demonstrated ability to enhance cellular energy production. In addition, a European patent has also recently been issued for the use of creatine compounds to prevent aging effects and to treat muscle atrophy. (19)

Conclusion

Creatine and ribose, acting at the mitochondrial level, enhance muscular, cardiovascular, and neurological function. Although very high doses of creatine and ribose were used in many of the studies cited in this article, other researchers have shown that regular, long term use of lower doses may be equally effective. For greatest effect these substances should be consumed on a continuous basis (around the clock), and especially prior to high energy requirements. Also, it is likely that combinations of various mitochondrial enhancers/"resuscitators," acting on various portions of the mitochondrial energy production process (reviewed in previous articles in this series, and summarized in Table 1, below), will have complementary/additive effects, even though slightly lower doses may be used than when the substances are taken alone.

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Oral Chelation with EDTA

A Food Additive with Many Remarkable Properties

by Ward Dean, MD

In the previous issue of Vitamin Research News, intravenous EDTA chelation therapy was discussed. This article continues to briefly describe a new intravenous approach with EDTA, to expand on EDTA's protective and enhancing effects as a food additive in foods and dietary supplements, as well as some clinically tested uses of oral EDTA.

The Food and Drug Administration has approved the synthetic amino acid, ethylene diamine tetraacetic acid (EDTA), as a pharmaceutical agent for the treatment of lead and other heavy metal poisoning or exposure. In older literature, the FDA also approved EDTA as being "possibly effective in occlusive vascular disorders...arrhythmias and atrioventricular induction defects...and in the treatment of pathologic conditions to which calcium tissue deposits or hypercalcemia may contribute other than those listed above." (1)

These "possibly effective" indications were removed from FDA-approved literature in the late 1970s for reasons known only to the FDA. Fortunately, physicians are not limited solely to FDA-approved indications and can prescribe approved drugs for whatever "unapproved" conditions they find them to be effective. Consequently, since EDTA is approved for the treatment of heavy metal poisoning (especially lead), many physicians continue to use pharmaceutical EDTA with great benefit in many diseases and conditions other than their officially approved uses.

There are two medical associations whose physician members are trained in the administration of intravenous

EDTA for the treatment and prevention of atherosclerosis, heavy metal toxicity, and other chronic degenerative diseases. These organizations are the *American College for Advancement in Medicine* (800-532-3688) and the *International Association for Integrative Medicine* (IAIM) (formerly, the *Great Lakes Association of Clinical Medicine* [GLACM]) (800-286-6013). Members of these organizations and their patients find that EDTA chelation therapy is highly effective as an alternative, or in addition, to more traditional/widely accepted approaches such as angioplasty or bypass surgery.

Low Dose, Rapid IV Injection

Although physicians in the US generally use doses of EDTA ranging from 1.5 to 3.0 grams, Dr. Walter Blumer in Switzerland has developed a protocol using calcium EDTA intravenously. This form of EDTA is non-irritating, and can be administered in less than five minutes. Dr. Blumer's technique is being adopted by a growing number of physicians in the US.

Beneficial Uses of Oral EDTA in Cardiovascular Disease

In addition to the controversial but widespread recognition of EDTA's intravenous benefits are its less well-known clinical uses when administered orally. Early clinical studies with EDTA reported loss of fat in rats, reduction of cholesterol in rabbits, and reduced blood pressure in humans. Consequently, a study of the effects of oral EDTA on patients with athero-sclerosis and/or hypertension was conducted on 10 patients. Four of these patients had hypertension, four had angina pectoris, one had peripheral vascular disease (intermittent claudication), and one was recovering from a heart attack. All were treated with one gm of oral EDTA daily for three months. Seven of the ten patients experienced significant reductions in their cholesterol levels, and blood pressure was reduced in all ten. The most marked change occurred in the patient with intermittent claudication, whose cholesterol dropped from 278 mg per 100 ml to 128! This patient also reported improved exercise tolerance, and the researchers found improved pulsations in the extremities. The four patients with angina pectoris also all reported improvement. (2)

In another series of 20 patients who suffered from hypercholesterolemia, hypertension, angina or peripheral vascular disease, one gram of EDTA was administered orally every day for 3 months. During that short time, elevated cholesterol levels in nine of the patients dropped to within the normal range. No adverse results were experienced by any of the patients. Angina attacks were reduced in frequency and severity in five individuals. One person who previously had suffered a heart attack and experienced several angina attacks daily thereafter, obtained complete relief. (3)

In another study, two patients with extremely elevated cholesterol were treated with oral EDTA. One patient took EDTA in progressively large doses ranging from 500 mg to 4 gm daily for one year, and the other took 1,000 mg daily for three years (Fig. 1.). Although the first patient suffered a heart attack after three years of therapy, she recovered uneventfully, and had reduced angina pains and improved sense of well-being with continued use of EDTA. The second patient—in addition to

hypercholesterolemia—had a condition known as xanthomatosis (yellowish papules in the skin, related to elevated blood lipids). She not only experienced dramatic reductions in her cholesterol levels with oral EDTA treatment, but her skin lesions completely resolved. (4) Other laboratory studies (including kidney and liver function) remained normal throughout the study for both patients. This is further confirmation of the safety of oral EDTA, considering that doses as high as 4 gm daily were consumed.

