



Myths of Vitamins

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In today's health-conscious society, many Americans hold myths about the proper role of vitamins. While vitamins are essential for good health, excessive amounts are unnecessary and can be harmful.

Once a day, "just to be sure," millions of Americans take a multivitamin pill. Then, when cold season comes around, some stock up on vitamin C. And if all these vitamins do not prevent that "rundown feeling," they might try a little—or a lot—of all the vitamins, with an added boost of vitamin B₁₂.

According to some recent articles and books by so-called nutrition "experts," this sort of therapy should do the trick. But millions of Americans now know it does not work.

A 4-year-old boy in Kansas learned the hard way that taking a whole bottle of 40 children's vitamins at once will not help him grow stronger, faster. He spent the following 2 days in intensive care with vitamin A and iron poisoning. His experience was added to the statistics compiled by FDA's National Clearinghouse for Poison Control Centers which reveal that 4,000 cases of vitamin poisonings are reported each year, with some 3,200 involving children.

Other Americans, with rashes, diarrhea or headaches, may also be unwary victims of the belief that since vitamins are good for them, the more the better.

This is just one of the many myths about vitamins accepted by many health-conscious Americans. Some of the myths have been with us so long they are difficult to distinguish from fact. For instance, many people will tell you that vitamins provide extra energy. False. Some of the B vitamins do aid in the conversion of foods to usable energy, but in amounts greater than the U. S. Recommended Daily Allowance (U. S. RDA), they provide nothing of value. Only people with a relatively rare medically diagnosed deficiency of a vitamin would benefit from an amount greater than the U. S. RDA levels.

FDA has put into action regulations to prohibit false and misleading promotional and labeling claims about vitamins and minerals, and to distinguish between vitamins and minerals that are dietary supplements and those that should be sold as drugs.

The Daily Multi-Myth

An advertisement on television shows a person explaining how he stays healthy and looks "great." He says he watches his diet, gets plenty of exercise, and, "just to be sure," takes a vitamin-mineral supplement every day.

This is the way we have come to expect the marketing of dietary supplements. They are promoted as an "insurance" policy to guarantee good health. The implication of such advertising has contributed to the myth that even a balanced diet cannot provide adequate nutrients.

Some people have gone further and maintain that modern farming methods have depleted the soil and that food itself no longer contains adequate nutrients.

This is untrue. More is known about the nutrient content of food today than ever before. And more is done, through modern farm practices, to protect and enrich the soil than was even known about in the "good old days." Crop rotation, soil tests and routine enrichment of crop soil were developed because the oft-revered "natural" way of farming was quantitatively and qualitatively unreliable.

In addition, the protein, carbohydrate, fat, fiber and vitamins are controlled primarily by the plant's genetic structure, not by the soil. Excess mineral elements in soil beyond the plant's requirements may be reflected in the plants, but these differences are usually small. Both desirable (magnesium, zinc, iron, etc.) and undesirable (lead, cadmium, selenium, etc.) elements are similarly accumulated.

A balanced diet which generally meets the U. S. RDA requirements for vitamins A, B₁, B₁₂, C and D nearly always will provide the needed amounts of other vitamins, despite the claims of some people that these other vitamins are hard to find and therefore must be eaten in special foods or taken by pill. Even though eating is a personal thing and the acceptability of foods varies from person to person, it is possible to obtain the U. S. RDA in many different diet patterns because of the wide variety of foods containing similar nutrients. But the simplest, surest guide to follow for a good daily balance of nutrients is still the selection of foods from each of four larger groups—milk, meat, vegetable/fruit and bread/cereal.

There are substances in food which some "experts" glibly term vitamins although they are of no importance in the diet for human nutrition. Examples are inositol, PABA (para-aminobenzoic acid), citrus bioflavonoid complex, hesperidin and rutin. Many companies have marketed these substances individually or in combination with essential vitamins, but consumers should not be misled by claims for them that ignore the fact that their absence from the diet does not cause a disease or any form of illness.

Foods can and do supply most Americans with adequate nutrients, and consumers should not expect any major physical benefits from multivitamin pills, contrary to the myth.

Much Ado About E

Vitamin E supplements have been found useful in only two conditions—in premature babies who because of poor placental transfer may have received too little of the vitamin before birth, and in persons with intestinal disorders in which fats are poorly absorbed.

This view by the National Academy of Sciences Committee on Nutritional Misinformation is vastly different from claims that have more than doubled the sales of vitamin E in the last 5 years.

Among the latter claims are assertions that the vitamin can promote physical endurance, enhance sexual potency, prevent heart attacks, protect against air pollution and slow the aging process. But there is virtually no scientific proof for the majority of these claims.

In fact, the new interest in E has been based on misinterpretations of animal research studies. Male rats that deliberately had been deprived of dietary sources of vitamin E became sterile, but the use of large doses in treating human sterility or impotence has not been successful. Similarly, it is known that E is essential to maintain pregnancy, but it has not been found to be a factor in fertility.

