

Reading Comprehension: Vitamin Supplements

Directions: Read the following text and then answer the questions. Choose only **ONE** answer for each question. Remember to read all the possible choices before selecting one.

A Closer Look at Vitamin Supplements

The debate over the use of vitamin supplements has been a long and fierce one, with advocates on both sides of the issue claiming medical research validates their own respective viewpoints regarding the controversial little pills. Many mention research findings that seem to point to a correlation between supplementary vitamin use and improved body function. Others, however, claim that the remarkable increase of daily supplementary vitamin use over the past decade is merely a marketing success story with little evidence of significant health benefits. In fact, the benefits of any dietary factors are very difficult to prove. Studies on population groups may not consider other lifestyle or genetic factors. They usually rely on people self-reporting their own dietary habits and often such surveys only reflect short-term eating habits. Other studies are completed in the laboratory on animals or blood samples, which may not reflect the effects of nutrients on humans. Although it is clear that vitamins are required to prevent deficiency diseases, the potential benefits of higher-dose supplements are still unproven in most cases and, in fact, are being reexamined for possible safety risks.

Currently, the most important benefit claimed for the “popular” vitamins C, E, A, and beta carotene is their role as antioxidants, which are scavengers of particles known as oxygen-free radicals. These unstable particles are by-products of the body’s normal chemical processes and are increased by smoking, environmental toxins, and stress. They can damage cell membranes and interact with genetic material, possibly contributing to the development of a number of disorders including cancer, heart disease, cataracts, and even the aging process. **Deficiencies** in these vitamins have been linked to heart disease. All of these nutrients have antioxidant effects and other properties that may benefit the heart. For example, vitamin E may prevent blood clots, the formation of fatty plaques, and cell proliferation of the walls of the arteries. Vitamin C may help maintain blood vessel flexibility and thereby have benefits on blood pressure. Generally, such findings have occurred only in the laboratory.

Many studies have been undertaken to determine if such actions are powerful enough to protect a person's heart. The evidence for protection from vitamin or other supplements, however, is quite weak, and in fact each of these supplements in high doses may be harmful. Long-term studies of people who took vitamin E supplements, which are usually composed of the form alpha tocopherol, are mixed. While population studies, such as a major study of nurses, reported benefit for the heart from high vitamin E levels, usually only found in supplements, others are finding little or no benefits for men or women and some have even reported harmful effects. Some research now indicates that vitamin E supplements may even become pro-oxidants in large doses and have damaging effects. Several experts believe that the beneficial form of vitamin E is gamma-tocopherol, which is found in foods, while supplements of vitamin E, which are usually alpha-tocopherol, are not protective and, in fact, replace the beneficial gamma-tocopherol. A few people taking large amounts have experienced fatigue, nausea, and

diarrhea. Vitamin E may also cause bleeding problems, particularly in people taking anti-clotting medications.

The evidence of any heart protection from vitamin C supplements is even weaker than that found with vitamin E. In two major studies that demonstrated some benefit from vitamin E, vitamin C was not protective. One study found some benefits against stroke but not heart disease. It should be stressed, however, that studies are continuing to indicate that high doses of supplements of any of these antioxidants have pro-oxidant effects that can harm the arteries and incur other damage. Studies have suggested that in doses of only 500 mg or more, vitamin C may actually have pro-oxidant effects as opposed to being a beneficial antioxidant in normal levels and can damage cells. Since ascorbic acid increases iron absorption, people with certain blood disorders, such as hemochromatosis, thalassemia, or sideroblastic anemia, should particularly avoid high doses.

In addition to research on the link between vitamin intake and heart disease, the effects of the antioxidant vitamins E, C, and A and beta carotene in relation to cancer, also thought to be initiated by the activity of oxygen-free radicals, have been intensively studied. One study reported that people with the lowest blood levels of vitamin E are at a higher risk for all types of cancer than those with the highest levels. Another study found that tocotrienol, a vitamin E compound found in unrefined palm oil, inhibits cancer cell proliferation and causes cancer cell death. Most studies, however, have found no evidence that vitamin E or C supplements protect people from a first or a recurring cancer. In fact, studies are now reporting that excessive use of a single supplement, such as beta carotene, may interfere with other nutrients or convert into pro-oxidants and become harmful. Synthetic forms of vitamin A are being studied for their protective effects and even for treating some cancers. It should be stressed, however, that vitamin A supplements can be very toxic, even in amounts not much higher than the normal levels.

Of particular concern are the many studies that have found an increase in lung cancer and overall mortality rate among smokers who took beta carotene supplements. In determining reasons for this disturbing effect, a recent animal study reported that beta carotene increased enzymes in the lungs that actually **promote** cancerous changes. Another study suggested that beta carotene taken as a supplement may interfere with other, protective forms of vitamin A.