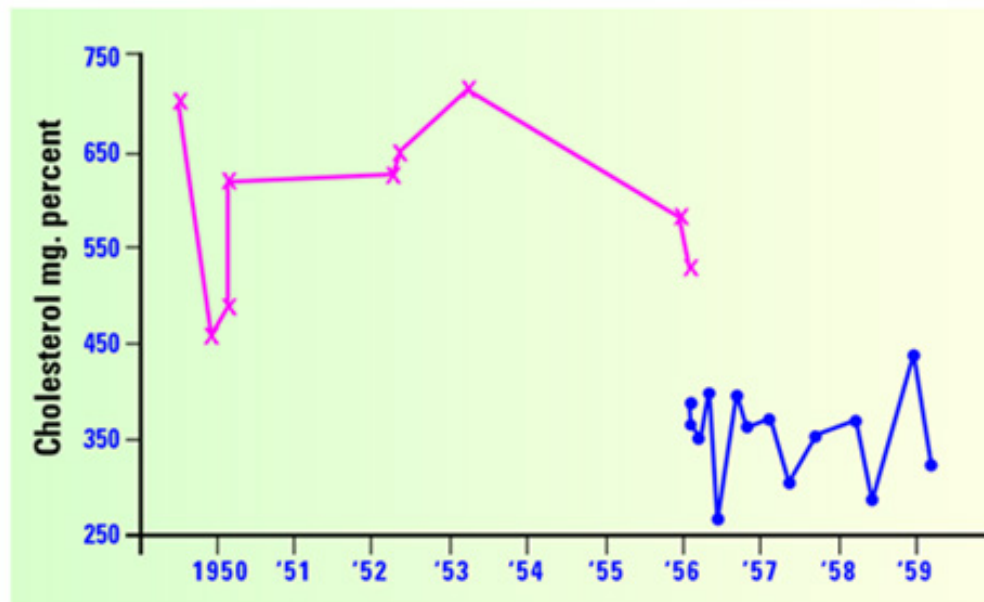


Fig. 1. Variations in plasma cholesterol after treatment with 1,000 mg of oral EDTA daily. The patient's cholesterol levels for six years prior to consuming EDTA are indicated by the Xs. Circles indicate cholesterol levels while consuming 1,000 mg EDTA daily for three years (bar). (Perry and Camel. 1960).

Further support of the anti-atherosclerotic effects of oral EDTA are provided by Italian researchers who found that two grams of oral EDTA daily were effective in reducing blood cholesterol. (5) Scientists at Wayne State University quantified reversal in atherosclerotic plaque in rabbits that were treated with daily subcutaneous EDTA injections. (6)

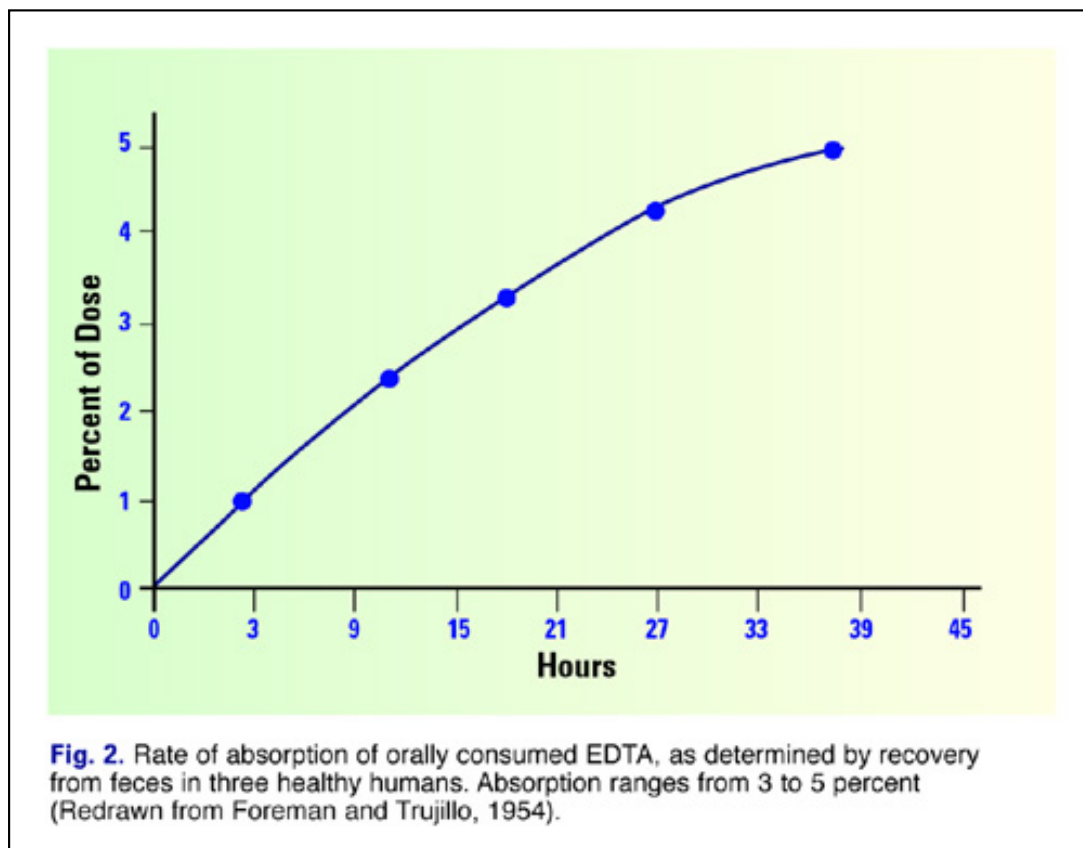
EDTA's Multiple Uses as a Food Additive

In addition to its remarkable pharmaceutical uses, the FDA has also approved EDTA as a food additive that is generally recognized as safe (GRAS). EDTA's array of biochemical properties make it extremely valuable as a food additive. It has the ability to: (1) bind with many metals; (2) act synergistically with other antioxidants to stabilize fats and oils; (3) prevent discoloration of potato products; (4) stabilize vitamins; (5) prevent discoloration of fish and shellfish; (6) prevent flavor changes in milk; (7) inhibit the thickening of stored condensed milk; (8) enhance the foaming properties of reconstituted skim milk; (9) prevent color changes of scrambled eggs prepared from egg powder; (10) preserve canned legumes; (11) prevent gushing in beer; (12) promote flavor retention and delay loss of carbonation in soft drinks; (13) prevent oxidation of meat products; and (14) prevent discoloration of canned fruits and vegetables. (7,8) In fact, EDTA's use in foods is so widespread that its presence in bloody evidence even created questions during the O.J. Simpson trial as to its source—i.e., from food or from blood previously drawn as evidence—since EDTA is also used as an anticoagulant in blood used for laboratory studies.

Absorption of Oral EDTA

In 1954, Dr. Harry Foreman and his colleagues performed a landmark study to determine how much orally administered EDTA the body absorbs. (9) The scientists found that the body absorbs about five percent of orally consumed EDTA (Fig. 2, pg. 3) and

that it can take up to three days for the EDTA to be totally excreted. If someone consumed nutritional supplements that contained 1,000 mg of EDTA (used as a stabilizer of the ingredients in the supplement), then we can assume from Dr. Foreman's research that about 50 mg will be absorbed each day and that 1,500 mg will be absorbed each month. That equates to almost the same amount of EDTA administered in one intravenous chelation treatment using the low-dose optimum protocol of Drs. Born and Geurkink (10) that was described in last month's Vitamin Research News.