One reason so little is known about vitamin E is that E deficiency is almost impossible to produce in human subjects. To withdraw all sources of vitamin E is almost to withdraw food itself, since the vitamin is present to some extent in most foods and in large amounts in vegetable fats and oils.

Discovered about 50 years ago, the vitamin has also been described as a cure, preventive or treatment of cancer, muscular dystrophy, ulcers, burns and skin disorders. Again, science does not back this up. In muscular dystrophy patients, for example, no deficiency of vitamin E has been found and large-dosage treatments have been ineffective.

The vitamin has been used in some cosmetics for its antioxidant properties, but one

popular new deodorant containing E was recalled when widespread incidence of severe rashes were reported after use.

C for Colds?

James Lind, surgeon's mate on the H. M. S. Salisbury, and "the father of nautical medicine," conducted the first properly controlled clinical therapeutic trial on record in 1747. Aboard ship, his experiment determined the value of citrus fruit in the prevention and cure of scurvy.

Forty-two years later, the Royal Navy adopted the administration of 1 ounce of lemon juice to each man each day. It wiped out scurvy in the Royal Navy and preserved its numbers to the extent that vitamin C is credited with having done as much as Lord Nelson to break the power of Napoleon.

So began the recorded and gradual recognition of vitamin C, which was isolated and so named in 1933.

Today, these things are known about C: it helps hold body cells together; strengthens blood vessels; helps heal wounds; helps tooth and bone formation; and helps in resistance to infection.

It is also known that C does not cure or prevent colds. The claims that C lessens the number and severity of colds remain controversial. In several clinical studies, subjects who believed they were being given C but who



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actually received inert tablets reported fewer colds than they expected to have. In some cases, those taking C reported no change.

Some research has indicated difficulties associated with large doses of vitamin C, including kidney stones, severe diarrhea and possible harm to diabetics. Also, because the body does excrete excesses of vitamin C, its presence in the urine makes accurate testing for diabetes impossible, since it gives a false indication of sugar levels. At this point, unless a physician has diagnosed vitamin C deficiency, the safe, practical course is to get the U. S. Recommended Daily Allowance of 60 milligrams per day (see table).

B Vitamins

A common belief about B vitamins is that the old “rundown feeling” can easily be overcome by vitamin B₁₂ supplements. But unless there is actually a deficiency—which is extremely rare—amounts beyond the U. S. RDA will not be of any benefit to the body, and any apparent effect has been shown to be psychological. In the case where vitamin B₁₂ treatment is recommended, when a person actually cannot absorb the vitamin properly, the treatment must be carried out through injections, and it is relatively ineffective when administered orally.

Another exotic claim for vitamins involves pantothenic acid and is also based on misinterpretation of animal experiments. When a severe deficiency was produced deliberately in male rats, their hair turned grey, and when the process was reversed, the color was restored. From this, some “experts” have deduced that deficiencies of pantothenic acid are responsible for greying hair in humans. Although greying hair may occur because of severe deficiency, grey hair does not mean a deficiency, since there are many other reasons for the condition. Clinical deficiencies in man are truly rare. There has been no discovery so far to prevent grey hair.

Skimping on protein and overcooking vegetables in water will cut back on the amount of B vitamins in a diet. But a rush for vitamin pills or expensive brewer’s yeast does more damage to the budget and offers far fewer benefits to health than consuming a proper selection of foods carefully prepared.

Natural vs. Synthetic

“Getting back to nature” can sometimes be an expensive trip—especially when you wind up where you started. Such is the case for persons paying about \$5 for 100 tablets of vitamin C “from pure rose hips,” from acerola cherries, or

for a host of combinations with natural but non-relevant ingredients, such as honey, when the same amount of pure ascorbic acid can be bought for less than \$1.

Two major fallacies lie behind the rush for so-called “natural” vitamins: (1) natural vitamins are superior to those synthesized by man; (2) vitamin products sold as “natural” don’t contain synthetic ingredients.

In truth, each vitamin has a particular molecular structure that remains the same whether synthesized in a laboratory, extracted from an animal or plant or consumed as part of an animal or plant. To be called “vitamin A,” for example, there has to be a specific molecular arrangement that is identical no matter where it is found or how it is derived. The body cannot distinguish in any way between a vitamin from a plant or animal and the same vitamin from a laboratory. Only the pocketbook “knows for sure.”

Perhaps even more revealing is that some synthetic ingredients many persons are trying to avoid today are also present in the “natural” products. In processing tablets and capsules, vitamin manufacturers must use inert substances and binders, such as ethyl cellulose, Polysorbate 80 (a synthetic emulsifier), as well as gum acacia, etc.

So it comes back down to some basic rules about eating. Your body not only needs vitamins and other nutrients, it needs the bulk and textures of real food. And it needs a balance of those foods, a balance that may not be provided in fad dieting or in an endless array of tablets and capsules.

