

HEALTH AND STRESS

The Newsletter of The American Institute of Stress

Number 5

1997

ARE THERE NUTRITIONAL REMEDIES FOR STRESS, AGING, ENERGY?

KEY WORDS: vitamins, vegetarian diet, tocopherols, hypertension, stress, magnesium, consumer fraud

Sales of antioxidant vitamins, herbal preparations, minerals, trace elements, melatonin, DHEA, and numerous combinations of these and other over-the-counter products have soared in recent years for a variety of reasons. The most common sales pitch is that we all need to supplement our diets to insure that we are getting optimal protection against infection, malignancy, atherosclerosis, aging, and other stress related disorders. This is presumably achieved by the ability of these products to bolster immune system defenses, block free radical damage, and augment the effects of natural substances manufactured in the body, especially since some of the latter decline sharply as we grow older.

Much of the evidence to support these claims comes from test tube and experimental animal research, rather than proof obtained from carefully designed and controlled clinical studies.

They are also based on certain assumptions that may be fallacious, or do not apply to the majority of the population. The most common is that since large scale studies show that people who consume diets high in certain vitamins have less cancer and heart disease, supplementation with synthetic products will provide identical benefits. However, it is quite likely that fruits and vegetables contain other substances not measured that potentiate these protective effects, or achieve them through other mechanisms.

Another is that extensive soil depletion and removal of vital nutrients during processing procedures has rendered our food supply nutritionally inadequate, so that vitamin and mineral deficiencies have now become commonplace. Some also argue that artificial colorings, preservatives, and other additives, as well as pesticides, acid rain, and various environmental pollutants, are potential poisons. Consequently, many now believe that most health problems can be traced to inadequate or harmful dietary habits, and can be successfully treated by nutritional interventions. Dramatic testimonials are frequently offered to support these claims for various disorders, which are apparently resistant to drug therapy. Since we are all so different, it is assumed that personal experience rather than scientific evidence is the best way to determine efficacy.

(Continued on page 2)

ALSO INCLUDED IN THIS ISSUE

Veggies Or Vitamins?.....	2
The Problem With Vitamin E.....	3
Vitamins Vs. Diet For Hypertension.....	4
Supplements To Reduce Stress.....	5
Stress And Magnesium.....	6
Consumer Fraud.....	6
Why We Eat What We Eat: The Psychology of Eating.....	Book Review - last page

Health and Stress: The Newsletter of The American Institute of Stress is published monthly. Annual subscription rate \$35.00 (U.S.), \$45.00 (Foreign). Copyright © 1997 by The American Institute of Stress, 124 Park Ave., Yonkers, NY 10703. All rights reserved.

HEALTH AND STRESS

*The Newsletter of
The American Institute of Stress*

Paul J. Rosch, M.D., F.A.C.P.

Editor-in-Chief

Contributing Editors from The Board of Trustees of
The American Institute of Stress

Robert Ader, Ph.D., Rochester, NY
Herbert Benson, M.D., Boston, MA
Michael E. DeBaakey, M.D., Houston, TX
Joel Elkes, M.D., Louisville, KY
Bob Hope, Palm Springs, CA
John Laragh, M.D., New York, NY
James J. Lynch, Ph.D., Baltimore, MD
Kenneth R. Pelletier, Ph.D., M.D., Berkeley, CA
Ray H. Rosenman, M.D., San Francisco, CA
Charles F. Stroebel, Ph.D., M.D., Hartford, CT
Alvin Toffler, New York, NY

(Continued from page 1)

Veggies Or Vitamins?

Vitamins C, E, and beta-carotene are particularly popular pills because of evidence that they reduce risk for both cardiovascular disease and cancer. Massive doses are taken by many, who assume this is perfectly safe and will provide greater protection. This is especially true for those whose diets are deficient in fruits, vegetables, and other natural sources of these nutrients. However, it is not known whether markedly increased intake of synthetic vitamins might suppress the body's production of its natural free radical fighters. Some studies also suggest that certain antioxidants can interfere with the beneficial effects of others. Large amounts of vitamin C taken in conjunction with iron supplements can have a reverse effect, and actually cause oxidative damage. Increased vitamin E may interfere with blood clotting, and has been associated with a higher risk of stroke due to bleeding. Vitamin A capsules containing 25,000 I.U., which are often taken for skin problems can cause birth defects, and routine beta-carotene supplementation was discontinued in at least two large studies because of an increased incidence of cancer.