Conclusion

Consequently, those unable to obtain intravenous chelation therapy due to financial, occupational, geographical or other restraints, or who wish to undergo a less-intensive preventive approach may be able to obtain many of the same benefits of intravenous chelation therapy by consuming food-additive EDTA that is used as a stabilizer in food supplements. Many physicians are augmenting weekly or monthly intravenous infusions with daily oral EDTA.

Because of concern that long-term use of EDTA might result in depletion of certain elements, Drs. Ira Manville and Robin Moser recommended that a potent vitamin and mineral formula be administered during treatment with EDTA. (11)

VRP recommends that the supplemental minerals should be taken with meals and not with the EDTA formula because of the possibility of EDTA binding to nutritional as well as to unwanted metallic elements. Dr. Garry Gordon at one time agreed with this approach, and recommended that EDTA would be most effective when taken on an empty stomach. (12) (1 hour before or 2-3 hours after a meal.). He has more recently altered this view, and now believes that EDTA can be taken at any time with any supplement. (13)

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Vitamin A Study Omits Vital Details

Failure to Account for Antagonistic Actions of Vitamin A on Vitamin D

by Karen Kaufman, MS, CCN

On January 23, 2003, the *New England Journal of Medicine* (NEJM) published a study linking high serum (blood) levels of retinol (vitamin A) with an increased risk of bone fractures—fractures associated with osteoporosis—in Swedish men. (1) This is the third recent study to hypothesize a link between high intake of vitamin A and osteoporosis—two previous reports published in the US suggested a possible association between vitamin A intake and increased incidence of hip fractures. (2,3)

Not surprisingly, this new study is fueling a debate about vitamin A that began after similar findings from the Nurses Health Study were published in the *Journal of the American Medical Association* (JAMA) a year ago. Further confounding the controversy is the recent release of another well-designed study that shows that high intake of vitamin A is not associated with the loss of bone mineral density. (4)

Interesting Study Riddled with Flaws

At first glance the NEJM report appears to be a balanced study that, over a period of 30 years, examined vitamin A (retinol and beta-carotene) levels from blood samples collected from a group of Swedish men. Why the interest in this particular group? The reason is that Swedish men suffer twice as many non-traumatic fractures (or fractures due to osteoporosis) as do women residing in either England or the Netherlands. Additionally, previous studies of European dietary habits have shown that Scandinavian populations (including the Swedes) have the highest intake of vitamin A from foods. In fact, vitamin A intake for this population is up to six times as high as that of people living in southern Europe.

30-Year Old Blood Samples

To understand why Swedish men have such unusually high rates of osteoporosis the authors recruited 2,322 men (82 percent of the adult male population) from the city of Uppsala, Sweden in the early 1970s. A single blood sample was drawn at the beginning of the study from each participant, and then frozen for storage (the authors claim that serum retinol levels remain stable for at least 15 years when frozen). In 1986 the researchers thawed the samples and tested them to measure levels of retinol, beta carotene, calcium, cholesterol, triglycerides, and albumin.

After comparing blood levels the researchers concluded that men with the highest blood levels of vitamin A at the study's start were 1.6 times more likely to break a bone than men who had had average vitamin A levels. Furthermore, men with elevated vitamin A levels had a 2.5 times greater risk than men with lower levels of vitamin A.

Obviously these findings have placed physicians, scientists, nutritionists and health-oriented people in a

quandary as to what to do. And, as is often the case with scientific research, the story warrants a more detailed examination of the facts.

Health Benefits of Vitamin A

Retinol (Vitamin A) is an essential nutrient. Early on, vitamin A was termed the “anti-infective” vitamin based on the increased number of infections noted in vitamin A deficient animals and humans. In vitamin A deficiency, both specific and nonspecific protective mechanisms are impaired, namely humoral response to bacterial, parasitic, and viral infections, cell-mediated immunity and phagocytosis. When vitamin A deficient animals are supplemented with vitamin A, immune responses improve. The activity of T lymphocytes and in particular T-helper cells seems to be mainly affected by vitamin A depletion.

While ingestion of excess vitamin A (33,000 to 100,000 IUs) daily for at least three months may lead to abnormalities in bone metabolism, a lack of vitamin A also causes malformation of bone. Vitamin A plays a central role in the development and maintenance of many tissues. Both a deficiency and an excess of vitamin A adversely affect embryo development, thus doses in excess of 10,000 IU per day for pregnant women are discouraged.

Study Ignores Vitamin D

One of the most glaring problems with the NEJM study is the puzzling failure of the researchers to measure serum vitamin D levels. The link between low vitamin D levels (hypovitaminosis) and osteoporosis is well established and has been demonstrated repeatedly in numerous studies. (5) In addition to failing to measure vitamin D serum levels in the participants, the authors also overlooked (or omitted) any mention of the well-known antagonistic actions of vitamin A on vitamin D. This oversight is even more glaring in light of the fact that one of the co-authors of the study, Hans Melhus, MD, has extensively researched how vitamin A actively inhibits the body's ability to properly utilize calcium by antagonizing vitamin D. (6)

Similar Vitamin A Levels in American and Swedish Men

Another observation not addressed in the NEJM article is that the serum retinol levels in Swedish men are similar to serum retinol levels of American men, according to a recently published study. (7) Surprisingly the researchers involved in the NEJM article failed to compare the incidence of osteoporosis in American men with their findings.

While osteoporosis in American women is a major issue that receives a great deal of attention, osteoporotic fractures among American men are rarely cited as a public health concern. And while American men are not immune to bone loss, they do not suffer from osteoporosis, despite having serum retinol levels equal to those of men in the Swedish study. Given the fact that the American diet is fortified with vitamin D, which is essential for bone formation, the most likely reason for this important difference is because there is more vitamin D in the food supply in the United States.

Possible Explanation for Low Vitamin D Levels

It is highly likely that Swedish men have lower levels of vitamin D both because of 1) their limited exposure to sunlight (required to synthesize vitamin D) at far Northern latitudes, and 2) due to the reduced amount of vitamin D available in the Swedish food supply. This deficit of vitamin D is exacerbated by the fact that, unlike the United States, there is little or no fortification of foods or dairy products with vitamin D in Sweden. This is due to the fact that during World War II, in the face of starvation conditions, infant formula was supplemented with huge amounts of vitamin D. The manufacturers of the formula assumed a certain amount of the vitamin D would breakdown while the formula sat on the shelves in the grocery stores. Unfortunately there was no breakdown of vitamin D, leading to the unforeseen consequence of a number of cases of mental retardation in infants due to hypercalcemia (high levels of calcium in the blood).

