

Abstract

Industrial production of vitamins and carotenoids is fundamental to modern nutrition and health, ensuring the global supply of essential micronutrients for humans and animals. Over the past century, scientific discoveries and technological advances have transformed the synthesis and manufacturing of these compounds. The process involves overcoming significant challenges, such as complex chemical structures, sustainability requirements, and the need for efficient, high-quality production methods.

Vitamins A, C, D, E, K, the various B vitamins, and carotenoids are produced using a range of technologies: chemical synthesis, fermentation, and extraction from natural sources. Innovations in process engineering, flow chemistry, and solid-state catalysis have improved efficiency and reduced environmental impact. The legacy of pioneering scientists and companies, such as dsm-firmenich, has shaped the industry and established robust supply chains for these critical nutrients.

Industrial strategies for producing vitamins A, E, B₁, B₂, B₆ and B₁₂ will be presented. Also market dynamics, regulatory considerations, and the ongoing commitment to innovation and sustainability in micronutrient production will be addressed. Understanding these challenges and solutions provides valuable insight into the future of micronutrient production and its role in global health.

