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Enhanced dermal delivery of vitamin D3 through microencapsulation**Ashok Hegde¹, Prabakaran Ravichandran², Ananthanag Thambarahalli³,
Ramasamy Annadurai⁴ and Gurpreet Kalsi⁵**^{1,2,3,4,5} ITC Life Sciences and Technology Center India**Abstract**

Vitamin D is an essential micronutrient required for normal human physiology, specifically for calcium absorption, healthy skin and hair follicle growth. Natural way of Vitamin D synthesis in skin upon exposure to sunlight is in the decline due to various factors including sedentary lifestyle, indoor stay, varying food habits, religious and socioeconomic factors. It is further affected by forced indoor stays and working from home situation during these pandemic times. Vitamin D deficiency leads to various physiological conditions including bone pain, skin acne and psoriasis. Large portion of world population is deficient in Vitamin D3 and its deficiency is widely prevalent (70-100%) in Indian population as well. Oral supplementation of vitamin D3 has drawbacks of reduced absorption/bioavailability, short-half life in serum and low amounts available for metabolism. Transdermal delivery has been considered as a potent alternative to oral supplementation. Dermal delivery of novel microencapsulated Vitamin D3 may offer significant benefits in terms of enhanced bioavailability at the target sites (deep layers of skin, hair follicles and sweat pores), with decreased toxicity. Preliminary in vitro studies from our lab have shown enhanced accumulation of microencapsulated Vitamin D3 in HaCaT cells and 3D skin. Further studies are in progress to ascertain the transdermal absorption and potential bioavailability through a microencapsulated composition.

Biography:

Dr. Ashok Hegde has completed his PhD from National University of Singapore, and postdoctoral studies from Institute of molecular and Cell Biology, Singapore and University of Michigan, Ann Arbor, USA. He is currently a Research Scientist at ITC Life Sciences and Technology Center, Bangalore, India. He has about two decades of research experience, and contributed to over fifty patents and publications. His research interests are in the area of skin and hair follicle biology.

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