BIOCHEMICAL DIFFERENTIATION OF *Paracoccidioides brasiliensis* and *Paracoccidioides lutzii* BY FOURIER TRANSFORM INFRARED SPECTROSCOPY


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In South America, the chronic infectious disease called Paracoccidioidomycosis is the third largest cause of death. The inhalation of the fungus *Paracoccidioides brasiliensis* (*P. brasiliensis*, Pb03 and Pb18) and *Paracoccidioides lutzii* (*P. lutzii*, Pb01) causes the infection. The 43kDa glycoprotein (gp43) has been using to diagnose this disease, but patients exposed to *Paracoccidioides lutzii* showed irregular reactivity with this antigen, which increases the clinical uncertainty. The clinical manifestation and treatment differ based on the causative agent, making it important to identify them correctly. Therefore, the aims of this study was distinguishing *P. brasiliensis* from *P. lutzii* by Fourier Transform Infrared (FT-IR) spectroscopy - a rapid, highly specific and sensitive technique that can identify biochemical composition with minimal sample preparation. We acquired thirty spectra each from pure cultures of *P. lutzii* and *P. brasiliensis*, nearly ten spectra per sample in triplicates. The FT-IR spectra showed the difference in biochemical composition, the major differences being in the polysaccharide and proteins vibrations. Principal Component Linear Discriminant Analysis (PC-LDA) could distinguish Pb01 (*P. lutzii*) with 96% efficiency and Pb03/Pb18 (*P. brasiliensis*) with 100% efficiency. The multivariate analysis is important to identify the spectral differences in specific chosen spectra regions where we can take biological or vibrations information. Thus, FT-IR may contribute to clinical diagnosis of this highly prevalent Latin American disease.