



The important role of protein corona formation on Fate and Behaviour of Nanoparticle in Biological System

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Many nanomaterials are promising in biological detection, diagnosis, and therapy for diseases and have shown great potential for biomedical applications. Therefore, the toxicity of nanomaterials becomes an increasing concern. Nanotoxicology is an emerging field to characterize and categorize the interactions of nanoscale materials with biologic systems, and consider the potential health and environmental effects caused by engineered nanomaterials.

Both *in vitro* and *in vivo* studies were applied to evaluate biological consequence of nanomaterials. The underlying mechanisms were investigated including induction of oxidative stress, inflammation and autophagy. The intrinsic physicochemical properties of nanomaterials have decisive influence on their biological consequences and toxicity. These properties include size, shape, surface charge, chemical composition, surface modification, metal impurities, agglomeration and dispersion, degradation, as well as the formation of “protein corona”. It is important to obtain a better understanding of the uptake, trafficking, pharmacokinetics, clearance, and role of nanomaterials in biological systems, so that their possible undesirable effects can be avoided.

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