

Notification No: 506/2022
Date of Award: 30/03/2022

Name of Candidate: Venkata Saibabu Thokala
Name of Supervisor: Prof. Luqman Ahmad Khan
Department/ Faculty: Biosciences / Natural Sciences
Title of thesis: Effect of Vanillin and Octyl gallate on growth and pathogenicity of *Candida Spp*

Findings

Candida albicans is a common opportunistic microorganism known to cause both superficial and systemic infections in immunocompromised hosts. The current therapeutics collectively suffers from shortfalls such as toxicity and resistance development. Therefore, identification of new classes of safe, well tolerated broad-spectrum antifungal drugs without a tendency for resistance are urgently needed. The present study was therefore designed to evaluate the antifungal effect of a naturally occurring Vanillin and octyl gallate on *Candida spp* and to investigate the underlying mechanisms involved. Vanillin has the inhibitory effect on *Candida* at the MIC values ranging from 125-250 μ g/ml. These concentrations are non-toxic to RBCs and *C. elegans* models. The anti-candidal effects of Vanillin is pleiotropic and targets multiple functions in *Candida*. Octyl gallate has the inhibitory effect on *Candida* at the MIC value 25 μ g/ml. Octyl gallate has shown to be non-toxic to RBCs and *C. elegans*. Also, octyl gallate targets mitochondrial functions and alters various metabolic pathways. LC-MS based metabolomics studies showed that OG treatment significantly affected the Arginine biosynthesis, Arginine and Proline metabolism and Amino acyl t-RNA biosynthesis related pathways. The results obtained in this study demonstrate that vanillin and octyl gallate have significant antifungal activity and can be consider as antifungal alternative in future.