

Title: ANTIMICROBIAL ACTIVITY OF A NEW COMPLEX WITH 6-METHYL-2-THIOURACIL BINDER AND COPPER

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Abstract

Resistant micro-organisms to conventional antibiotics have stimulated the search for new drugs from plant and synthetic origin as alternative treatments. Thiouracil derivatives have potential therapeutic action as antiviral, anti-tumor and anti-microbial agents. Copper is well known as an essential metal bonded to various metalloenzymes and as an exogenously administered compound in humans, especially in the form of complexes which can interact with biomolecules. This transition metal arouses interest in coordination of complexes with potential biological activity as antimicrobial, antiinflammatory and antitumor activity. This study aimed to evaluate the antimicrobial activity of a new complex with the binder 6-methyl-2-thiouracil and copper. The complex was synthesized by the Research Group of Synthesis and Molecular Characterization of the Universidade Federal de Mato Grosso do Sul. The antimicrobial activity was evaluated in 96-well microplates by broth microdilution technique. The strains tested were obtained from the American Type Culture Collection (ATCC): *Candida albicans* ATCC 90028, *Candida glabrata* ATCC 2001, *Candida tropicalis* ATCC 28707 and *Candida krusei* ATCC 6258, *Staphylococcus aureus* ATCC 25923, *Salmonella* Enteritidis ATCC 13076, *Escherichia coli* ATCC 25922 and *Pseudomonas aeruginosa* ATCC 27853. The compound called Cu(bipy)Cl₂(6-Metilthiouracil) showed antimicrobial activity against *Staphylococcus aureus* with a minimum inhibitory concentration of 1000 µg/ml. For the other microorganisms, the complex did not show activity at the concentrations tested (1.9 to 1000 µg/ml). The bacterium *Staphylococcus aureus* is considered an opportunistic human pathogen and is often associated with infections acquired in communities and in hospitals. This micro-organism may exhibit resistance to conventional antibiotics such as methicillin and oxacillin, due to the presence of resistance genes to these drugs. The results encourage further research on antimicrobial agents containing complexes with the binder 6-methyl-2-thiouracil and transition metals.

Keywords: Complex, transition metals, bacteria, yeasts

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