TITLE: BIOCHEMICAL SPECTRUM OF *PARACOCCIDIOIDES* ISOLATES USING FOURIER TRANSFORM INFRARED SPECTROSCOPY WITH ATTENUATED TOTAL REFLECTION (FTIR-ATR)

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ABSTRACT:

Paracoccidioidomycosis (PCM) is a disease caused by the dimorphic fungi of the genus *Paracoccidioides*. It is a very important systemic mycosis, mainly because of its high mortality rates and its incapacitating potential. The variability of clinical presentations as well as distinct profiles of host immune response during infection reinforce the need to better elucidate the chemical characteristics of *Paracoccidioides* isolates. Thus, in this work the comparative analysis of the chemical composition of the fungus was carried out by the FTIR-ATR, an established measurement system for analyzing chemical and biological materials with many applications already developed. For this, colonies of *P. brasiliensis* (Pb18 and Am17) and *P. lutzii* (Pb01) were mantained in Fava-Netto solid medium at 37 ° C with 15 days of subculture and the FTIR-ATR spectra were collected at 16 ± 1 ºC, with 16 scans and spectral resolution of 2 cm^{-1}. From the analysis of spectrum absorption, it was possible to observe, in all the samples, 5 regions: Between 3000-2800 cm^{-1}, a characteristic peak of membrane functional groups, such as fatty acids and some amino acids; Between 1800-1500 cm^{-1}, characteristic peak of protein amide groups; Between 1500-1200 cm^{-1}, a mixed region; Between 1200-900 cm^{-1}, characteristic peak of nucleic acids, carbohydrates and polysaccharides of cellular wall and between 900-700 cm^{-1}, a region known as "fingerprint zone", very specific for each substance or organism analyzed. Isolates Pb01 and Pb18 showed a very similar spectrum in regions of membrane functional groups, such as proteins and carbohydrates (peaks at 2915 and 2850 cm^{-1}), different from that found in isolate Am17. In addition, different peaks were observed also in Am17 in the region 1050 and 1070 cm^{-1}, suggesting possible alterations in the constitution of the cell wall and membrane, data that can be better clarified through other techniques of biochemical analysis. The fingerprint region (650-850 cm^{-1}) was very similar in all three isolates, which was already expected, since they are fungi of the same genus. These data, although still preliminary, showed that the isolates Pb18 and Pb01 have very similar biochemical profiles, although they belong to different species. On the other hand, the isolate Am17 of the species *P. brasiliensis* presents biochemical differences that, when characterized, may explain new mechanisms of interaction and pathogenicity of this species.

Keywords: spectroscopy, paracoccidioidomycosis, infrared

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