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**Synthesis, Characterization and Synergistic Activity of Cerium-Selenium
Nanobiocomposite of fungal L-Asparaginase against Lung Cancer**

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Abstract

Cerium selenium nanobiocomposites are novel lung cancer drug as they possess combined anti-cancer property of nanocomposite with L-asparaginase working in synergetic manner. Cerium selenium nanobiocomposites were synthesized using simple co-precipitation method. The size of the nanocomposite was found to be in the range 60-90 nm. Maximum absorption was observed using UV spectrum in the range of 350-490 nm. The nanobiocomposites was characterized using H-NMR and FTIR analysis it was found that secondary alkyl, allylic carbon, monosubstituted alkenes and sp^2 hybridized C-H bonds of alkenes were involved in binding of cerium and selenium nanoparticles with L-asparaginase for the formation of cerium selenium nanobiocomposite. The spherical shape of the cerium selenium nanobiocomposites were confirmed using SEM. Anticancer activity was checked by performing MTT assay resulting in 70.84 % and 48.78% toxicity for maximum concentration of 1000 ($\mu\text{g/ml}$) and IC_{50} concentration of 125 ($\mu\text{g/ml}$) respectively on A549 lung cancer cell line using fluorescent microscopic analysis.

Keywords: Cerium selenium nanobiocomposite; MTT assay; A549 cell line; Novel lung cancer drug; Asparaginase.

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