



IMAGE AWARENESS WELLNESS INSTITUTE

Balanced Nutrition: Antagonism

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“Man is a food-dependent creature. If you don’t feed him, he will die. If you feed him improperly, part of him will die.” (Emanuel Cheraskin, MD, DMD)

BALANCE

In my last newsletter I began a discussion of the importance of balance in the realm of nutrition. I pointed out that nutrients work together in a profound synergism. If one nutrient is insufficiently supplied, this will hinder the use of other nutrients. The principle of synergism underlines the fact that even marginal deficiency of a nutrient can alter the use of other nutrients.

The ability of a shortage or an excess of a single nutrient to impact the overall nutrition was examined by the celebrated researchers Harte and Chow many years ago when they reviewed over 200 scientific studies. “Their findings reveal that the shortage of a single essential vitamin, mineral element, amino acid, or fatty acid will create a shock wave that spreads to affect the utilization and/or function of every other essential nutrient.”

This newsletter focuses on the antagonism of nutrients. An awareness of the principle of antagonism provides a warning against excessive intake of isolated nutrients whether that excess is relative or absolute.

Researchers Karl Schutte and John Myers write, “Because living

matter is involved, it is impossible to obtain absolute deficiencies of any essential nutrient, as by definition, all essential elements must be present, even if at such a low level that no normal development is possible. This is an important point to grasp, because it means that *all deficiency conditions that occur are relative deficiencies*. As the organism’s requirements may change with age, or with alteration in environment, deficiency symptoms may appear where previously a healthy plant or animal existed. This will take place where the level of nutrition was previously considered quite adequate....This fact, that all deficiencies are relative ones, is of great practical importance, as many widespread trace-element deficiencies are not due to absolute shortages of elements, but are *induced deficiencies*, brought about by altering the beneficial ratios of various



nutrients to each other. This results in nutritional *imbalance*, with dire consequences, as will be seen later.”

The establishment of the proper balance of nutrients is a primary principle I try and keep in mind when suggesting a supplement program for someone else or when I put my own supplement program together. No matter how beneficial a single nutrient is, it may do more harm than good if consumed to excess when other nutrients are being inadequately supplied.

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Schutte, Karl, and Myers, John, *Metabolic Aspects of Health*, Kentfield, CA: Discovery Press, 1979, 10-11.

VITAMIN-MINERAL ANTAGONISM

High vitamin C intake can deplete copper and increase retention of iron. Excess vitamin D intake will cause an increased absorption of calcium but can also cause a potassium deficiency. Too much copper will increase requirements for vitamin C and niacin (vitamin B3).

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Watts, David L., *Trace Elements and Other Essential Nutrients*, Dallas, TX: Trace Elements, 1995, 20.

VITAMIN-VITAMIN ANTAGONISM

Vitamin E provides a case study in the importance of balance. In na-



ture Vitamin E is a fat soluble antioxidant. It is usually found as a family of eight different compounds: alpha, beta, gamma, and delta tocopherols and alpha, beta, gamma and delta tocotrienols. These members of the vitamin E family are also accompanied by high quality fats as found in wheat germ oil. Despite the fact that this complex of substances is found together, research has traditionally focused on only one member of the complex--alpha tocopherol.

Lester Packer argued for "the necessity for careful discrimination among the various forms of vitamin E." Packer found in his laboratory work that alpha-tocotrienol had 40 to 60 times the antioxidant potency of alpha tocopherol. This means that an experiment with one form of vitamin E could have dramatically different results than an experiment with a different form of vitamin E.

Stephan Christen was a researcher at the University of California in Berkeley. I had the opportunity to discuss his research with him several years ago. Christen found that unbalanced vitamin E supplementation was undesirable and could be dangerous.

Large amounts of alpha tocopherol appear to push gamma tocopherol out of the body. Gamma tocopherol proved to be important in inactivating nitrogen oxides which trigger some of the damage caused by inflammation and also damage

DNA. Even if vitamin E is natural, it will not provide optimal benefit unless it contains both alpha and gamma tocopherol according to Christen.

