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BOOK OF ABSTRACTS

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F-02-SL

ACUTE ORAL INTAKE OF SURFACE-MODIFIED TiO_2 NANOPARTICLES PROMOTES BIOCHEMICAL AND MORPHOLOGICAL CHANGES IN RAT FEMALE REPRODUCTIVE SYSTEM

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ABSTRACT

Titanium dioxide nanoparticles (TiO_2 NPs) are commonly used in various industrial and consumer products, including cosmetics, pharmaceuticals, food and beverages, etc. Since bare TiO_2 NPs pose a risk to reproductive health, we compared their toxic effect to effect of TiO_2 NPs surface-modified with salicylic acid (TiO_2/SA NPs) or 5-amino salicylic acid (TiO_2/5-ASA NPs) in female rats 14 days after acute oral treatment. In rat ovaries, oviducts, and uterus, bare TiO_2 NPs and TiO_2/SA NPs promoted acute toxicity along with the hormonal imbalance, irregular estrous cycle, swelling of the genital organs that increased organ-to-body mass ratio accompanied with prooxidative shift in redox status. The observed effects were less pronounced in TiO_2/5-ASA NPs-treated rats. According to the presented results, surface-binding of 5-ASA, but not SA are able to suppress the toxic effects of bare TiO_2 NPs in rat female reproductive system. Further studies are necessary to confirm these assumptions.