



Research article

Biosynthesis and evaluation of TiO₂ and ZnO nanoparticles from *in vitro* stimulation of *Lactobacillus johnsonii*

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Key words: TiO₂ and ZnO Nanoparticles, UV, FTIR, TEM and Lactobacillus.

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Abstract

The microbial synthesis of nanoparticles is advantageous more other chemical and physical methods. Biosynthesis of TiO₂ and ZnO Nanoparticles (NPs) were carried out using *Lactobacillus johnsonii* that isolated from human gut and identified biochemical in previous study. Results of molecular identification using 16S DNA of Lactobacillus strain revealed that similarity in phylogenic tree is 100% with *Lactobacillus johnsonii*. Synthesis in MRS broth and evaluation of TiO₂ and ZnO nanoparticles from *Lactobacillus johnsonii* carried out using UV, FTIR, and TEM. Charts results of UV experiment for both nanoparticles indicated that absorbance at 409 and 492 nm is typically for TiO₂ and ZnO Nanoparticles respectively. Also, FTIR peaks of TiO₂ chart has confirmed that the stronger ability of proteins to bind metal, and grow the possibility of coating the metal nanoparticles with proteins to prevent agglomeration of the particles. TEM images at different magnification explain the shape and size range of TiO₂ and ZnO Nanoparticles. TEM of TiO₂ NPs recorded irregular shapes but, ZnO NPs spherical, results shows also, average size between 4-9 nm in both cases.