Almost all vitamin E supplementation for decades has consisted of only one member of the vitamin E family: alpha tocopherol. Stephan wrote, "Because large doses of dietary alpha-tocopherol displace gamma-tocopherol in plasma and other tissues, the current wisdom of vitamin E supplementation with primarily alpha-tocopherol should be reconsidered."

Vitamin E illustrates two important aspects of the functioning of nutrient complexes. The first is *specificity of action*. Alpha tocopherol simply cannot do what gamma tocopherol does and visa versa. This is why GNLD labels its products as Vitamin E "Complex" or Vitamin B "Complex". Every effort is made to assure that the entire family of nutrients is present in the proper proportions indicated by the blueprint found in nature. There is a basic synergism between the members of the vitamin E family in that they all perform the work of antioxidants, but in different parts of the body. They also help the body cope with different kinds of free radicals.

The second principle is *competitive absorption* or the *antagonistic action of certain nutrients*. Huge intakes of isolated alpha tocopherol will depress levels of gamma tocopherol. This aspect of nutrition is little studied and little understood, but it is nevertheless very real and capable of demonstration with regard to a wide variety of nutrients.

There are some indications of competitive absorption of carotenoids as well. This is significant in view of the remarkable specificity of action of the different carotenoids. Few carotenoid supplements provide a well-balanced intake as found in a variety of foods

one would normally consume. REFERENCE:

Christen, Stephan, et al., "Gamma-Tocopherol traps mutagenic electrophiles such as NOX and complements alpha-tocopherol: Physiological implications," *Proc. Natl. Acad. Sci, USA*, Vol. 94, pp. 3217-3222, April 1997

STEREISOISOMERS

When vitamins are synthesized one will often get a mirror image of a natural molecule. Sometimes there are many different forms (stereoisomers) of a vitamin.

For example, there are 272 stereoisomers (3-dimensional arrangements) of beta-carotene alone. The synthetic product consists of totally different stereoisomers than does the natural product. The *New England Journal of Medicine* wrote, "...how a particular beta carotene came to be selected for world-wide testing is neither hard to understand nor easy to forgive." (Synthetic beta-carotene does not appear to prevent cancer and may actually increase it while the natural forms of carotenoids (including beta-carotene) found in foods are strongly associated with decreased risk of development of cancer and a number of other diseases.)

Vitamin E provides us an example of the dramatic difference a slight change in the structure of a molecule can make. Synthetic vitamin E is made from isophytol, a petroleum or turpentine product. It consists of molecules which, when in solution rotate polarized light to the left (an "L" structure) and molecules which rotate light to the right (a "d" structure). Only the "D" form is natural for vitamin E.

Studies have shown that the natural form of vitamin E is 50% more effective than synthetic vitamin E. Researchers discovered that the placental cords of pregnant women had 3 1/2 times more natural vitamin E than the synthetic. The body was selectively targeting absorption of the natural molecule for the infant.

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American Journal of Clinical Nutrition, April 1998.

Shute, Evan, *Common Questions on Vitamin E and Their Answers*, p. 82.

MINERAL-MINERAL ANTAGONISM

An illustration of this competitive aspect of nutrients is the relationship between calcium and magnesium. I had the opportunity to meet Mildred Seelig before she died. She was considered one of the world's leading experts on magnesium. She shared with me that she felt the ideal relationship between these two minerals was two parts calcium to one part magnesium.

Many physicians know nothing of this and indiscriminately prescribe massive doses of calcium to their patients while ignoring the importance of magnesium. In her book on magnesium she wrote, "[Calcium and magnesium] are two sides of a physiological coin; they have actions that oppose one another, yet they function as a team." She then goes on to say, "But calcium intakes that are unduly high relative to

magnesium can intensify the problems caused by the low magnesium content of most modern diets."

