

## Complexes of a tridentate ONS Schiff base. Synthesis and biological properties

### ABSTRACT

Several new complexes of a tridentate ONS Schiff base derived from the condensation of S-benzylthiocarbamate with salicylaldehyde have been characterised by elemental analyses, molar conductivity measurements and by i.r. and electronic spectra. The Schiff base (HONSH) behaves as a dinegatively charged ligand coordinating through the thiol sulphur, the azomethine nitrogen and the hydroxyl oxygen. It forms mono-ligand complexes:  $[M(ONS)X]$ ,  $[M=NiII, CuII, CrIII, SbIII, ZnII, ZrIV \text{ or UVI with } X = H_2O, Cl]$ . The ligand produced a bis-chelated complex of composition  $[Th(ONS)_2]$  with ThIV. Square-planar structures are proposed for the NiII and CuII complexes. Antimicrobial tests indicate that the Schiff base and five of the metal complexes of CuII, NiII, UVI, ZnII and SbIII are strongly active against bacteria. NiII and SbIII complexes were the most effective against *Pseudomonas aeruginosa* (gram negative), while the CuII complex proved to be best against *Bacillus cereus* (gram positive bacteria). Antifungal activities were also noted with the Schiff base and the UVI complex. These compounds showed positive results against *Candida albicans* fungi, however, none of them were effective against *Aspergillus ochraceus* fungi. The Schiff base and its zinc and antimony complexes are strongly active against leukemic cells ( $CD50 = 2.364.3 \text{ g cm }^3$ ) while the copper, uranium and thorium complexes are moderately active ( $CD50 = 6.969.5 \text{ g cm }^3$ ). The nickel, zirconium and chromium complexes were found to be inactive.

**Keyword:** Tridentate Schiff base; Condensation; Bacteria