

S18-6 Safety analysis of nanomaterials about biodistribution and immunotoxicity

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A diverse array of nanomaterials such as nanosilica and carbon nanotubes are in widespread use due to the development of nanotechnology. Nanomaterials are already being applied in universal fields such as electronics, sunscreens, cosmetics, and medicines, because they have unique physicochemical properties such as high conductivity, strength, durability, and chemical reactivity. The advent of nanomaterials has also provided extraordinary opportunities for biomedical applications. However, the increasing use of nanomaterials has raised public concern about their potential risks to human health. In particular, recent reports indicated that carbon nanotubes induced exaggerated inflammation and mesothelioma-like lesions in mice. However, few studies have examined the immunotoxicity of nanomaterials and it is essential to progress studies on the immunotoxicity of nanomaterials to ensure their safety. In this regard, we aim to elucidate the pharmacodynamics and immunotoxicity of nanomaterials, in order to develop novel safe nanomaterials and to establish scientifically based regulations. In this study, we will introduce our data on the immunotoxicity of nanosilica, especially the relationship between physical properties (primary grain size, configuration and surface charge), pharmacodynamics of these materials, and their immunotoxicity. We consider that our study will improve the quality of human life by safely using nanomaterials, which can benefit society in general.