

S18-5 Safety analysis of nanomaterials about intracellular distribution

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Recently, nanomaterials (NMs) showing useful properties such as controlled release and tissue permeability have been developed for practical use as medicines and cosmetics. On the other hand, because NMs possess innovative properties, kinetics, and biological effects distinct from those of micro size bulk materials, the potential harmful effects of NMs on humans are raising concerns about their safety. Therefore, there is an urgent need for risk assessment of NMs. However there is no information about association of nanomaterial properties with kinetics (exposure, absorption, distribution, and excretion). In this respect, we have demonstrated that that NM with a diameter of under 100 nm can penetrate the stratum corneum of mouse skin and are taken up by living cells such as keratinocytes and Langerhans cells. Additionally, silica nanoparticles with a diameter of 70 nm taken up by Langerhans cells enter the nucleus, indicating the risk of genotoxicity. In this presentation, I would like to discuss the relationship between particle size, intracellular distribution, and hazard effect.