The late Linus Pauling advocated massive doses of vitamin C to prevent colds, cancer, and heart attacks. He personally took 20 or more grams

daily in the form of a powder mixed in juice. Although citrus fruits are a rich source of vitamin C, he would have had to consume 255 oranges daily to obtain this amount. Many people similarly assume that optimal amounts of other vitamins cannot be obtained from dietary sources, and regularly take very large doses of these and other antioxidant supplements. Recent studies suggest that this may not be necessary.

Antioxidant activity can be measured in a test tube by determining the amount of free radicals that are neutralized. One experiment revealed that just three and a half ounces of blueberries had the same antioxidant properties as 1,773 I.U. of vitamin E, or 1,270 mg. of vitamin C. In addition, foods rich in these vitamins may contain plant chemicals that provide other health benefits. Two recent studies in humans and monkeys showed that a daily glass of pure grape juice reduced the platelet clumping that contributes to clot formation around 40 percent. Earlier studies have also suggested that the positive health effects of grape juice, as well as red wine, may be due to their content of certain flavonoids that reduce platelet stickiness, in addition to blocking free radical damage.

The only way to prove that vitamin supplementation provides significant benefits is to conduct carefully controlled studies that allow you to draw meaningful conclusions from the results. Three such large clinical trials have been reported to date. The Alpha-Tocopherol, Beta-Carotene (ATBC) Cancer Prevention Study compared the effects of vitamin E, beta-carotene, and a placebo in almost 30,000 male Finnish smokers. No benefits were seen with vitamin E, and those receiving beta-carotene had an 18 percent higher rate of lung cancer and 8 percent more deaths. The vitamin E group also had a greater incidence of hemorrhagic stroke. Similarly, the Beta-Carotene and Retinol Efficacy Trial (CARET), which studied 18,000 smokers, ex-smokers, and workers exposed to asbestos, was terminated after four years, because those taking supplements already had 28 percent more lung cancer and a 17 percent higher death rate!

The Physicians' Health Study, which followed some 22,000 doctors for 12 years, found no differ-

(Continued on page 3)

(Continued from page 2)

ence in cancer or heart disease rates in those who were taking beta-carotene. Another smaller clinical trial, The Polyp Prevention Study, found no indication that taking vitamin C, vitamin E, and beta-carotene supplements had any effect on the incidence of colorectal cancer.

Nevertheless, numerous surveys have shown that people who eat beta-carotene rich foods have less cancer, presumably because of improved immune system resistance. Support comes from a recent study in which volunteers simply consumed a daily lunch consisting of carrots, sweet potatoes, kale, and tomatoes, which furnished several times the average dietary intake. After three weeks, blood levels of beta-carotene more than doubled, and T-cell stimulation responsivity, a standard measurement used to assess the immune system's ability to ward off infection and malignancy, increased 33 percent. Certain of these foods appear to contain flavonoids and other phytochemicals that potentiate beta-carotene's protective immune system and antioxidant effects, and are not available in current synthetic vitamin preparations. One authority believes that you can get all the beta-carotene you need from eating two carrots a day.

The Problem With Vitamin E

Although nutritionists feel that it is preferable to obtain vitamins from natural foods rather than synthetic supplements, it would appear difficult to obtain optimal amounts of vitamin E from diet alone. The usual 15 I.U. recommended daily allowance (RDA) for men would require eating 248 slices of whole wheat bread, 16 dozen eggs, or 20 lbs. of bacon. Our major dietary source actually comes from breakfast cereals that have been superfortified with synthetic tocopherols. Although margarine, wheat germ, nuts, and leafy green vegetables are rich in vitamin E, they only provide the equivalent of one or two I.U. per serving.

It is important to emphasize that suggested RDA's for vitamins are the amounts considered necessary to prevent deficiency diseases, such as scurvy for vitamin C, and night blindness for vitamin A. However, no such specific deficiency disorder in humans has been attributed to a lack of

vitamin E. In addition, dosages 20 or 30 times the RDA appear to be necessary to obtain antioxidant protection against coronary heart disease and cancer. It would be almost impossible to achieve this amount solely through dietary intake.

