

Toxic effects of titanium dioxide on microbial activity and in vivo metabolite concentration

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Nanotechnologies are developing rapidly in diversity industries. Especially titanium dioxide has been widely used in many products as an additive, including as a white pigment, food colorant, and cosmetic cream. However, with useful properties, concerns about their potential toxic effects and environmental impact become known. Antimicrobial activity with commercially available TiO₂ nanomaterials were tested using Gram-negative *Escherichia coli*, Gram-positive *Bacillus subtilis*, and yeast, *Saccharomyces cerevisiae* yeast strain. TiO₂ nanoparticles were tested to observe effects of UV wavelength and UV exposed time. In vivo metabolite, G6P (glucose 6 phosphate) was measured by GC/MS. In percentage survival rate, *S. cerevisiae* showed highest survival rate than other two species. TiO₂ nanoparticles have toxic effects only UVC range. And G6P concentration of TiO₂ exposed cell is higher than control.