Short Communication

Antibacterial Activity of Endophytic Fungi Associated With the Genus Jatropha in Mauritius

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Background: Endophytic fungi are important components of the forest community and are significantly diverse from one plant to another as well as from one ecosystem to another.
Objective: The current study aimed to characterise, at the molecular level, the diversity and seasonal variation of endophytic fungi from Jatropha plants found in Mauritius and to compare the phytochemicals and the antimicrobial potential of the fungal isolates with the leaves extracts.
Materials and methods: Endophytic and saprophytic fungi were isolated from the leaves of Jatropha plants during summer and winter. The isolated fungi were further classified through molecular characterisation. The isolates were grouped into 76 distinct operational taxonomic units based on the sequence of the internal transcribed spacer regions in the rRNA gene. The colonization frequency and the dominant fungi percentage of these endophytic fungi were calculated. The antimicrobial properties of the extracts from the endophytes were compared to that of the extracts obtained from the leaves of the Jatropha plants.
Results: The overall colonisation rate for the two seasons was 67.42%. Maximum colonisation (27%) was observed in both J. curcas and J. multifida. There was a diverse array of fungi which included 21 common genera. Colonisation frequency of the other genera recovered during this study varied according to the plant from which the isolation was carried out. J. multifida was richer in the genus Phoma, J. curcas were colonised mainly by Neofusicoccum as compared to J. integerrima and J. podagrica, which were colonised by the Corenespora. Climate was also a primary driver of endophytes and saprophytes community diversity and composition. Moreover, the endophytic fungi from the leaves of J. curcas gave highly significant antimicrobial activities effects ($p<0.01$) against both the tested Gram (+ve) and Gram (-ve) clinical pathogens. Among the four active isolates, Engyodontium was the genus that showed highest antimicrobial activity. Overall, the endophytic fungi from the Jatropha species were more effective than the crude ethyl acetate extract of the leaves. Conclusion: The antimicrobial activity of these endophytic microorganisms could be further exploited and find application in the pharmaceutical industry.

Note: This work is partly presented at Webinar on Clinical Pharmacy, going to be held on May 31st, 2021 GMT+1.