In response to this unfortunate situation, European countries subsequently made it illegal for food manufacturers to fortify anything with vitamin D.

Vit. A: Food vs Supplements

One surprising and little publicized finding from the Nurses Health Study published in JAMA last January was the fact that the women who had the highest risk of hip fracture had the highest intake of vitamin A from food—not from vitamin A supplements or vitamin A from multivitamins.

In the authors' own words: "Women currently taking a specific vitamin A supplement had a non-significant increased risk of hip fracture compared with those not taking that supplement, and, among women not taking supplemental vitamin A, retinol from food was significantly associated with fracture risk." The authors of both studies concluded from their data that the amount of vitamin A that food is fortified with should be reexamined.

However, none of the researchers involved in either study considered the possibility that it might not be vitamin A that is the villain in osteoporosis, but rather a deficiency of vitamin D. One reason the women in the Nurses Health Study who took vitamin A supplements or multivitamins did not have a significant increase in hip fracture could be the fact that they had a higher intake of vitamin D as well. People who take a vitamin A supplement are likely to supplement with other nutrients. People who take a multivitamin are getting supplemental vitamin D along with their vitamin A.

It is also important to note that both these studies emphasized the fact that pro-vitamin A or beta carotene did not have a deleterious effect on bone metabolism or bone density. One reason for this is that the conversion of beta carotene to vitamin A in the body occurs very slowly and on a limited basis. It is an interesting fact that diseases caused by a vitamin A deficiency, such as xerophthalmia or blindness, can only be reversed by the administration of preformed vitamin A (retinol). Beta carotene will do nothing to reverse the disease process.

Conclusion

Vitamin A is an essential nutrient that is directly involved in the proper functioning of most organs of the body. Reproductive processes in both men and women and proper bone development and maintenance are particularly dependent upon an adequate vitamin A status. Following the introduction of vitamin A fortified foods, and the introduction of inexpensive vitamin A supplements, numerous diseases related to vitamin A deficiency have been largely eradicated in the Western world.

Given the striking differences observed in varied populations—including those consuming foods and supplements that provide a balanced supply of vitamins A and D—it would seem reasonable to expect that future studies account for the vital interrelationship of essential nutrients, and focus on the important balance of all nutrients that is required for optimal health.

Vitamin Research Products is committed to providing nutritional formulas designed to maintain optimal health, based on the highest standards of scientific evidence available. VRP continues to view the science of nutrition as a work in progress, and keenly reviews and analyzes evolving scientific data.

Vitamin Research Products has always produced an extensive line of multivitamins with a healthy dose of vitamin A, but please do not be misled by the label. It may state the daily dosage provides 12,000 IU's of vitamin A. However, when you look at the breakdown, 5,250 IUs comes from retinyl palmitate or preformed vitamin A—the rest is vitamin A from beta carotene or mixed carotenoids, or a combination of each (Table 1.)

In spite of all the noise about the possible toxicity of vitamin A, even the conservative Council on Responsible Nutrition has yet to deviate from its recommendations concerning vitamin A. This organization is carefully watching the research, but finds the evidence from the HANES III study which found that a high intake of retinol was NOT associated with adversely affecting bone density more

compelling than the data from the Nurses Health Study. It will stand by its recommendation that 10,000 IUs is still the safe Upper Limit (UL) for vitamin A.

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Table 1. Vitamin A Activity of Vitamin Research Products Multivitamins				
VRP Formula	Total Vit. A IUs per Day	Percent Vit. A as Beta Carotene*	Percent Vit. A as Retinyl Palmitate	Total IUs of Retinyl Palmitate
Extend Core	12,000	56 %	44 %	5,250
Extend ONE	8,000	50 %	50 %	4,000
Extend Plus	15,000	60 %	40 %	6,000
Extend Plus, Powder	15,000	60 %	40 %	6,000
Extend Prenatal	7,500	56 %	44 %	3,300
Extend Ultra	15,000	67 %	33 %	4,950
Extend Ultra, Powder	1,000	67 %	33 %	3,300
Optimum 6	12,500	58 %	42 %	5,250
Optimum 18	15,000	67 %	33 %	4,950
Optimum D	12,000	56 %	44 %	5,250
Optimum Silver	1,200	56 %	44 %	5,250
Kid's Essentials	3,500	71 %	29 %	1,015
Women's Essentials	12,000	56 %	44 %	5,250

* From Beta Carotene and/or CAROTeam

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Inexpensive Nutrient Offers Protection From Radiation **Potassium Iodate and “Dirty Bombs”**

by Jim English



On June 8, 2002, Westchester County, New York officials began to distribute potassium iodine tablets to thousands of residents living within a 10-mile radius of the nearby Indian Point nuclear power plant. (1) The pills, also known as “KI,” prevent the thyroid gland from absorbing radiation released from nuclear weapons and nuclear power plants if taken within 24-hours of exposure. Following New York’s lead, twelve other states, including Maryland and Vermont, also requested anti-radiation pills from the Nuclear Regulatory Commission to distribute to residents living near nuclear reactors.

Waiting in line with his two young daughters for their free anti-radiation pills, Westchester County resident Joseph Ruffino told the Associated Press that the whole thing was kind of surreal. "It's hard to believe this is your daily reality these days, but it is." (2)

The New Nuclear Reality

More than a decade after the collapse of the Soviet Union the danger of the intentional use of radiation against civilians is greater than at any other time since the end of the Cold War. After a pair of hijacked commercial jetliners toppled the Twin Towers on September 11, 2001, engineers scrambled frantically to reassess the integrity of nuclear power plants. Their report, delivered to a special meeting of the UN International Atomic Energy Agency (IAEA) convened in Vienna on November 1, 2001, stated that the world's 1,300 nuclear facilities were vulnerable and not hardened to withstand "acts of war," such as a deliberate attack with a large, fully-fueled passenger jet. This grim assessment led IAEA's director general, Mohammed ElBaradei, to state that, "There is no sanctuary any more, no safety zone." (3)

In response to this threat and follow-up advisories from US Nuclear Regulatory Commission regarding potential terrorist attacks against nuclear power plants, the FBI temporarily closed the air space around all US nuclear power plants in October 2001. (4) Currently the FAA and US military constantly monitor air traffic in proximity to nuclear plants and, while unwilling to expose details that might tip potential attackers, they're believed to have contingency plans in place for immediate response if a threat is perceived. (5)



"Dirty Bombs"