As a result of these research findings, many have begun to question the health benefits claimed by the vitamin supplement industry, and indeed, have even indicated a potential safety risk in many cases. While no one would argue against the necessity of vitamin intake for disease-prevention, particularly with heart disease and cancer, many warn against "self-medicating" with the supplements and advise professional medical advice before beginning a dietary program that includes use of vitamin pills. Perhaps further evidence of the **hazards** of vitamin supplements will lead to changes in the current labeling laws set by the Food and Drug Administration that seem to protect the industry above the consumer.

- 1) What is the pattern of organization of this article?
 - a) comparison and contrast
 - b) definition
 - c) benefits
 - d) descriptive

- 2) According to the article,
 - a) there is only one known benefit of vitamins
 - b) the link between supplements and disease prevention is weak
 - c) vitamin supplements have antioxidant effects
 - d) a high intake of vitamin supplements can damage cell membranes

- 3) Definitive evidence regarding dietary factors and disease is difficult to find because
 - a) studies do not take into account long-term dietary programs
 - b) studies are often too limited and often neglect other interfering factors
 - c) subjects may be untruthful about their daily dietary programs
 - d) all of the above

- 4) Smoking leads to a higher count of oxygen-free radicals.
 - a) True
 - b) False

- 5) What does “they” in paragraph two refer to?
 - a) oxygen-free radicals
 - b) by-products
 - c) normal chemical processes
 - d) smoking, environmental toxins, and stress

- 6) What can be inferred from the following statement from paragraph two:
Generally such findings have occurred only in the laboratory.
 - a) that studies on vitamin C effects on blood pressure have been conducted in laboratories only
 - b) that studies on vitamin C effects on blood pressure should be conducted only in laboratories
 - c) that researchers have not found evidence of vitamin C affecting blood pressure outside of the laboratory
 - d) that researchers have now found evidence of vitamin C affecting blood pressure outside of the laboratory

- 7) “Deficiencies’ in paragraph two can best be replaced by
 - a) an abundance of
 - b) a lack of
 - c) abnormalities in
 - d) an increase in

- 8) Oxygen-free radicals may lead to the development or progression of
- heart disease, cancer, blood disorders, cataracts
 - high blood pressure, cataracts, aging, heart disease
 - cancer, aging, heart disease, cataracts
 - cancer, aging cataracts, high blood pressure
- 9) What does the prefix “pro,” as in “pro-oxidant” most likely mean?
- for
 - against
 - above
 - below
- 10) What did the vitamin E study involving the group of nurses indicate?
- that vitamin E supplements become pro-oxidants
 - that the role vitamin E plays in heart-disease prevention is unclear
 - that the “nurse study” reflects only short-term eating habits
 - that vitamin E supplements provide little or no benefit for men or women
- 11) Which of the following statements is true?
- vitamin E may protect against heart disease and stroke
 - vitamin C may protect against heart disease and stroke
 - vitamin E may protect against stroke and cancer
 - vitamin C may protect against stroke but not cancer
- 12) It is suggested that
- only 500 mg of vitamin C can lead to cell damage
 - less than 500 mg of vitamin C can lead to cell damage
 - as little as 500 mg of vitamin C can lead to cell damage
 - exactly 500 mg of vitamin C can lead to cell damage
- 13) A person who has a high blood level of vitamin E
- is at a higher risk for developing cancer
 - is at a reduced risk for developing cancer
 - is protected only from a first or recurring cancer
 - none of the above
- 14) What is the main idea of paragraph five?
- the role of vitamins in heart disease compared with that of cancer
 - the role of vitamins in cancer prevention
 - the effects of vitamins E,C, A and beta carotene
 - the dangers of excessive use of supplements in cancer treatment and prevention
- 15) Based on what you have read in this article, in what way are heart disease and cancer similar?
- both can be prevented by increased intake of vitamin E
 - both may be caused by the effects of oxygen-free radical activity
 - neither is significantly affected by vitamin C intake

- d) neither shows any response to high-dose supplement use
- 16) What does “promote” in paragraph six mean?
- a) encourage
 - b) prevent
 - c) respond to
 - d) interfere with
- 17) Research into the effects of supplements on lung cancer seem to indicate that
- a) beta carotene supplements cause cancer
 - b) beta carotene supplements lead to lung cancer only when taken with vitamin A
 - c) vitamin A supplements may counteract the beneficial activity of beta carotene
 - d) beta carotene supplements may counteract the beneficial activity of vitamin A
- 18) “Hazards” in the concluding paragraph can best be defined as
- a) benefits
 - b) dangers
 - c) disadvantages
 - d) difficulties