Vitamins A and D Toxicity

Vitamins A and D were the first to explode the myth that vitamins are not toxic when administered in doses beyond body requirements.

Excessive amounts of vitamin A taken over long periods can increase pressure within the human skull and may mimic a brain tumor. Large doses of this vitamin taken over extended periods have also been known to retard growth in children and cause dry and cracked skin, headaches, bone pain and other symptoms—in fact, almost the same symptoms as for a severe deficiency.

Excessive doses of vitamin D have been known to retard mental as well as physical growth in children. It can also cause nausea, weakness, stiffness, constipation, hypertension and even death.

Because of this, FDA prohibits, except by prescription, any daily recommended intake of

a tablet or capsule of more than 10,000 International Units (IU) of vitamin A and 400 of vitamin D. While this in no way prevents the consumer from taking as much as he chooses at any one time, it does control the strength and labeling for each package.

From this regulatory action a new myth may have arisen: That all vitamins are nontoxic except for A and D. In fact, the correct interpretation of this action is that the only conclusive, actionable proof of toxicity so far is with excessive A and D. Medical libraries contain numerous references to adverse side effects from ingestion of high levels of niacin or vitamin C. In addition, the interaction of nutrients within the body is affected by high intakes of certain vitamins and minerals.

Other problems involving vitamins E and C and folic acid have also been reported recently. For example, there is evidence of a possible antagonistic effect of high intake levels of vitamin C on the nutritional status of A.

As research continues, there will be more answers as to how much is too much of a vitamin, what the entire scope of usefulness of each vitamin is, and which medical conditions may respond well to vitamin therapy. In the meantime, consumers should know that elaborate testimonials, miraculous claims and vitamins supposedly derived from exotic sources result from mere guesswork, confusion and outright fraud.

Best Sources

Vitamin A—Fish-liver oils, liver, cream, butter, whole milk, whole-milk cheeses, egg yolk, dark green leafy vegetables, yellow vegetables, yellow fruits, fortified products.

Vitamin D—Fish-liver oils, fortified milk, activated sterols, exposure to sunlight.

Vitamin E—Plant tissues—wheat germ oil, vegetable oils (such as soybean, corn and cottonseed), nuts, legumes.

Vitamin K—Green leaves such as spinach, cabbage, cauliflower and liver.

Vitamin C—Citrus fruits, tomatoes, strawberries, cantaloupe, cabbage, broccoli, kale, potatoes.

Folic acid—Widespread in foods. Liver, kidney, yeast, deep green leafy vegetables are best sources.

Thiamine—Pork, liver and other organs, brewer's yeast, wheat germ, whole-grain cereals and breads, enriched cereals and breads, soybeans, peanuts and other legumes, milk.

Riboflavin—Milk, powdered whey, liver, kidney, heart, meats, eggs, green leafy vegetables, dried yeast, enriched foods.

Niacin—Lean meat, fish, poultry, liver, kidney, whole-grain and enriched cereals and breads, green vegetables, peanuts, brewer's yeast.

Vitamin B₆—Wheat germ, meat, liver, kidney, whole-grain cereals, soybeans, peanuts, corn.

Vitamin B₁₂—Amply provided by small daily intakes of animal protein.

Biotin—Liver, sweetbreads, yeast, eggs, legumes.

Pantothenic acid—Almost universally present in plant and animal tissue. Liver, kidney, yeast, eggs, peanuts, whole-grain cereals, beef, tomatoes, broccoli; salmon.

Choline—Egg yolk is best source. Liver, heart, sweetbreads, milk, meats, nuts, cereals, vegetables, soybeans.

U. S. RDA's for Vitamins

	Unit of measurement	Infants	Children under 4 years of age	Adults and children 4 or more years of age	Pregnant or lactating women
Vitamin A	International Units	1,500	2,500	5,000	8,000
Vitamin D	International Units	400	400	400	400
Vitamin E	International Units	5	10	30	30
Vitamin C	Milligrams	35	40	60	60
Folic acid	Milligrams	0.1	0.2	0.4	0.8
Thiamine	Milligrams	0.5	0.7	1.5	1.7
Riboflavin	Milligrams	0.6	0.8	1.7	2.0
Niacin	Milligrams	8	9	20	20
Vitamin B ₆	Milligrams	0.4	0.7	2.0	2.5
Vitamin B ₁₂	Micrograms	2	3	6	8
Biotin	Milligrams	0.15	0.15	0.30	0.30
Pantothenic acid	Milligrams	3	5	10	10

Information in this publication was adapted from "Myths of Vitamins,"
FDA Consumer, March 1974.

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Cooperative Extension Work in Agriculture and Home Economics, The Texas A&M University System and the United States Department of Agriculture cooperating. Distributed in furtherance of the Acts of Congress of May 8, 1914, as amended, and June 30, 1914.