

Exploring the Vital Role of Vitamins in Disease Prevention and Health Maintenance

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Abstract: *The human body relies on vitamins to carry out fundamental functions, yet it is unable to produce them on its own. Certain nutrients, like phytochemicals, are considered essential as the body cannot produce them in sufficient quantities. While ideally vitamins are obtained through a healthy diet, supplements are often necessary. Vitamins are crucial for growth, metabolism, and overall health, with vitamin D being the only one the body can produce. Vitamins, related molecules with similar vitamin activity, make up the bulk of vitamins. Vitamin C is a potent antioxidant drug used in dermatology to treat photoageing and hyperpigmentation. L-ascorbic acid is the active form, with limited oral absorption, making topical application more effective. Its electron-donating ability is crucial for various physiological processes, and its deficiency can lead to scurvy. Vitamin E (tocopherols and tocotrienols) has demonstrated significant biological effects on enhancing human health and play a promising role in food systems. Supplementation of α -tocopherol up to 0.2% in oils provides higher oxidative stability, making vitamin E a valuable functional ingredient for food preservation and nutritional quality enhancement. This study investigates the roles of vitamins C and E in disease prevention and management, highlighting their antioxidant properties and physiological functions. Both vitamins are crucial for neutralizing free radicals, thereby reducing oxidative stress linked to various diseases, including cardiovascular conditions, cancer, and neurodegenerative disorders. Vitamin C supports immune function and collagen synthesis, while Vitamin E contributes to cellular integrity and skin health. The research underscores the synergistic effects of these vitamins, which enhance each other's antioxidant capabilities and may improve overall health outcomes. By addressing their roles in disease processes, the study emphasizes the importance of adequate vitamin intake for promoting health and preventing illness.*

Keywords: Vitamins, Supplementation, Healthy Diet, Deficiency, Daily Requirement, Biological Importance, Role in Diseases, Benefits, Adverse Effect, Interactions