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Vitamin K

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6.1 INTRODUCTION

The first indication of the existence of vitamin K occurred in 1929 whilst Henrik Dam was investigating the possible essentiality of cholesterol in the diet of the chick. When the chicks were fed diets which had been extracted with nonpolar solvents to remove the sterols, they developed internal haemorrhages and blood taken from these chicks clotted slowly. In 1935, Dam proposed that the curative factor present in vegetable and animal sources was a new fat-soluble vitamin which he called vitamin K. The first isolation of vitamin K₁ from alfalfa was independently reported by the teams of Doisy, Dam and Karrer in 1939. Vitamin K₂ was isolated from putrified fish meal by Doisy’s group in 1941.
6.2 CHEMICAL STRUCTURE AND NOMENCLATURE

The term 'vitamin K' is a generic one used for all compounds possessing cofactor activity for $\gamma$-glutamylcarboxylase. Two forms of vitamin K exist in nature: vitamin K$_1$ is synthesized by green plants in the chloroplasts and vitamin K$_2$ is synthesized by bacteria. The chemical structures of these compounds are shown in Figure 6.1.

![Chemical Structures](image)

\(\text{Figure 6.1 Structures of the vitamin K-active compounds. (a) Phylloquinone (vitamin K}_{1}\); (b) menaquinones (vitamin K}_{2}\); (c) menadione. The vertical dotted lines in (a) delineate the four isoprene units.}\)