

The Photocatalytic Effects of Modified Hydrothermal Nano Titania Extraction on the Skin and Behavior of Sprague-Dawley Rats

ABSTRACT

Background. Potential antibacterial substances, such as titanium dioxide (TiO₂), are being extensively studied throughout the research world. A modified hydrothermal Nano Titania extraction was shown to inhibit *Staphylococcus aureus* growth in the laboratory. However, the toxicity effect of the extract on rats is unknown. In this study, we observed the effects of a modified hydrothermal Nano Titania extraction on the skin and behavior of Sprague-Dawley rats.

Methods. Sprague-Dawley (*Rattus norvegicus*) rats were used as the experimental animals. The skin around the dorsum of the tested animals was shaved and pasted with 0.1 mg and 0.5 mg of the Nano Titania extraction. The color and condition of the pasted area and the behavior of the animals were observed.

Results. 0.1 mg Nano Titania extraction application on the dorsum of the rat produced no skin color changes at day 1, day 3, day 5, or day 7 post application. There were no changes in their behavior up to day 7 with no skin rashes or skin scratches seen or fur changes. However, 0.5 mg of Nano Titania extraction resulted in redness and less fur regrowth at day 7.

Conclusions. A 0.1 mg modified Nano Titania extraction was observed to have no effect on the skin of Sprague-Dawley rats.