

Preface

It was first observed in 1926 that rats administered a diet deficient in riboflavin developed a type of dermatitis termed *acrodynia*. But it was not until 1934 that György differentiated between riboflavin and the acrodynia preventing factor, which he called "vitamin B₆." Within 5 years vitamin B₆ was isolated in crystalline form, characterized as 3-hydroxy-4,5-dihydroxymethyl-2-methyl pyridine (pyridoxine or pyridoxol) and chemically synthesized.

Pyridoxine is distributed throughout the entire plant and animal kingdoms. Plants synthesize pyridoxine, whereas animals and some bacteria and fungi must obtain it from external sources. In mammalian tissues the enzymatic conversion compounds, pyridoxal and pyridoxamine, are also present as well as the catalytically active forms of vitamin B₆, pyridoxal 5'-phosphate, and pyridoxamine 5'-phosphate. The term "vitamin B₆" is now used to refer to all 3-hydroxy-2-methyl pyridine derivatives that can mimic the biological activity of pyridoxine.

Pyridoxal 5'-phosphate is unusual among the coenzymes and cofactors in terms of the large number of different enzyme reactions that are dependent on its presence. It functions as a coenzyme in the deamination, decarboxylation, transamination, racemization, and transsulfuration of amino acids and in the metabolism of fats and carbohydrates. Elucidation of the catalytic role of pyridoxal phosphate in these enzymatic reactions was achieved by Snell and Braunstein and their associates with the use of model systems. In addition to its role as a coenzyme, vitamin B₆ is associated with metabolism in the brain, tryptophan metabolism, the metabolism of other vitamins and hormones, the development of immune mechanisms, the formation of endogenous oxalates, and the occurrence of uremia, liver disease, anemias, and dental caries.

This volume contains 18 chapters that emphasize the more biochemical, nutritional, and medical aspects of vitamin B₆. Chapters on pyridoxal binding sites, resolution and reconstitution, modification of proteins by B₆, and suicide inhibition are included. Each of the important B₆-containing enzyme systems, transaminases, racemases, amino acid decarboxylases, glycogen phosphorylase, and choline diphosphate 4-keto-6-deoxy-D-glucose-3-dehydrogenase, as well as β - and γ -elimination and replacement reactions, are covered. Chapters on the metabolism and catabolic pathways, therapeutic use, and pharmacology and nutrition related to B₆ complete the medical and nutritional aspects.

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