

Potential toxicity of cellulose nanocrystals examined

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Novel nanomaterials derived from cellulose have many promising industrial applications, are biobased and biodegradable, and can be produced at relatively low cost. Their potential toxicity—whether ingested, inhaled, on contact with the skin, or on exposure to cells within

the body—is a topic of intense discussion, and the latest evidence and insights on cellulose nanocrystal toxicity are presented in a Review article in *Industrial Biotechnology*.

Maren Roman, PhD, Virginia Tech, Blacksburg, VA, describes the preparation of cellulose nanocrystals (CNCs) and highlights the key factors that are an essential part of studies to assess the potential adverse health effects of CNCs by various types of exposure. In the article ["Toxicity of Cellulose Nanocrystals: A Review"](#), Dr. Roman discusses the current literature on the pulmonary, oral, dermal, and cytotoxicity of CNCs, provides an in-depth view on their effects on human health, and suggests areas for future research.

The article is part of an IB IN DEPTH special research section entitled "Cellulose Nanotechnology: Fundamentals and Applications," led by Guest Editors Jose Moran-Mirabal, PhD and Emily Cranston, PhD, McMaster University, Hamilton, Canada. In addition to the Review article by Dr. Roman, the issue includes Reviews by M. Rose, M. Babi, and J. Moran-Mirabal ("The Study of Cellulose Structure and Depolymerization Through Single-Molecule Methods") and by X.F. Zhao and W.T. Winter ("Cellulose/cellulose-based nanospheres: Perspectives and prospective"); Original Research articles by A. Rivkin, T. Abitbol, Y. Nevo, et al. ("Bionanocomposite films from resilin-CBD bound to cellulose nanocrystals), and P. Criado, C. Fraschini, S. Salmieri, et al. ("Evaluation of antioxidant cellulose nanocrystals and applications in gellan gum films"); and the Overview article "Cellulose Nanotechnology on the Rise," by Drs. Moran-Mirabal and Cranston.

"A comprehensive and objective assessment of the environmental toxicity of [cellulose nanocrystals](#) is important for deployment of these crystals for a number of exciting [industrial biotechnology applications](#)," says Co-Editor-in-Chief Larry Walker, PhD, Biological and Environmental Engineering Department, Cornell University, Ithaca, NY.

More information: The article is available on the [*Industrial Biotechnology*](#) website.

Provided by Mary Ann Liebert, Inc

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