

Overview: Vitamin K & the Nervous System



As part of its Thematic Review Series, *Advances in Nutrition*, an international review journal, published “Vitamin K and the Nervous System: An Overview of Its Actions” by Guylaine Ferland of the Department of Nutrition, Université de Montréal, Montreal, Quebec, Canada.

According to the author, the role of vitamin K in the nervous system has been somewhat neglected compared with other physiological systems despite the fact that this nutrient was identified some 40 years ago as essential for the synthesis of sphingolipids. Present in high concentrations in brain cell membranes, sphingolipids are now known to possess important cell signaling functions in addition to their structural role.

“In the past 20 years, additional support for vitamin K functions in the nervous system has come from the discovery and characterization of vitamin K-dependent proteins that are now known to play key roles in the central and peripheral nervous systems,” says Ferland. “Notably, protein Gas6 has been shown to be actively involved in cell survival, chemotaxis, mitogenesis, and cell growth of neurons and glial cells.”

Although limited in number, Ferland offers that studies focusing on the relationship between vitamin K nutritional status and behavior and cognition have become available, pointing to diet and certain drug treatments (i.e., warfarin derivatives) as potential modulators of the action of vitamin K in the nervous system.

“New knowledge has been gained about menaquinone-4 (MK-4), the principal K vitamer in brain, which could have far-reaching effects in the brain and other components of the nervous system ... A limited number of studies have provided evidence of a relationship between vitamin K status, behavior, and cognition,” Ferland writes. “This review presents an overview of the research that first identified vitamin K as an important nutrient for the nervous system and summarizes recent findings that support this notion.”

Reference: Guylaine Ferland. Vitamin K and the Nervous System: An Overview of its Actions. 2012 American Society for Nutrition. *Adv. Nutr.* 3: 204–212, 2012.

