Evaluation of the fungicidal capacity of new medicinal compounds on a virulent strain of Paracoccidioides brasiliensis

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Introduction: Paracoccidioidomycosis (PCM) is a fungal disease of which the primary manifestation is pulmonary; with the aggravation of the disease it can affect peritoneal organs and cause secondary lesions in the oral mucosa. It is caused by fungi of the genus *Paracoccidioides* spp. and is characterized by a long and difficult treatment, which is sometimes abandoned by the patient. Resistance of the fungus to conventional treatments is becoming increasingly common, leading to an increased importance of new scientific studies aimed at discovering new drug sources that improve both the performance of the immune response against the fungus and reduction of treatment time. **Objective:** This work aims to evaluate the effect of new drug compounds synthesized by our research group and test them using *in vitro* assays to assess their fungicidal capacity against the virulent Pb18 strain of *P. brasiliensis*. **Methodology:** Assays were performed to measure cell viability and mitochondrial activity of a 1 x 10^6 cells/mL concentration of Pb18 fungal suspension in contact with standardized concentrations (6, 3, and 1.5 mg/mL) of the 10 new compounds tested. The effects of the compounds were analyzed by evaluating mitochondrial activity and the number of viable fungal cells after treatment with the compounds at 24, 48, and 72 hours of incubation. **Results:** There was a significant decrease in the cell viability of Pb18 in the presence of the compounds as compared to the controls (only Pb18). Regarding the mitochondrial activity evaluation, we observed that the compound named F1 showed the highest efficacy in reducing the mitochondrial activity of the fungus when compared to the other nine compounds tested. **Conclusion:** Thus, we note that compound F1 has good fungicidal activity against Pb18, a result that allows us to evaluate whether compound F1, synthesized in our experimental PCM model, has antifungal effects on *P. brasiliensis* in the development of the disease as well as the ability to improve the immune response pattern against the fungus.

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