For example, a review of over 2000 patients with angiographically confirmed coronary artery disease, revealed that 400 or 800 I.U. of vitamin E daily reduced the likelihood of subsequent heart attack by a whopping 77 percent! A National Institute of Aging nine year study of 11,000 senior citizens aged 67-109, found that those taking vitamin E supplements in similar dosages had a 40% reduction in heart disease risk, and were also 22% less likely to develop cancer. Another report showed that this amount of vitamin E was also required to prevent or reduce exercise induced muscle damage in middle-aged and older men.

Vitamin E reduces free radical oxidative damage to cells, but, as with vitamin C, optimum daily requirements vary depending on age, sex, smoking, exposure to environmental pollution, diet, exercise, and other factors. Although smokers require greater amounts of vitamin C and E because they have more oxidative damage, taking huge doses does not always necessarily imply better protection for everyone. In one study, 40 male smokers and an equal number of non-smokers received supplements of vitamin E ranging from 70 to 1,050 I.U. daily. After 20 weeks, red blood cell samples were incubated with hydrogen peroxide, one of the most harmful free radicals, to determine the degree of oxidative damage that was present. Both smokers and non-smokers taking 70, 140, or 560 I.U. of vitamin E daily showed correspondingly less free radical damage than controls not receiving these supplements.

However, non-smokers taking 1,050 I.U. daily actually fared worse than controls receiving no vitamin E, suggesting that at this dosage, the vitamin might actually be promoting free radical production. This reverse effect was not seen in smokers, presumably because any excess vitamin E was consumed in detoxifying the increased free radicals generated by smoking. While it seems likely that most people would benefit from taking supplemental vitamin E, too much could also prove detrimental.

(Continued on page 4)

(Continued from page 3)

tal because of interference with the effects of other antioxidants.

Another problem is that the terms vitamin E and alpha-tocopherol are often used as synonyms, since the latter is the compound primarily used in vitamin supplements. However, other tocopherols that are also found in foods may be equally important. Gamma-tocopherol was recently reported to protect against nitrogen oxides, highly reactive free radicals that are relatively unaffected by alpha-tocopherol. Nitrogen oxides are responsible for the production of acid rain, and in the body, they can alter DNA and trigger inflammatory responses. Researchers found that during experimentally induced inflammatory reactions, gamma-tocopherol blood levels quickly fell as they trapped damaging nitrogen oxide waste products.

Unfortunately, taking large amounts of alpha-tocopherol promotes the elimination of gamma-tocopherol from the body, thus impairing defenses against the injurious effects of nitrogen oxide compounds. Support for this comes from a Swedish study designed to investigate why Lithuanian men had four times the mortality from heart disease than Swedish men the same age. This could not be explained by any variation in standard risk factors, such as hypertension, smoking, or elevated cholesterol. Alpha-tocopherol levels were also the same in both groups. The only difference observed was that the Lithuanian men had significantly lower concentrations of gamma-tocopherol.

Hawaiian researchers also recently reported that in test tube studies, gamma-tocopherol blocked the formation of tumor cells much more effectively than alpha-tocopherol. As a result of these new findings, one authority has stated that "gamma-tocopherol may be as important as alpha-tocopherol in the prevention of degenerative diseases". He believes that vitamin E and alpha-tocopherol should not be used interchangeably, and more efforts should be directed to obtaining vitamin E from foods, rather than synthetic supplements. In addition, vitamin E supplements should also be reformulated as soon as possible to include gamma-tocopherol, and possibly even other forms found in natural sources, about which little is known.

Vitamins Vs. Diet For Hypertension

It is generally advised that before starting drug therapy, hypertensive patients should attempt to lower blood pressure by non-pharmaceutical approaches. These include weight reduction, avoiding salt and alcohol, regular exercise, reducing stress, and other lifestyle changes that may be appropriate. Dietary recommendations vary with each patient. Losing weight is very effective for obese individuals, but provides few benefits for others. While salt restriction and a strict low sodium diet was previously routinely described for everyone, responses are erratic, and the wisdom of this has recently been questioned. Such measures may be efficacious in certain salt sensitive populations because of genetic factors. However, little improvement is seen in most patients, and might be harmful for others. Some patients with hypertension have been shown to improve with calcium supplementation, and a low sodium diet would necessitate avoiding dairy products which are a major source of calcium. Obviously, a diet that is effective for one patient, might be useless or even harmful for others.

