

## Potential role of zinc oxide nanoparticles in human glioblastoma cell line (SF-767)

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Nanomaterials are emerging milestones in Photodynamic Therapy (PDT) ongoing research with tremendous multiple clinical applications, diagnostic as well as antitumor, in many microbial nonmicrobial treatment purposes and are front runners in such applications due to their high quantum yield, size dependent tunable emission of wavelength over wide spectrum of light. Nano-dependent PDT technique involving NPs is simple, biosafe, biocompatible in dark, enhances endogenous fluorescence, noninvasive, fast with their least permeability in normal cells but ZnO NPs with high surface to volume ratio and biocompatibility can be used as an efficient photosensitizer carrier system and at the same time providing intrinsic white light needed to achieve cancer cell necrosis. In present experiment, I am interested to synthesize zinc oxide (ZnO NPs) by using sol hydrothermal route under super critical condition by applying autogenous pressure. After successful growth of mentioned Nanoparticles, the toxicity of (ZnO NPs) will be investigated in human glioblastoma (SF-767). I want to study the toxicity of NPs alone and complex with different photosensitizer (PS) e.g. aminolevulinic acid (ALA) by using SF-767 as an experimental model. Mechanism of cytotoxicity appears to involve the generation of singlet oxygen inside the cell. At the end, cell viability will be determined by neutral red assay (NRA), the results will be verified by microscopic analysis (visualization) of cell morphology.

**Keywords:** ZnO nanorods, 5-aminolevulinic acid, reactive oxygen species, human brain carcinoma

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