Vitamin A is an essential nutrient necessary for maintenance of normal epithelial tissue and for optimal growth. Impaired dark-adaptation and night blindness are well known manifestations of vitamin A deficiency. Although vitamin A is present in many foods, it cannot be assumed that all individuals receive adequate amounts. Preliminary reports from the recent 10-state nutrition survey show that a significant proportion of the population has a low intake of vitamin A and low plasma vitamin A levels. Thus it would appear important to improve the diet of a considerable segment of the population or provide a vitamin A supplement for them.

Vitamin A is found in food in carotenoids, which are converted to vitamin A in the intestine; or, it may be preformed, as in foods from animal sources (or in diet supplements). There is no danger of excessive intake of vitamin A when carotenoids are ingested.

The recommended daily allowances of vitamin A are: for infants and children up to age 12 years, from 1,500 to 4,500 I.U.; for adults, 5,000 I.U.; and for pregnant women 6,000 I.U. Although diets of many individuals provide higher levels of vitamin A, there are no known advantages in exceeding these allowances in normal individuals.

Thus, for prophylactic use or as a safeguard against inadequate intake, there are properly formulated supplements available on the market, i.e., those that contain 1,500 to 4,000 I.U. for infants and children, 5,000 I.U. for adults, and 6,000 I.U. for pregnant women.

However, excessive intake of preformed vitamin A may result in serious and potentially toxic effects. The easy availability of vitamin A in large doses without prescription exposes individuals to the danger of severe clinical toxicity. Physicians should be aware of the circumstances in which vitamin A toxicity may occur and its clinical manifestation.

Doses of 25,000 I.U. or more of vitamin A, which are present in some vitamin preparations, should not be used, unless severe deficiency of vitamin A, documented by an abnormally low blood level, exists. These doses taken daily for an extended period of time pose a risk, particularly to the pregnant woman and fetus. Studies in pregnant animals have shown that large doses of vitamin A produce central nervous system anomalies with hydrocephalus, encephalocele, and other teratological effects in the offspring. Infants may develop a bulging fontanel or hydrocephalus when given about 10 times the recommended daily allowance of vitamin A for several weeks.

The older child or adult with hypervitaminosis A manifests pseudotumor cerebri, a syndrome that may simulate the presence of an intracranial neoplasm, with signs and symptoms of unlocalized increased intracranial pressure, such as headache, nausea, vomiting, lethargy, tinnitus, and diplopia. Physical findings are usually limited to the eyes, with sixth nerve paresis, papilledema, and, in long-standing cases optic atrophy and even blindness. Ingestion of as little as 25,000 to 50,000 I.U. of vitamin A per day for as short a period as 30 days can induce signs of increased intracranial pressure. Nonspecific findings encountered at all ages include dry skin and mucous membranes, sparse hair, brittle nails, myalgia, bone pain, arthralgia, abdominal pain, splenomegaly and hypoplastic anemia with leukopenia.

Despite awareness of the potential dangers of vitamin A toxicity, the incidence of hypervitaminosis A appears to be increasing. Hypervitaminosis A may result through...
easy availability of high potency vitamin preparations without prescription and by the overzealous parent who frequently administers vitamins under the popular premise, that, if one is good, two are better. The problem may be compounded by the use of bizarre, highly fortified health foods.

Serious problems of hypervitaminosis A have arisen in the use of large doses of vitamin A in treatment of acne vulgaris in adolescents. The clinical impression that high doses of vitamin A (50,000 I.U. to 150,000 I.U. per day) over a prolonged period are beneficial treatment for acne vulgaris has not been validated by well controlled clinical trials, nor is the rationale for this method of treatment clear.19

Vitamin supplements with proper levels of vitamin A for infants, children, adults, and pregnant women are available on the market. These should be prescribed when indicated. Vitamin supplements containing more than the daily doses recommended (6,000 I.U.) should not be used.

CONCLUSION

The grave risks resulting from the unrestricted sale of high concentrations of vitamin A make it imperative that an active curb, by appropriate legislation if necessary, be placed on the over-the-counter marketing of high potency vitamin A preparations. Physicians should be aware of the vitamin A content in the preparations they prescribe for their patients. They also should caution parents regarding the dangers of overdosage of this vitamin.

Committee on Drugs
SUMNER J. YAFFE, M.D., Chairman
Committee on Nutrition
L. J. FILER, JR., M.D., Chairman

REFERENCES

THE USE AND ABUSE OF VITAMIN A
Sumner J. Yaffe and L. J. Filer, Jr.

Pediatrics 1971;48:655

Updated Information & Services
including high resolution figures, can be found at:
/content/48/4/655

Permissions & Licensing
Information about reproducing this article in parts (figures, tables) or in its entirety can be found online at:
/site/misc/Permissions.xhtml

Reprints
Information about ordering reprints can be found online:
/site/misc/reprints.xhtml
THE USE AND ABUSE OF VITAMIN A
Sumner J. Yaffe and L. J. Filer, Jr.
Pediatrics 1971;48:655

The online version of this article, along with updated information and services, is located on the World Wide Web at:
/content/48/4/655