

S18-7 Safety analysis of nanomaterials about reproductive development

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Nanomaterials acquire revolutionary functions such as anti-inflammatory and anti-viral effects by increasing surface area per unit weight, due to the reduction to nano size. Such nanomaterials are rapidly put to practical use without safety evaluation. This is because it is widely assumed that nanomaterials are merely of the same molecular composition as existing materials of more than submicron size, and that nanomaterials cannot be absorbed from the digestive tract or skin as is the case with existing materials of more than submicron size. On the other hand, as was the case with thalidomide, evidence shows that fetuses and infants are affected more than adults by a variety of environmental toxins, because of physiological immaturity. Thus, placental or breast milk-mediated exposure to nanomaterials may possibly induce unexpected biological effects. To our knowledge, however, no studies have examined effects of pregnant animal exposure to nanomaterials on transitivity to placenta or infants, or on maintenance of pregnancy. Therefore, using nanosilica particles (nSPs) employed as additives in cosmetics and foods, we will report on the efficiency of transitivity of nSPs of various diameters to the circulation through the placental barrier after nanomaterial exposure and the risks of nSP exposure to pregnant mice. In this symposium, we will discuss the development of safety in nanomaterials and the maintenance of good health.