The relationship between calcium and magnesium is not unique. These kinds of relationships are everywhere in nature. There is a strong antagonism between zinc and copper. Carl Pfeiffer believed that an imbalanced intake of these nutrients contributed to stretch marks. He wrote, "Both zinc and copper are needed for effective crosslinking of the elastin chains to make the perfect elastic tissue. When imperfect, any overstretching will cause long tears which appear as striae or stretch marks."

Pfeiffer was particularly concerned about copper piping in homes and copper cooking utensils depressing zinc levels. He became quite fearful of copper. I did a lecture with a physician who knew Pfeiffer in which he discussed the problem with excess copper and I discussed the problems of a copper deficiency. Afterward this physician told me that Pfeiffer had suffered a heart attack which could have been contributed to by a deficiency of copper.

Another highly significant antagonism is that between iodine and other halides (fluoride, bromine, and

chloride). David Brownstein writes, "All halides compete with one another for absorption and receptor binding in the body. Bromine interferes with iodine utilization in the thyroid as well as wherever else iodine would concentrate in the body."

Brownstein continues, "Iodine deficiency is a huge public health problem. The exposure to goitrogens (substances that promote goiter), including the halides bromide and fluoride, has exacerbated the iodine deficiency problem. It is one of the main underlying causes of many varied illnesses including thyroid disorders, chronic fatigue, fibromyalgia, cancer (including cancer of the breast and prostate), and other health issues."

High intake of fluoride as promoted by many public health agencies depresses tissue levels of iodine leading to deficiencies.

The antagonisms and synergisms of minerals are well enough understood that one will find circles or wheels of mineral interactions in various places.

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Brownstein, David, *Iodine*, West Bloomfield, Michigan: Medical Alternatives Press, 2006, 49, 54.

FOOD NUTRIENT ANTAGONISMS

Substances in foods can induce nutritional deficiencies through various mechanisms as well. Overconsumption of certain foods can induce nutritional deficiencies even when nutrients are fairly abundant in the diet.

Many people today in their concern about cholesterol avoid egg yolks, but consume egg whites. The protein avidin in egg white is a po-





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tent biotin antagonist. Administration of avidin to test subjects results in biotin abnormalities within 3 days and a drop in blood levels of the vitamin by the tenth day.

Another common antagonism is that between members of the cabbage family and iodine. In Tasmania children consuming milk obtained from cows fed on kale, a member of the cabbage family, developed goitre, while other children did not. Goitre is a classic iodine deficiency disease.

A number of foods antagonize vitamin B6. Flaxseed meal contains a compound called linatine which induces vitamin B6 deficiency in laboratory animals. This is one of the reasons I am a little cautious about going out of one's way to consume flax seeds.

Button mushrooms contain agaritine, a suspected vitamin B6 antagonist. Alfalfa sprouts contain L-canaline which also interferes with vitamin B6.

Man often adds nutritional antagonists to his foods as well. A wide range of food additives antagonize vitamin B6 including overheated vegetable oils, cara-

mel color and Yellow No. 5, and the sprouting inhibitor maleic hydrazide used on onions and potatoes. Potato chips are loaded with vitamin B6 antagonists. Residues of a ripening agent which is a vitamin B6 antagonist are commonly found on peaches, nectarines, tomatoes, brussels sprouts, cherries, grapes and apples. Small wonder that deficiencies of vitamin B6 and other nutrients are common even though the nutrients are found in many foods.

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APPLICATION

The lesson we should learn from nutrient antagonisms is that we should attempt to obtain a generous and balanced supply of all essential nutrients on a regular basis. Picking and choosing isolated nutrients without using a basic multiple like the GNLD Uni-Paks or Formula IV Plus is foolish and misguided.

My personal priority is first Sports 30, second Pro-Vitality to fill major nutritional gaps, and then additional antioxidant nutrients such as Betagard, Vitamin E Complex, Super C, and TRE.

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