On the other hand, it has been well established that vegetarians have lower blood pressures than any other group. Whether this is due to the absence of dietary fat, which could clog arteries, or dietary ingredients that reduce blood stickiness and improve blood flow is not clear. Nevertheless, this observation provides additional proof that fruits and vegetables provide benefits that cannot be achieved by simply taking supplements of some of the vitamins they contain. There is nothing to suggest that any vitamin can reduce blood pressure in hypertensive or other individuals. But proof that this can be accomplished by adhering to a vegetarian regimen comes from a report just published in *The New England Journal of Medicine*.

The Dietary Approaches to Stopping Hypertension (DASH) study of almost 500 hypertensive adults was conducted at five different medical centers. One third of the participants ate a typical American diet low in fruits and vegetables, and moderately high in fat. A second group followed the same diet but were given extra fruits and veg-

(Continued on page 5)

(Continued from page 4)

etables. The third group was placed on a combination diet that was low in fat, and contained nine to ten servings of fruits and vegetables a day, which is more than twice the average consumption. The best results were seen in this third group with the combination of low fat and extra fruits and vegetables. A significant reduction in blood pressure was seen within two weeks, both in whites and African Americans. Researchers calculated that if the entire population of the U.S. experienced a similar drop in blood pressure, there would be 125,000 fewer strokes each year. A less impressive improvement was seen in the second group, who also ate extra fruits and vegetables, but made no attempt to reduce fat intake.

Supplements To Reduce Stress

One of the most popular claims for nutritional supplements is that they can effectively eliminate or reduce stress. Several years ago, governmental regulatory agencies cracked down on vitamin manufacturers that implied this in their labels. However, the word stress still appears on some products, and the FDA was recently petitioned to ban vitamin and "stress formulas", because there was no proof that their ingredients were beneficial in this regard. Most claim protection against the effects of daily stress, or overwork, and usually contain large amounts of vitamins, as well as minerals, trace elements, or herbal products. While generally not harmful, some formulations have enough vitamin C to cause diarrhea, and dosages of B6 that can produce nerve damage if taken over long periods of time. Others include spirulina, bee pollen and ginseng, to make them appear more "complete".

Although increased amounts of vitamin C may be required during periods of acute and severe stress, there is no evidence that administering this or other vitamins provide any clinical benefits. Manufacturers often base their claims on a 1952 National Academy of Sciences report on people who had lost their appetites for a prolonged period of time due to a serious illness or injury. In some cases, supplementation was recommended to prevent or restore the depletion of water soluble vitamins. However, there is no indication that this is of value in normal

individuals, or that vitamins can reduce or alleviate stress.

Some studies do suggest that certain herbals are effective for specific stress related complaints. *Valeriana officinalis* (valerian) is a popular over-the-counter remedy for anxiety and insomnia in Europe and Asia. Two of its major constituents have been isolated, and demonstrated to have both sedative and analgesic properties in carefully controlled studies. *Passiflora incarnata* (passion flower) is used for similar purposes. It is also sometimes smoked like tobacco, has been described as producing a "relaxing high", and an aid in treating nicotine and other addictions. One of its alkaloids that produces a mild euphoria, has been classified as a monoamine oxidase inhibitor, and was used as a truth serum by the Germans in World War II. The yellow flowered tops of *Hypericum perforata* (St. John's wort) have been consumed in a tea or olive oil extract as a nerve tonic for hundreds of years. It has become increasingly popular here and abroad as an antidepressant. A German trial convincingly demonstrated that it significantly relieved symptoms of depression in women, along with improvement in objective rating scales and other measures. A pigment extract, hypericin, was recently shown to have neuroreceptor affinities identical to those seen with anxiolytic and antidepressant drugs. It is currently undergoing clinical trials in the U.S. to evaluate these, as well as antiviral effects.

Ginseng and ginkgo preparations are among the leading herbal products sold in the world. They are often promoted as stress reduction aids because they produce a general sense of well-being. As also noted in a prior Newsletter, the adaptogens, which include *Eleutherococcus* and *Glycyrrhiza* extracts, are described as "Nature's Answer to Stress". All of these herbal products have been studied intensively, and solid scientific findings have confirmed their significant antioxidant and other important physiologic properties. Some provide numerous other alleged benefits, ranging from increased energy and potency, to improvement in memory and learning abilities. Unfortunately, there is little financial incentive to do important research, because it is unlikely that protective patents could be obtained.

