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Activity of a curcumin-based compound against *Trichophyton rubrum* and *Trichophyton mentagrophytes* clinical isolates, and its toxicity

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Superficial cutaneous mycoses are the most frequent mycosis and affect diverse groups of people around the world. These infections generate high cost to the health services, besides the high impact on the quality of life of the patients. Dermatophyte species are the main etiological agent, being the most frequent group in the dermatomycosis, especially *Trichophyton rubrum* and *T. mentagrophytes* species. The scarce arsenal therapeutic, high economic cost of medications, fungal resistance problems and severe adverse effects, generate an urgent need for the development of new antifungal agents, with innovative mechanisms of action and especially non-toxic for the hosts. Curcumin has been the focus of therapeutic research and has been considered a privileged natural product in view of its therapeutic potential. In view, of the fact that curcumin is attractive for further development as antifungal agent the present study investigated an analogue of curcumin (curcuminoid) with the aim to evaluate its potential antifungal activity and also its toxicity. The Minimal Inhibitory Concentration (MIC) of curcumin and the curcuminoid were evaluated against *Trichophtyton rubrum* and *T. mentagrophytes* clinical strains, using the Clinical and Laboratory Standards Institute M38-A2 guidelines as reference. To evaluate the compound toxicity, 5 µL of the curcuminoid at the concentration 125 µgmL-1 was injected into the hemocoel through the last right proleg of *Galleria mellonella*. The curcuminoid exhibited MIC50 31.2 µgmL-1. On the other hand, curcumin (Merck®) exhibited no antifungal activity at the concentrations tested. Toxicity assay performed on *G. mellonella* demonstrated no toxicity of the curcuminoid at 3×MIC concentration. Regarding the analysis, the curcuminoid showed potent and selective antifungal activity against the *T. rubrum* and *T. mentagrophytes* clinical isolates and may serve as a potential lead compound to develop a new antifungal agent against dermatophytes species.

Biography

Veridianna Camilo Pattini has completed her Teaching and Bachelor's Degree in Biological Science from São Paulo State University (UNESP), Brazil. During her graduation she was involved in projects related to Microbiology, with emphasis on Industrial Microbiology (Fermentation Processes). In addition, she worked on projects related to education, as a Biology teacher for A-levels students, preparing the students for University. Currently, she is a Master student of Microbiology at São Paulo State University (UNESP), Brazil, working with curcumin-based compounds as antifungal agent at the Laboratory of Antibiotics and Chemotherapy (LAQ), supervised by Professor Luis Octavio Regasini. Concomitantly, she is also a Postgraduate student in Clinical Analysis and Diagnostics at the School of Medicine of São José do Rio Preto (FAMERP).

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