In addition to attacks against nuclear power plants a new radiological threat in the form of a "dirty bomb" has entered the modern terror lexicon. Unlike standard nuclear devices a dirty bomb uses conventional explosives, such as dynamite, to spread airborne radiation and contamination across populated areas. Particularly disturbing is the fact that the only way to distinguish a dirty bomb explosion from a regular explosion is to wait until high radiation levels are detected. Also troubling is the fact that dirty bombs don't require expensive manufacturing facilities or specialized talents to assemble. In fact, the hardest part in building a dirty bomb is acquiring the radioactive material. (6)

Dirty bombs are not weapons of mass destruction, but weapons of mass disruption. "Claims of thousands of deaths are likely to be exaggerated, but there would be a severe contamination problem and a lot of panic," says Michael Clark of Britain's National Radiological Protection Board. (7)

Millions of Unprotected Sources

On June 2, 2002 the IAEA issued warnings about the existence of millions of radiation sources that terrorists could easily turn into bombs. (8) The IAEA also reported that controls to prevent radiological materials from being stolen are weak. Such radiological materials include weapons-grade plutonium and uranium, as well as freshly spent nuclear fuel. Also easily available are cobalt 60, strontium 90 and cesium 137—lethal radioactive materials used extensively in equipment found in hospitals, factories and laboratories.

And while concerns about unprotected radiological materials in countries such as the former Soviet republics, Pakistan, India and other developing nations is particularly high, Western sources are also doing a poor job of monitoring these lethal substances. According to the IAEA, US companies have lost over 1,500 radiation sources since 1996, and more than half of these have never been recovered. In Europe another 30,000 sources of material are "at risk of being lost from regulatory control," and up to 70 radiation sources are lost every year. "Security is as good as its weakest link and loose nuclear material in any country is a potential threat to the entire world," says ElBaradei. (8)

How Real is the Threat?

To date the only known attempt by terrorists to set off a dirty bomb occurred in 1996, after Chechen rebels planted a device containing radioactive cesium 137 in a Moscow park. Fortunately, there was no explosion. More recently, on January 1, 2003, Britain's government confirmed that it had evidence gleaned from documents discovered in the Afghan city of Herat showing that al-Qaeda had successfully constructed a dirty bomb. (9) This report was followed as recently as February 6, 2003, when intelligence sources in the US suggested that al-Qaeda was close to developing a dirty bomb and warned that major attacks could be launched against Western targets within weeks. (10)

Protecting Against a Dirty Bomb?

If authorities have advance warning of a strike on a particular place, they will try to evacuate the population. If time doesn't allow for evacuation, urging people to hide in basements and other underground spots might save lives.

Following a nuclear or dirty bomb explosion the first immediate priority of local and state authorities will be the evacuation and treatment of the wounded, many of whom will die without immediate medical care. Government and medical guidelines direct that potassium iodide should be given immediately, especially to children, pregnant women, and nursing mothers, to prevent the destruction of the thyroid or the later development of thyroid cancer—the incidence of which rose sharply among survivors of the Soviet Union's Chernobyl nuclear disaster, especially in children. (4) (Potassium iodide provides little if any protection against other types of radiation, for which there are no known protective agents. For more information see sidebar response by Ward Dean, MD.)

Potassium Iodine

Following a nuclear disaster one of the greatest dangers is the release of gases containing a radioactive form of iodine that is readily taken-up by the thyroid gland. Exposure to radioactive iodine leads to thyroid cancer and death. Standard treatment to prevent radiation-induced damage to the thyroid is to immediately treat victims with potassium iodide tablets to block absorption of radioactive iodine isotopes. (11) Iodine tablets, in the form of potassium iodide, are commonly used in cases of radiation exposure and are often distributed to people who live around nuclear power plants in case of an accident. In 1997, as a safety measure, the French government began to distribute iodide tablets in advance to populations living near nuclear power plants, to avoid having to do so in an emergency. (12) And in England officials have taken steps to distribute potassium iodide tablets to residents living near a nuclear submarine construction facility. (13) Potassium iodide tablets were also used extensively to treat the victims of the Chernobyl accident. (4)

Potassium Iodate

Potassium iodate is an iodine-rich salt that is more stable, and has a longer shelf life, than potassium iodide. Potassium iodate has been shown to be as effective as potassium iodide in protecting the thyroid gland from exposure to radioactive iodine following a nuclear accident. (14) This was of special interest to Indian scientists because of potassium iodate's

Dear Dr. Dean,

I read your recommendations for anthrax, smallpox, and other biological agents. Do you have any suggestions for radiation or chemical protection?

D. Taylor

Dear Mrs. Taylor,
The 1973 NATO *Handbook on the Medical Aspects of NBC Defensive Operations* states that "Chelating agents, e.g., EDTA, if administered soon after exposure, are effective in enhancing the elimination of certain radioisotopes. These materials are not effective for radioisotopes which have been incorporated and fixed in organs and tissues, e.g., bone." (1,2) Thus, oral EDTA (and, perhaps, DMSA) should probably be taken immediately upon learning of potential radiation exposure.

Another substance I keep around our house in case of accidental or deliberate nuclear exposure is **Potassium Iodate**. **Potassium iodate** was used following public exposure from the radiation released from the Chernobyl nuclear plant disaster to block uptake by the body of radioactive iodine (I-131). (3) It is cheap, it stores well (in excess of ten years), and may not be available if/when it is needed. **Potassium iodate** should be taken at the time of a nuclear emergency. Depending on the threat it may need to be taken for only 1 to 2 days, or up to several weeks or more in the case of a more severe

greater shelf life, particularly in hot and humid climates. When researchers in Bombay gave potassium iodate to animals they found that potassium iodate is just as effective as iodide at blocking radioactive iodine from entering the thyroid.

Recommended Doses

The following doses should be taken as a single dose within 3 hours of exposure, or up to 10 hours after exposure, although this is less effective:

- **Adults:** 2 caps.
- **Children** aged 3-12 years: 1 cap.
- **Infants:** 1 mo. to 3 years, 1/2 cap;
- **Newborns** to 1 mo., 1/4 cap. Note: Dosages may be crushed and taken mixed with milk or water.

Precautions

While potassium iodate can be taken by a majority of people without any problems, it should only be used in case of a nuclear emergency. Doses in excess of the single (one time only) daily dose listed above should be taken only upon recommendation by a physician or public health authority.

