Xanthone derivatives with antifungal potential for mycoses treatment

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Opportunistic bacterial and fungal infections have increased due to the growing number of immunocompromised patients. *Staphylococcus aureus*, *Pseudomonas aeruginosa* and *Escherichia coli*, are the most commonly involved bacteria [1]. Although fungal infections contribute substantially to human morbidity and mortality, the impact of these diseases in human health is not widely appreciated. *Candida* and *Aspergillus* species are the most frequent nosocomial fungal pathogens responsible for systemic infections which kill about one and a half million people every year [2]. Nevertheless, the most common fungal diseases in humans are superficial infections, which affect approximately 25% of the world’s population. They are predominantly caused by dermatophytes and affect also healthy persons with a considerable impact on patient’s quality of life [3].

The main challenge in developing antifungal drugs is related to the similarity between fungi and their hosts. Antifungal drugs often exhibit therapeutic limitations with fungistatic mechanism of action, high toxicity, many drug interactions, insufficient bioavailability and development of resistance or innate resistance [4]. Thus, it is imperative to continue the discovery and development of new antimicrobial drugs, more effective and less toxic than those already in use, especially those with new mechanisms of action.

Based on these precedents, this project for the thesis for Masters in Pharmaceutical Chemistry aims to evaluate the antimicrobial activity of a library of xanthone derivatives, especially chiral compounds, against clinically relevant bacteria and fungi (*Candida*, *Aspergillus* and dermatophyte species) using the broth microdilution method by Clinical and Laboratory Standards Institute. Considering the battery of compounds available, it will be expected the possibility of the establishment of some structure-activity relationships (SARs). For the compounds showing antifungal activity some mechanisms of action will be evaluated.

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REFERENCES