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(57) Abstract :
The present invention discloses Nickel thiosemicarbazone complexes as novel anticancer drug towards human breast carcinoma cell line. The present invention proposes a method for synthesizing mononuclear nickel thiosemicarbazone complexes [Ni(L)(py)]. These complexes are derived by reacting various thiosemicarbazones with Ni(ClO4)2•6H2O and pyridine as a co-ligand. The synthesized complexes retain their ligands in a unique ONS-fashion along with a nitrogen-coordinated pyridine, forming a slightly distorted square planar geometry. Notably, the pyridine remains trans to the central imine nitrogen, facilitating a distinct ONSN ligand environment around the nickel center. This particular environment is associated with significant cytotoxic behavior, a property further enhanced due to the presence of sulfur in the thiosemicarbazone complexes and the coordination with an N-donor ligand, pyridine. Of the complexes synthesized, [Ni(L3)(py)] exhibits the highest efficiency as an anticancer drug, displaying a promising LD50 value of 7.6 µM compared to conventional drugs. The patent hence offers potential in developing novel anti-cancer drugs.

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