Patients should notify their doctor if taking quinidine, captopril, or enalapril, or are sensitive to iodine, or suffer from dermatitis herpetiformis, thyrotoxicosis or kidney problems before taking potassium iodate (or any thyroid blocker).

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exposure. For more comprehensive details follow the directions on the bottle or from your physician.

Rob Watson, VRP's President and CEO, wanted some **Potassium iodate** for his family and VRP employees, and suggested we make it available to others as well. I agree, considering the recent speculation that "suitcase nukes" or radiation-contaminated explosives may be loose in this country. VRP now offers this somewhat hard-to-find supplement. I recommend putting it on the shelf until needed.

Just as many people keep band-aids and snake bite kits on hand for the possibility that they may need them, I think a family supply of **Potassium iodate** (and **Oral ChelatoRx**) is a good idea for a family first aid kit or medicine chest.

Ward Dean, MD

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Customers' Corner

by *Ward Dean, MD*

VRP Medical Director and Director, Research & Development

Elevated Cortisol Levels

Dear Dr. Dean,

I am a 56-year-old male and my cortisol levels are high — over two times the “upper normal” limit. What dose of Phosphatidylserine (PS) is necessary to significantly reduce my cortisol levels (by at least 25 percent)? If I stop taking PS will my cortisol levels increase again (meaning receptors have not been permanently re-sensitized)?

Thank you for your help, Mr. K.

Dear Mr. K.,

Cortisol is an essential toxin. Consequently, I believe that cortisol, like blood pressure, blood sugar and insulin, should be kept as low as is compatible with good health. Because people respond differently to different substances, it's not possible to accurately “gauge” how much a particular supplement will “ratchet down” a particular parameter (in this case, cortisol).

Phosphatidylserine is usually effective in doses of 300 mg daily. After a month or so, the dose may be reduced to 100 mg daily. Other approaches to lower cortisol include **AdaptaPhase I** and **AdaptaPhase II**, **DHEA**, and the drug, Metformin. The active ingredients in **AGE-Block** may possess similar cortisol-lowering effects of Metformin, but have not been tested for this purpose, to my knowledge. **SeriPhos** may possess similar cortisol-lowering effects as **Phosphatidylserine**, at less cost.

You may have to continue to take whatever works for prolonged periods of time. Unfortunately, we're fighting “entropy,” not treating acute illnesses. The same age-related conditions that caused the problem in the first place are likely to recur if the receptor-sensitizing substance is discontinued.

If chronic stress has been a cause of the elevated cortisol, it's important to eliminate the cause (if possible). Alternatively, **L-Theanine** may help to modulate responses to stress.

Ward Dean, MD

Nighttime Sugar Cravings

Dear Dr. Dean,

I have been taking **ThermoAMP** and **ThermoLoss** and I'm pleased with results (I wanted to take off 5 to 10 lbs). However, I don't take these formulas after 5 PM, because I have trouble sleeping, and I constantly wake up around 2 AM with an uncontrollable desire to eat sugar. Are there any supplements I could take at night to stabilize what I believe are low blood sugar levels?

Ms. D.

Dear Ms. D.,

I have several suggestions. First, try adding **ThermoLoss EF (Ephedra Free)** to your program, around 5 PM or thereabouts. **ThermoLoss EF** should not have the stimulating, sleep-preventing effects of the ephedra-containing formulas.

Alternatively you can take **GluControl** or **AGE-Block** around bedtime to help control your carbohydrate cravings. These formulas contain VRP's standardized *Goat's Rue Extract*, which acts to control blood sugar by restoring insulin receptor sensitivity. They are beneficial for both diabetics as well as those who suffer from hypoglycemia, and should help you control those sugar cravings.

5-HTP has also been helpful for many people in controlling carbohydrate cravings, in doses up to about 300 mg at bedtime.

Ward Dean, MD

Chelation — Oral and I.V.

Dear Dr. Dean,

Last year I was taking your **Oral ChelatoRx** and this year I started taking IV chelation. There was a major change at first.

Now I don't notice any change, but still have angina pains from time to time. This seems to happen more on the day of chelation. At this point, I have cut back on half my blood pressure meds and a third of my diabetes meds. Yesterday was my 26th treatment and I now have them once per week. My questions are:

1. At what point should you give up on IV chelation and see a cardiologist?
2. Would it be beneficial to again start with the Oral as well as the IV Chelation?
3. Should kidney function be monitored when using oral chelators?

Mr. P.

Dear Mr. P.,

To respond in order: First, I would never "give up" on chelation, either oral or IV. There may be times when other modalities may be necessary, but none of these other modalities do what chelation does—i.e., improve the microcirculation, where the oxygen and nutrient exchange actually takes place.

Second, I would definitely continue with oral chelation, in addition to IV chelation. I now recommend that my IV chelation patients continue with oral chelation as well. The presence of the low blood levels of EDTA that are maintained with oral chelation has continuing benefits in terms of elimination of heavy metals and prevention of thromboses. On the other hand, the stimulation of parathyroid hormone to enhance calcium metabolism occurs only with IV chelation, with the fairly large but short-lived "bolus" of EDTA (it is completely excreted within 24 hours).

Third, it is not necessary to monitor kidney function with oral EDTA. Oral EDTA is poorly absorbed by the GI tract. Only about 5 to 15% is absorbed. Consequently, of a one gram dose (the amount in ten **Oral ChelatoRx** capsules), only 50-150 mg is absorbed. Over a month, that's 1,500 to 4,500 mg absorbed. Most physicians administer EDTA intravenously in doses of 1,500-3,000 mg at a time. Therefore, a month's worth of **Oral ChelatoRx** is equivalent to about one intravenous chelation. Therefore, there is negligible risk of kidney toxicity with oral EDTA chelation. Long-term chelation actually tends to improve kidney function.

Considering your continuing symptoms, I would suggest adding **Turmeric Extract**, **CoQ10**, and extra niacin (work up to 1,500-3,000 mg) to your daily regimen. Also, **AGE-Block** can help to maintain stable glucose and insulin levels.

Ward Dean, MD

Diverticulitis

Dear Dr. Dean,

Can you suggest anything to help with Diverticulitis?

Thank you, T.G

Dear T.G.,

Diverticulitis is caused by “blebs” (diverticuli)—as occurs in an old inner tube—in the colon. Undigested food and fecal matter becomes trapped in these blebs, which then putrefies, and becomes infected. Usually, diverticula follow chronic constipation. The colon is supposed to be a “low pressure” environment. Although there is no nutritional way to heal these blebs that I know of, once formed, further development of diverticula can be reduced by maintaining regular, “low pressure” bowel movements.

