

# Antimicrobial Activity of Two Antitumour Agents and Ribonucleotide Reductase Inhibitors, Pyridine-2-carboxaldehyde Thiosemicarbazone and the Acetate Form of its Copper(II) Chelate

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Some copper chelates have potent antitumour activity, and in some cases also the free ligands have activity *in vivo*. Yet, little is known about their antimicrobial properties. Copper(II) chelates of the thiosemicarbazones of  $\alpha$ -N-heterocyclic carboxaldehydes constitute one important group of such agents, also their ligands having marked antitumour activity. Both the ligands and chelates inhibit ribonucleotide reductase. Some ligands have been or are under clinical trials as antineoplastic agents. I report here a study on the antimicrobial properties of the prototype compounds of this group, pyridine-2-carboxaldehyde thiosemicarbazone and its copper(II) chelate. They were tested against nine microbes, including bacteria (*Bacillus cereus*, *Escherichia coli*, *Pseudomonas aeruginosa*, *Staphylococcus aureus*, *Staphylococcus epidermidis* and *Streptococcus lactis*), yeasts (*Candida albicans* and *Saccharomyces cerevisiae*) and one mold (*Aspergillus niger*). Two clinical isolates of *Bacillus* sp. and one reference strain were also studied. Both the ligand and the chelate had marked activity. The ligand displayed considerable activity against all bacteria except for *S. lactis*, and its activity against *E. coli* and *P. aeruginosa* was that high that practical applications might be considered. It was highly active against *A. niger* and moderately active against *C. albicans*. The chelate was highly active against *S. epidermidis* and *S. cerevisiae*. Both compounds inhibited the clinical isolates markedly. Since some related ligands have been or are in clinical trials on humans or are entering them, their route to clinical use, also as antimicrobials, might be much more straightforward than that of substances, whose toxicity in humans is wholly unexplored.

**Key words:** Antibacterial Agents, Antifungal Agents, Antimicrobial Metal Complex