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Synthesis and Biological Properties of Zinc(II) Complexes of some 2-hydroxyacetophenone-benzoylhydrazones

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Abstract:

The new zinc(II) complexes have been prepared in ethanol by condensation of 2-hydroxyacetophenone with either benzhydrazide or 3-methoxybenzhydrazide and zinc acetate in the presence of triethylamine. The IR, 'H, 13C NMR and UV-visible data show coordination of hydrazone ligands to the metal centers and the spectroscopic data augur well with the x-ray structures which had been published earlier. The Schiff bases and their complexes were screened for antimicrobial, cytotoxic and antioxidant activities. The anti-microbial activities of the ligands and complexes were evaluated by using plate diffusion method against some gram-positive bacteria, gram-negative bacteria and two fungi. There was growth inhibition exhibited by ligands and zinc(II) complexes against tested bacteria and fungi. The Schiff base, H\(^2\)phbh was cytotoxic with IC\(^{50}\) 10.0 µg/ml against the MCF-7 (human breast cancer cells) while both zinc(II) dimer complexes were strongly cytotoxic with IC\(^{50}\) values of 4.5 µg/ml. The Schiff bases and zinc(II) complexes showed higher antioxidant activity than quercetin or vitamin E and is comparable with butylated hydroxy toluene (BHT), a commercially used synthetic antioxidant.

Keywords: Hydrazone Schiff bases, zinc(II) complexes, cytotoxicity, antioxidant and antimicrobial activities

References:


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