Thus, the adverse effects of the diverticula can be minimized by a high fiber diet and plenty of fluids. I recommend daily **Detox FiberPlex**, **EnteraKlenz**, **Triphala**, and **Chitosan**, as aids to maintaining normal bowel function. Try one or a combination of these substances to establish a program that will work for you. If additional stimulus is required, I'd add magnesium to bowel tolerance as a mild, natural laxative. **Chitosan**, in addition to adding fiber, has healing properties on inflamed gastrointestinal mucosa.

Ward Dean, MD

Vitamin K and Warfarin

Dear Dr. Dean,

Can you tell me anything about the relationship of Vitamin K and warfarin? Does warfarin destroy Vitamin K, which I understand is necessary for calcium to be absorbed into bone? I have been told that I should take warfarin for the rest of my life since I am subject to blood clots, but I also lost a substantial amount of bone density. I was told by one nurse-practitioner that warfarin is “nasty stuff” and that one of the side effects is bone loss. This seems reasonable since most of the information about warfarin says to limit Vitamin K because it interferes with the action of warfarin.

However, none of the side effect information along with the warfarin tablets mentions bone loss. Is there any natural substance, without side effects, that will help to prevent clots the way warfarin is supposed to?

Thank you, H.H.

Dear Ms. E.,

Vitamin K inactivates Warfarin. We have a biological requirement for vitamin K, but do not have a “need” for Warfarin (rat poison). A recent study showed that Warfarin had a marginal advantage over aspirin in preventing strokes, but had a significantly greater effect in producing fatal hemorrhages. Overall, there was no difference in mortality. Frankly, I'd stick with aspirin (1/2 baby aspirin daily). I think that low dose of aspirin would even further reduce adverse effects.

Other “blood thinning” alternatives that can be used in addition to aspirin, which I think will further reduce the likelihood of blood clots without the adverse effects of Warfarin (or even, low dose aspirin) include **Turmeric** (see my article on the effects of **Turmeric** on fibrinogen levels) and **EDTA** (as in **Oral ChelatoRx**).

To help with maintenance of bone density, I suggest one of VRP’s multimineral formulations such as **Essential Minerals** or **Advanced Essential Minerals**. These are specifically designed as bone-building formulas, based on Dr. Alan Gaby’s book, *Preventing and Reversing Osteoporosis*. Also, **Osteoflavone Complex**, **Xylitol** and additional **Vitamin D** and **Vitamin K** may help.

Ward Dean, MD

Barrett’s Esophagitis

Dear Dr. Dean,

I’m 50-years-old and have been diagnosed as having Barrett’s esophagitis in addition to a hiatal hernia. I’ve been taking Zantac for years to control my GERD (*Gastroesophageal Reflux Disease*) and presently use a formula from another company that contains DGL. The formula smells and tastes very bad and it also stains my teeth. I’ve also used just plain DGL from the same company and it doesn’t seem to help as much as the formula. Do you have a product that will work as well as this to help me? I would like to get off of Zantac if I could, or at least replace some of the nutrients I am losing due to taking this for so long.

Thanks, Dr. P.

Dear Dr. P.,

I’d suggest giving **CeaseFire** a try. **CeaseFire** is a combination of DGL and mastic gum. Mastic gum is a specific treatment for GERD. Studies show that two weeks of taking one gram daily (two wafers) results in a 99 percent eradication of *H. pylori*. You should be able to dispense with Zantac with **CeaseFire**.

Also, you might try **Chitosan**. **Chitosan** is noted for its mucosal healing properties and I have used it successfully in many patients with gastric ulcers, as well as with inflammatory bowel disease.

For the hiatal hernia, I suggest seeing a chiropractor who is skilled in reducing these hernias by simple repositioning.

Ward Dean, MD

DMSA and ALA Dosages

Dear Dr. Dean,

I returned from the San Diego **Defeat Autism Now!** (DAN!) conference where I spoke with your representative about a number of the products that you offer. I am eager to try the **Xylitol** crystals to reduce my son’s sugar consumption and to help fight his yeast overgrowth.

In any case, would VRP consider offering **DMSA** and **Alpha Lipoic Acid** (ALA) in smaller doses, e.g. down to 25 mg per capsule? If not, are there reasons why not?

I rely on Vitamin Research Products for a number of mineral and vitamin supplements and will continue to do so, and it would be convenient to have your company as a source of lower doses of **DMSA** and **ALA**.

Thank you, Mr. S.

Dear Mr. S.,

The more we learn about lipoic acid, the more benefit we see from higher dosages. For those who desire lower dosages, the capsules can always be opened and mixed with food. Although the dosage would not be exactly the same each day, the differences over the long term would be insignificant.

Ward Dean, MD

Raising Glutathione Levels

Dear Dr. Dean,

Dr Sherry Rogers in her new book *Detoxify or Die* recommends a detox “cocktail” consisting of 500 mg. of vitamin C, 300-600 mg of **Lipoic Acid**, and 400-800 mg of glutathione.

I note in your catalog that you don't list glutathione. Does Vitamin Research Products have a suitable substitute?

Dear Mr. H.,

Glutathione is pretty fragile. I doubt whether any of the glutathione in her cocktail survives the stomach. A more reliable way to raise glutathione levels is to take **N-Acetyl Cysteine (NAC)**, or **ImmunePro Rx** whey powder. Both of these products are well documented to raise glutathione levels in the blood.

VRP also offers **B1, C, & N-Acetyl Cysteine** as a formula, to which you could add **Lipoic Acid**.

Ward Dean, MD

Gerovital Question

Dear Dr. Dean,

My father is 62-years-old and has been using Gerovital (GH3) for the last ten years. He's doing extremely well with no health complaints, except for high total cholesterol (230 mg/l) and hypertension (which is controlled well with enalapril).

What do you think of Gerovital, and should he continue to use it?

Thank you, Mr. E.

Dear Mr. E,

I think GH3 is an interesting substance, although I think it has been superceded as an anti-aging substance by many new discoveries. Since he has elevated cholesterol and hypertension, he obviously could benefit by a number of other substances.

I recommend **AGE-Block**, VRP's premier anti-aging formula. Please see my article, *The Metabolic Pattern of Aging*, on this web site for an explanation of the value of this unique formula.

Also, **DMAE 100 Plus** is a formula that is based upon the metabolic breakdown products of GH3, and imparts many similar benefits at a significantly lower price.