(Continued on page 6)

(Continued from page 5)

Stress and Magnesium

Animal studies have shown that magnesium deficiency increases stress induced hypertension, stroke, myocardial infarction, rhythm disturbances, and sudden death. Conversely, the administration of magnesium protects against the cardiac damage caused by stress related hormones like adrenaline and noradrenaline. During acute stress, there is an increase of fatty acids in the blood, which slows down blood flow and promotes clot formation. Magnesium tends to bind to these fatty acids, making less of the active, or ionizable form available. A high fat intake increases blood lipids that similarly bind magnesium, and dairy products, which are also rich in calcium, can seriously aggravate the problem. When calcium is high and magnesium is low, blood clotting is accelerated, further impeding blood flow.

Magnesium also appears to be particularly important in preventing heart attacks in humans. In Finland, the incidence of coronary disease is lowest in those areas with the highest drinking water concentrations of magnesium. One study found reduced magnesium in the heart muscle of patients who died from heart attacks, but not other forms of heart disease. The magnesium content of skeletal muscle was normal in both groups. Routine blood tests for calcium and magnesium measure the total that is free, as well as bound to protein but it is only the free, or ionizable form that is active. Tetany, which consists of involuntary muscular contractions and spasms, occurs when blood calcium levels are low. However, when individuals hyperventilate, they show the same symptoms even though blood calcium measurements are normal. The reason is that hyperventilation causes more carbon dioxide to be eliminated, making the blood more alkaline. As a result, there is increased binding of calcium to proteins in the blood, making less of the active ionizable form available.

Serum magnesium has been found to be low in some patients with migraine, who are often significantly improved when this is corrected. In others, although blood magnesium levels are normal, it is believed that there may be a deficiency of active

ionized magnesium that is causing the problem. To test this hypothesis, ionized magnesium was measured by a special technique in 40 migraineurs. Low levels were confirmed in all patients, even when routine blood magnesium tests were perfectly normal. Thirty-five of these experienced complete relief when they were given intravenous magnesium within 15 minutes after the onset of headache.

Migraine is associated with a higher incidence of depression, bipolar disease, panic disorder and epilepsy, all of which may also be stress related. It is possible that a lack of ionizable magnesium not detectable with current testing may contribute to the problem in some patients. If so, administering supplemental magnesium might prove beneficial. Some of the drugs used to treat these disorders, including anticonvulsants and antidepressants, can also provide relief for migraine patients who fail to respond to conventional measures. One explanation for this that has been proposed, is that they increase the sensitivity of blood vessel receptors to the effects of ionizable magnesium.

Consumer Fraud

An even greater problem for consumers is that the lack of government regulation makes it difficult to distinguish between authentic products and others that are worthless. Many marketing and promotional claims are not only illegal, but irrational, and sometimes dangerous. A few years ago, FDA agents posing as customers in health food stores asked for advice on what products were useful for hypertension, infections, and cancer. Of 129 such requests, 120 had recommendations that could not be substantiated. Neither operators or employees of health food stores are required to have any nutritional education or training, and most simply regurgitate the material supplied to them by manufacturers and distributors.

Many nutritional supplements are sold by multilevel sales force marketing techniques that are even more likely to misinform the public. Claims that the product can cure a wide range of diseases are common, and anyone can become a distributor by filling out an application and paying a fee.

(Continued on page 7)

(Continued from page 6)

On the other hand, it is just as easy to obtain a certificate or "degree" from numerous correspondence colleges suggesting that the recipient is a qualified nutritional expert. There is no school to attend, and one has only to pay the tuition, write a brief article on a relevant subject, and take an open book test, which is graded quite liberally. Some of these diploma mills have awarded degrees to children, non-existent individuals, and even household pets! You can also obtain a "professional membership" and fancy certificate from various organizations with impressive sounding names, simply by sending in a fairly reasonable fee for dues.

How can you go about finding a reputable nutritionist? Many people would consult the Yellow Pages. The National Council Against Health Fraud did just that, and found that about half of over 600 such listings were fake or deceitful, and another 72 were highly suspicious. Of some 24 practitioners who identified themselves as having a Ph.D. in the field, 17 had phony credentials. State regulatory agencies have little control and few resources to deal with this problem. A common and profitable practice pursued by many of these practitioners are the use of exotic laboratory tests that allegedly detect metabolic or mineral imbalances and toxicity. Hair analysis is often used, as are exotic and proprietary studies of various blood components that allegedly detect and measure immune system and other disturbances that presumably cannot be evaluated with conventional testing procedures. Various nutritional recommendations are based on these results, and later modified based on subsequent testing (which usually shows improvement), and thus keeps the client coming back.

