

Synthesis, characterization and anticancer activity of transition metal complexes derived by tridentate ligands 4-amino-1, 2-naphthoquinone-2-thiosemicarbazone and 4-amino-1, 2-naphthoquinone-2-semicarbazone

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A series of transition metal complexes of Co(II), Ni(II) and Cu(II) have been synthesized with novel ligands 4-amino-1,2-naphthoquinone-2-thiosemicarbazone and 4-amino-1,2-naphthoquinone-2-semicarbazone. The structures of the complexes were established by spectroscopic data i.e. UV, IR, ¹HNMR, ¹³CNMR, Mass, ESR, magnetic measurements and elemental analysis. The results suggested that Co(II) and Ni(II) complexes possess 1:2 metal to ligand stoichiometry, while the Cu(II) complexes exhibit 1:1 metal-ligand compositions. Compounds have been evaluated for *in-vitro* antiproliferative activity against three human cancer cell lines viz. MCF-7 for human breast cancer, Hep-G2 for liver carcinoma and MG-63 for osteosarcoma using MTT assay, and *in-vivo* anticancer activity on MNU induced breast cancer animal model. Results of antiproliferative screening revealed that, metal complexation enhanced the cytotoxicity of ligands in all cancer cells and Cu complexes were found to be most active compounds of the series in both *in-vitro* and *in-vivo* anticancer studies.

Keywords: Transition metal complexes, MCF-7, Hep-G2, MG-63, antiproliferative activity, MTT assay.

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