

Title of Research:

12_S02-01

Evaluation of the relationship between physicochemical properties, bio-distribution, and safety of nanomaterials

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Summary of Research:

Advances in nanotechnology have led to the recent development of many nanomaterials. However, the increasing use of nanomaterials has prompted public concern regarding their potential safety. Because nanomaterials have great potential to improve the quality of human life, it is essential to ensure the safety of nanomaterials for the development of safety-assessed products. The safety of nanomaterials is related to the dose, concentration, and duration of the exposure and their abundance and persistence in tissue. Accordingly, a systematic and thorough analysis of the Absorption, Distribution, Metabolism, and Excretion (ADME) of nanomaterials is essential as the basis for determining the potential for risk to human health. In addition, understanding of the ADME of nanomaterials is necessary in regard to their tissue toxicity. In this study, we examined the absorption of nanomaterials via skin route. We used nickel particles with the diameter of 1000 nm (NP1000) or less than 100 nm (NP100). Nickel particles are generally used for industrial products, such as a ceramic capacitor. In addition, nickel ion is known to induce metal allergy to the skin exposure. Our results showed that the ion and the nickel particles used in this study could not penetrate the skin in vivo and in vitro, although more precise investigation is needed. The data could provide information to ensure the safety of nanomaterials.

Timeline: November 1, 2012 –

Topics:

Poster presentation at The 2nd LRI Annual Conferences “Evaluation of the relationship between physicochemical properties, biodistribution, and safety of nanomaterials”