Such testing procedures have not been standardized, approved or demonstrated to have any clinical value. Their uselessness is illustrated by the tremendous disparity in the results reported. In one study, over 50 hair specimens from perfectly healthy teenagers were sent to 13 commercial laboratories under various assumed names. As anticipated, identical samples produced dissimilar findings, even when submitted to the same laboratory. There was little agreement about what the "normal" values were for many of the minerals tested.

The promise of a dietary supplement that will retard the aging process, improve vitality, relieve stress, memory loss, aches, stiffness, and other complaints, would be appealing to almost everyone. Such products may indeed exist, or be on the horizon. However, at present, they are difficult to identify, and many people are taking worthless wares that will not only fail to provide benefits, but could prove harmful, especially if they delay access to needed medical care. Unfortunately, any preparation may produce temporary improvement because of the power of the placebo effect, and the raised expectations of success based on glowing testimonials of miraculous results achieved by others. As Seneca noted over 2000 years ago, "Part of the cure is the wish to be cured."

Various governmental agencies and other watchdog groups may be of assistance in providing reliable information on various practitioners, products, or organizations providing nutritional services. The National Council Against Health Fraud conducts research, publishes a monthly newsletter and task force reports, and can be reached at P.O. Box 1276, Loma Linda, CA 92376, or their web site, www.ncahf.org. Dr. Stephen Barrett, one of their Board members, maintains a web site, www.quackwatch.com that also reports on the latest developments. His 1994 book, *The Vitamin Pushers: How the health industry is selling America a bill of goods*, co-authored with Dr. Victor Herbert, is another useful resource.

Paul J. Rosch, M.D., F.A.C.P.
Editor



"I told him to lay off the high-fibre diet."

Book Reviews • Meetings and Items of Interest

Book Review

Why We Eat What We Eat: The Psychology of Eating, Capaldi, S., ed., American Psychological Association, Washington, 1996, 339 pgs. \$49.95

Eating is obviously one of the most fundamental and distinctive activities of life, and dietary intake and preferences are fairly characteristic for each species. However, this varies in different human cultures, where, in addition to what is available, tradition, taboos, and various psychological factors often influence what and when we eat, as well as how much. This can be particularly true in contemporary Western societies, where there is now an unusual preoccupation with the health effects of diets and foods, that is often fueled by financial, rather than scientific concerns.

This book is divided into five parts, containing sections that explain how food preferences and tastes are learned, how different eating patterns develop, and the effects of biological factors on these traits. The emphasis is on basic research, physiological considerations, and psychological constructs, which attempt to explain possible mechanisms of action, or specific observations. A chapter on Brain Mechanisms and the Physiology of Feeding, discusses various feedback mechanisms that increase or decrease food intake, and reviews the effects of various neurotransmitters that modulate this, as well as the desire for certain types of food. However, although the clinical implications of this with respect to obesity are mentioned, there is little information that is likely to be of any practical value to health care professionals.

No mention is made of the important role of stress in eating disorders, or anorexia, which is often characterized by increased cortisol levels. Indeed, there is no reference to stress in this entire volume, even in the discussions of hunger and neurotransmitters that affect food intake, despite several research reports that would have been extremely pertinent. Part Five: How the Social Context Influences Eating, contains chapters entitled Social Influences on Food Preferences and Feeding Behaviors of Vertebrates, and Sociocultural Influences on Human Food Selection. Unfortunately, the important influence of advertising, and particularly television commercials is not addressed in either of these. The titles and affiliations of authors are not listed, but they would appear to be primarily academic researchers, rather than practitioners.

Meetings and Items of Interest

June 30-July 5 International Congress of Physiological Sciences, St. Petersburg, Russia, for info, call the Organizing Committee at 011 7 812 234 1390/5573

July 14-16 The 18th International Conference of the Society for Stress and Anxiety Research (STAR), Heinrich-Heine-University, Düsseldorf, Germany, call Volker Hodapp at 011-49-211-81-12090

Aug. 31-Sept. 5 14th World Congress of Psychosomatic Medicine, Cairns, Australia, contact Wyeth Clinical Meetings Service at 011-61-2-843-6414

ISSN # 1089-148X

HEALTH AND STRESS

*The Newsletter of
The American Institute of Stress*

124 Park Ave., Yonkers, New York 10703

Non-Profit Organization
U.S. Postage
PAID
Yonkers, NY
Permit No. 400