

**TITLE:** ANTIFUNGAL POTENTIAL OF PHOTODYNAMIC THERAPY WITH HYPERICIN on PLANKTONIC CELLS OF *FUSARIUM OXYSPORUM*

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**ABSTRACT:**

*F. oxysporum* has emerged as an important opportunistic pathogens mainly in immunocompromised humans, since from skin infections such as keratitis and onychomycosis, to systemic infections such as disseminated fusariosis. These fungi have shown an important resistance profile to conventional antifungals therefore, it is indispensable that new therapies be explored. Within this context, Hypericin-based Photodynamic Therapy (PDT+Hyp), has shown to be promising due to its high effectiveness rate and low toxicity. In this sense, the objective of this study was to evaluate the *in vitro* antifungal potential of PDT + Hyp in *F. oxysporum* planktonic cells. For this, *F. oxysporum* (ATCC 48112) were incubated at 25°C for 7 days on potato dextrose agar (PDA). Conidia were harvested in 0.85% sterile saline and hyphae were removed by filtration. The fungal suspension ( $1 \times 10^5$  conidia/mL) were dropped into 96-wells plates and mixed with ten different concentrations of hypericin (50-0.005  $\mu$ M). The plate were incubated for 2 h in the dark at 25°C into shaking with 90 RPM. Then, the suspension were irradiated using LED with irradiance of 3.0 mW/cm<sup>2</sup>. Two fungal suspension controls were included: one in saline irradiated (CC) and other with saline non-irradiated (C). Subsequently, serial dilutions (1:10) were performed and 20  $\mu$ l aliquots from each concentration plated on PDA and incubated at 25°C for up to 48 h. Under the experimental conditions described above, fungicidal effect was achieved with photoinactivation hypericin, showed one significant reduction ( $p < 0.05$ ) in up to 3 logs for the concentrations 50-0.78  $\mu$ M, especially for concentrations of 25 to 6.25  $\mu$ M. It should be noted that the intensity of the LED used in this study is much lower than those used in the literature, which motivates the studies considering greater tolerability of the PDT use. This is a preliminary study showing a possible treatment with PDT + Hyp for infections caused by *F. oxysporum*.

**Keywords:** *Fusarium oxysporum*, hypericin, photodynamic therapy.

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