Ward Dean, MD

Granuloma Annulare Feedback

Dear Dr. Dean,

I have a client using **Turmeric** and **Culturelle** for *Granuloma Annulare*. She is 60 years old, takes a multivitamin and shows no signs of diabetes (blood sugar levels of 95). We want to add **Fumaric Acid** to see how that works. So far, the **Turmeric** and **Culturelle** have decreased her "itchiness" but there has been no reduction in the lesion on her leg after five weeks. Can you suggest a proper dose of **Turmeric** and **Fumaric Acid** for her?

We have been reading your newsletter articles about Granuloma and would love to hear more details on dosages that the VRP customer uses to decrease her DGA.

Thank you for your assistance and for the newsletters!

P.S. My products arrive so fast, I appreciate the service. I live in Michigan and usually request a 3-day shipment. One time it arrived about 48 hours after I placed the order.

Ms. J.

Dear Ms. J.,

With regard to **Fumaric Acid**, start at 500 mg/day. Increase by 500 mg at weekly intervals, until relief is obtained, or a maximum dose of 3,500 mg per day is reached.

Turmeric is effective in doses of several hundred mg several times daily, although doses of several grams are consumed daily by millions of people (i.e., in foods like curry).

Ward Dean, MD

R-Lipoic Acid and ALC Timing

Dear Dr. Dean,

I read that **Acetyl-L-Carnitine (ALC)** and **(R) Alpha Lipoic Acid**, when taken together are effective anti-aging substances. However, the directions for taking **ALC** is on an empty stomach, while **ALA** is to be taken with meals. How do I reconcile this?

Sincerely, Mr. Y.

Dear Mr. Y.,

Lipoic Acid is both fat and water soluble, so I don't know if it matters when it is taken. I agree that **ALC** is most effective when taken on an empty stomach. But, unlike amino acids like 5HTP, tyrosine and phenylalanine, that should be taken on an empty stomach to enhance their conversion into neurotransmitter substances, I don't

think **ALC's** effectiveness is greatly reduced when taken with food.

I think that as long as the two substances (especially **ALC**) are taken several times daily, they will work together in the body. They don't have to be taken at the same split second to enhance each other's effectiveness.

Ward Dean, MD

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Nutrition Review

L-Arginine May Protect Against Heart Disease

A research team reports that the amino acid L-arginine may help to prevent blockage of blood vessels. Early development of atherosclerosis is marked by lesions and cholesterol deposits that form at points where blood vessels branch off in different directions. Blood rushing around these tight corners constantly exposes cells to a pounding force, leading to inflammation. As inflamed blood vessels narrow, arterial plaques build up, reducing blood flow and contributing to strokes and heart attacks. "Atherosclerotic plaques act like trash caught in a river bend, impeding the flow," said Dr. Louis J. Ignarro, a 1998 Nobel laureate in medicine and UCLA professor of molecular and medical pharmacology.

"But our research shows that treatment with antioxidants and L-arginine may prevent blood vessel inflammation and subsequent damage." When researchers exposed human cells to high fluid forces, they discovered that high shear stresses induced inflammatory molecules. When they added antioxidants and L-arginine to the cells, the production of inflammatory molecules decreased. Additionally, L-arginine was shown to promote the production of Epithelial Nitric Oxide Synthase (eNOS), a molecule that promotes dilation of blood vessels and prevents clotting.

"Our findings suggest that people who take dietary supplements of L-arginine, an amino acid, and antioxidants, such as vitamins C and E, might be at a lower risk for atherosclerosis and heart disease."

Proc. Natl. Acad. Sci. USA, Vol. 100, Issue 3, 1420-1425, February 4, 2003.

Bad Breath May be Sign of Serious *H. Pylori* Infection

Persistent bad breath (halitosis) is often associated with indigestion (dyspepsia), stomach pain and hunger-like pains. Researchers have now shown that chronic bad breath and indigestion may be an indication of a much more serious problem—*Helicobacter pylori* (*H. pylori*) infection. *H. pylori* is a common bacteria that has previously been shown to be a principal cause of stomach ulcers.

Researchers tested 148 patients who were diagnosed with non-ulcer dyspepsia. Four weeks after treatment to eradicate the *H. pylori* infection patients were re-evaluated. Eradication of *H. pylori*, reported to be successful in 74 percent of the patients, was also associated with the elimination of symptoms that included halitosis, bloating, pain and hunger-like pains.

Based on the study, the researchers, writing in the *European Journal of Internal Medicine*, concluded that bad breath is a frequent and treatable symptom that may also serve as an indication for the need to eradicate *H. pylori*.

Previous research published in the journal *Circulation* has shown that potent strains of *H. pylori* bacteria may also play a key role in certain kinds of stroke. Researchers found that specific strains of *H. pylori* are much more prevalent in the blood of patients who have suffered an atherosclerotic stroke. Some studies have also linked *H. pylori* with inflamed artery walls and arterial lesions, including stroke caused by narrowing of the arteries due to atherosclerosis.

1. *Eur J. Internal Medicine* 2003;14:45-48.
Circulation 2002 Jul 30;106(5):580-4.

Selenium Reduces Prostate, Other Cancers

A study published in the *Journal of the National Cancer Institute* suggests that selenium supplements decrease cellular changes that lead to prostate cancer. The researchers randomly fed 49 elderly male dogs either a normal diet or a diet supplemented with selenium. After seven months the dogs supplemented with selenium had less DNA damage to their prostate than dogs fed a normal diet. Also the prostate of dogs supplemented with selenium was shown to have twice as many cells undergo apoptosis, a mechanism that can remove damaged cells.

The authors conclude that “selenium may benefit the aging prostate by decreasing the accumulation of DNA damage in epithelial cells even before these cells show cytotoxic changes suggestive of malignancy.”

A second study reported in the *Proceedings of the National Academy of Sciences* could help explain how selenium reduces the risk of certain cancers. Researchers found that selenomethionine—a form of selenium—switches on a gene (p53) that prevents tumors from developing. The study, carried out on human lung cancer cells, led researchers to note that for cancer prevention, selenium intake would have to be around 200 mcg daily.

These studies confirm the anti-cancer benefits of selenium that a recent study on former smokers found is associated with a lower risk of bladder cancer.

1. *J Natl Cancer Inst.* 2003 Feb 5;95(3):237-41.
2. *Proc. Natl. Acad. Sci. USA*, Vol. 99, Issue 22, 14548-14553.

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