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Extracellular hydrolytic enzyme activities and biofilm formation in *Candida* species isolated from people living with human immunodeficiency virus with oropharyngeal candidiasis at HIV/AIDS clinics in Uganda

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ABSTRACT

Background: Commensal oral *Candida* species can become opportunistic and transition to pathogenic causes of oropharyngeal candidiasis (OPC) in individuals with impaired immunity through ecological cues and the expression of extracellular hydrolytic enzyme activities and biofilm formation.
Objective: We evaluated phospholipase, proteinase, hemolysin, esterase, and coagulase enzymatic activities and biofilm formation in *Candida* species isolated from people living with human immunodeficiency virus (PLHIV) with OPC.
Methods: Thirty-five *Candida* isolates from PLHIV with OPC were retrieved from a sample repository and evaluated for phospholipase activity using the egg yolk agar method, proteinase activity using the bovine serum albumin agar method, hemolysin activity using the blood agar plate method, esterase activity using the Tween 80 opacity test medium method, coagulase activity using the classical tube method, and biofilm formation using the microtiter plate assay method *in vitro*.
Results: A total of 35 *Candida* isolates obtained from PLHIV with OPC were included in this study, and phospholipase and proteinase activities were detected in 33/35 (94.3 %) and 31/35 (88.6 %) *Candida* isolates, respectively. Up to 25/35 (71.4 %) of the *Candida* isolates exhibited biofilm formation, whereas esterase activity was demonstrated in 23/35 (65.7 %) of the *Candida* isolates. Fewer isolates (21/35, 60 %) produced hemolysin, and coagulase production was the least common virulence activity detected in 18/35 (51.4 %) of the *Candida* isolates.
Conclusion: Phospholipase and proteinase activities were the strongest in oropharyngeal *Candida* species.

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