Title: Phospholipase, proteinase and biofilm production by Candida albicans and Candida tropicalis bloodstream isolated from patients with candidemia in Manaus, Amazonas, Brazil

Authors: Silva, J.S¹, Pereira¹, V.N. ², Corrêa, M.A.E. ², Jackisch-Matsuura, A.B¹

Institution:¹ Instituto Leônidas e Maria Deane – ILMD/FIOCRUZ (Rua Teresina, 476, Adrianópolis, Manaus-AM), ² PPG Saúde Sociedade e Endemias na Amazônia – UFAM/FIOCRUZ (Rua Teresina, 476, Adrianópolis, Manaus-AM)

Abstract:

Candida is the most important etiological agent of fungemia. The main species is Candida albicans but Candida tropicalis is emerging as the second most important species in candidemias in the state of Amazonas. This study evaluated 34 isolates of Candida albicans and 30 isolates of Candida tropicalis to produce proteinase, phospholipase and biofilm formation. These isolates are from 11 Hospitals of Manaus, isolated in 2013 and stored in the Laboratório de Biodiversidade e Saúde – Instituto Leônidas e Maria Deane/FIOCRUZ Amazônia. The Candida albicans were previously characterized as the DST (Diploid Sequence Type) in 23 different genotypes, but the main DST was the DST90 where 9 isolates belong to this genotype and 5 isolated are from the DST90 complex. For evaluation of the production of phospholipase, proteinase and biofilm it followed the method of Price et al. (1982), Ruchel et al. (1982) and Christensen et al. (1982), respectively. From the isolates of Candida albicans 97.1% (n = 33) showed phospholipase production while only 3.33% (n = 1) of C. tropicalis isolates showed production of this enzyme. For the production of proteinase 73.52% (n = 25) of isolates of C. albicans and 33.33% (n = 10) of C. tropicalis were positive. For the production of biofilm only 11.8% (n = 4) isolates of C. albicans were producers, while 70% (n = 21) of isolates of C. tropicalis were positive. Considering the C. albicans isolates belonging to genotype DST90, it was found that these yeasts do not produce biofilm, but most are proteinase producer and strongly producing phospholipase. In conclusion, the production of enzymes (phospholipase and proteinase) were higher in isolates of C. albicans than C. tropicalis isolates, moreover biofilm formation was higher in isolates of the C. tropicalis.

Keywords: hydrolytic enzyme, biofilm, virulence, Candida, candidemia

Financial support: PPSUS-DECIT/SCTIE/MS/CNPQ/FAPEAM/SUSAM