

Symposium on

The Role of Some of the Newer
Vitamins in Human Metabolism
and Nutrition*

VANDERBILT University School of Medicine welcomes this group of scientists. The fact that such a distinguished group of speakers has agreed to participate in this symposium and the large out-of-town attendance indicate the wide interest in the topics to be discussed. All of us are indebted to the National Vitamin Foundation which has made this symposium possible. Those of us directly concerned with the symposium are particularly indebted to Doctor Robert S. Goodhart, Scientific Director of the National Vitamin Foundation, and to his office for their cordial assistance in so many ways in the organization of the meeting.

Each species has its own particular vitamin-requirement spectrum. The dietary requirement spectrum for man ranges from the obvious to the occult—from the clear dietary dependence for ascorbic acid to the less defined need for nutrients such as pantothenic acid. In at least the instance of vitamin K, the nutrient plays an essential role in man, but the evidence indicates that he is not dependent upon the diet for a supply of this vitamin. This nutrient is produced by gastrointestinal synthesis. Several species of animals possess an ability to synthesize one or another vitamin in varying amounts—thus the rat can make both niacin and ascorbic acid in quantity sufficient for its needs, but requires niacin if the dietary supply of specific precursors is limited. Where man is known to synthesize vitamins, the synthesis is from specific precursors—vitamin A from carotene, niacin from tryptophan.

One may identify three important broad levels of study of a vitamin in man: (1) *dietary deficiency*, whereby the syndrome resulting from withdrawal of a factor from the diet of a dependent species is investigated;

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(2) *non-dietary deficiency*, in which the syndrome is studied which results from a deficiency of an essential "metabolic nutrient" which, under usual circumstances, is made either in the gut or tissues of man in quantity to meet the physiologic needs; and (3) *metabolic deficiency*, in which a syndrome or effect of a deficient quantity of the vitamin at the tissue level is studied. "Metabolic deficiency" does not depend upon the factor being a dietary essential. While the metabolic deficiency may be induced by dietary lack, it may result also from removal or blockage of a synthetic process or by interference with a key metabolic reaction in which the vitamin (or its derivative) plays some role. Studies at this level, such as those employing antivitamins or antimetabolites, give important information as to whether a vitamin is an *essential metabolite* for a species. If such studies indicate that a vitamin is an essential metabolite, the other two levels of study provide the complete nutritional picture of the factor.

In keeping with these thoughts, we have arranged this symposium on the role of some of the newer vitamins in human metabolism and nutrition. It is our hope that it will bring up to date the evidence bearing on the roles in human nutrition of vitamin B₆, tocopherol, and pantothenic acid.

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