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Toxicity of nano structures

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Abstract

Research work on the synthesis, designing and characterization of nanostructures has been extensively documented in the last decades. This in-depth documentation not only enabled researchers to understand the relationship between the nanostructure properties, size, shape, and composition but also have given them immense control over their manufacturing. This enhanced knowledge, cemented the switching of academic nanotechnology research into industrial products. However; despite the recent accomplishment in synthesis, characterization and application of the nanostructure materials, a complete knowledge/information of their interactions with biological systems is still not available. Hence, it is difficult to forecast the injurious biological responses of these novel nanostructures to humans, animals, insects and plants. Due to this hesitancy, safety regulatory authorities and general public have raised their concerns to the manufacturing and use of nanostructure-based products. Consequently, it is vital for the researchers to concentrate more on safe designing, manufacturing and characterization of nanostructures before these could meet human and communal needs. This review is taking an overview of the increasing investments in nanotechnology, designing, synthesis and characterization of nanostructures and their *in vitro* and *in vivo* toxicities.