

TITLE: DEVELOPMENT OF NEW ALTERNATIVES FOR THE COMBAT OF *ASPERGILLUS* sp. IN PULMONARY ASPERGILLOSIS

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ABSTRACT:

Pulmonary aspergillosis is caused by the fungus of the genus *Aspergillus*, with *Aspergillus fumigatus* being the main species isolated in these infections. Patients whose immune system is weak are the most affected. This pathogen initiates a silent infectious process, invading and injuring the tissues of the lower and upper respiratory tract, where the mortality rates can reach 90%. The increase in the number of immunocompromised, transplanted patients, the use of broad-spectrum antibiotics, chemotherapeutic agents and immunosuppressants make pulmonary aspergillosis a current public health problem. In addition, the number of cases of species resistant to azole antifungals, the pre-exposure of the microorganisms present in the environment by fungicides and the prophylactic use culminate in the difficulty and therapeutic failure. In view of these facts, we observed the need for research and development of new strategies that help in the success of the therapy applied in pulmonary aspergillosis, as well as the reduction of mortality and resistance rates. In this context, 8-hydroxyquinoline derivatives have emerged as a potential target because of their broad spectrum of biological action (antibacterial, antifungal, neuroprotective and antitumor). 8-Hydroxyquinoline and its derivatives Clioquinol, PH151, PH160, PH179 and PH304 were evaluated against 13 isolates of *Aspergillus fumigatus* and 2 isolates of *Aspergillus flavus* using the broth microdilution test (EUCATS 9.3.1). Plates were incubated for 72 hours at 32 °C. Minimum inhibitory concentration (MIC) was considered the last concentration capable of inhibiting 100% visual fungal growth. The results obtained showed MIC between 0.5 and 64 µg mL⁻¹. Although Clioquinol has demonstrated excellent effectiveness on fungal isolates, there are reports of toxicity in the literature. These molecules present a promising strategy for the development of new biomaterials and drugs with antifungal potential in the fight against pulmonary aspergillosis.

Keywords: 8-hydroxyquinoline, antifungal, *Aspergillus*, pulmonary aspergillosis, fungal infection.

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