

Title: STUDY OF BIOLOGICAL ACTIVITY IN COMPOUNDS SYNTHESIZED FROM THIOSEMICARBAZONES

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Abstract

The increased bacterial resistance is an important factor in the number of deaths in hospitals, making it difficult the healing and raising spending on assistance. Thus, it is urgent to develop new synthetic or natural drugs. A prominent group of compounds is represented by thiosemicarbazones (TSCs) and semicarbazones (SCs) due to low cost of synthesis and broad spectrum of action, including antifungal, antibacterial, anti-inflammatory and antiviral activities. In this study, tests were performed with four synthesized chemical ligands, namely: H2L0; H2L1; H2L2 and H2L3. All assays were performed quantitatively by determining the minimum inhibitory concentration (MIC 50%) and the minimum fungicidal concentration (MFC). The standard strains ATCC (American Type Culture Collection) used were the bacteria *Staphylococcus aureus* and *Klebsiella pneumoniae*, and the yeasts: *Candida albicans*, *Candida tropicalis* and *Candida parapsilosis*. The tests were performed in triplicate in 96-well plates, incubated for 24 hours at 35°C, in specific medium. The antibacterial activity of the compounds H2L1, L2 and L3, against *S. aureus*, showed MIC from 3.7 to 19.7 µg/mL; H2L0 exhibited the lowest activity. For *K. pneumoniae*, MIC of the four compounds exceeded 500 µg/mL. The compound H2L3 inhibited the growth of the three species of *Candida* tested, showing MIC between 5.6 and 6.2 µg/mL. The other compounds showed no inhibitory activity against fungi. MFC tests with H2L0, H2L1 and H2L2 showed no change in the growth curve of the colonies, for the three species of *Candida*. The compound H2L3 was the most active within the 24-hour period. It can be concluded that the antifungal activity of TSCs is excellent, while the antibacterial activity is significant when compared to the literature. Therefore, these compounds are potential ligands for metals, indicating a prospect of a future metalodrug.

Key words: thiosemicarbazones, antibactericidal, antifungal, ligands.

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