

Morphological and Molecular Identification of Fungi for their Association with Postharvest Fruit Rots in Some Selected Citrus Species

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ABSTRACT

Purpose: The availability of fresh Citrus fruits is limited by their susceptibility to invasion by microbial pathogens which leads to cause serious postharvest losses. The present study was carried out to isolate and morphologically identify postharvest fungal associations from selected Citrus fruit species (*C. sinensis*, *C. limon*, *C. crenatifolia* and *C. medica*) and to confirm their identity by molecular characterization.

Research Method: Postharvest fungal associations of selected Citrus fruit species were isolated, and identification was done based on morphological characteristics. Confirmation of fungal associations was done through phylogenetic analysis of newly generated ITS sequencing data. Further, frequency of occurrence of each fungal isolate was calculated in three different districts in Sri Lanka.

Findings: From the morphological and molecular identification, *Collectrichum fructicola*, *Collectrichum gloeosporioides*, *Lasiodiplodia theobromae*, *Aspergillus niger* and *Pestalotiopsis* sp. were recorded from *C. sinensis*. *Neofusicoccum parvum*, *Collectrichum gigasporium* and *Aspergillus clavatus* were isolated from *C. crenatifolia*. Further, *Lasiodiplodia theobromae* and *L. pseudotheobromae* were the only fungal association isolated from *C. limon* and *C. medica* fruit species, respectively. It is worthwhile noting that this is the first report of association of the *C. gigasporium* and *Pestalotiopsis* sp. from Citrus fruits in Sri Lanka.

Research Limitations: Since this research was mainly focused on the isolation and identification of the potential fungal associations, pathogenicity evaluation could not be carried out.

Originality/value: Findings of potential disease causative agents in citrus will be valuable for agriculture sector, to adopt and practice effective strategies to minimize postharvest losses of citrus fruits.

Keywords: Citrus fruits, Fungal associations, Molecular identification, Postharvest fungi


INTRODUCTION

Citrus is the largest genus in the family Rutaceae and it is one of the most traded horticultural products in the world (Turner and Burri, 2013). Citrus fruits are native to the tropical and subtropical areas of Asia and later they spread to other parts of the world (Liu *et al.*, 2012). Most of the citrus fruits are highly preferred as fresh juice and as a flavour enhancer in food (Herath *et al.*, 2016). Due to the delicious taste and nutritional value it possesses, citrus has become one of the most desirable fruits in the local as well as international markets. Citrus fruits have higher contents of nutrients such as

vitamin A and C, sugars, minerals, and amino acids with beneficial properties for health such as antioxidant, anticancer and antimutagenic (Paul and Shaha, 2004; Herath *et al.*, 2016).

Citrus sinensis (Green cultivar is locally known as “Pani dodam”) is considered one of the most important fruit crops due to its sweet taste and other benefits such as nutritional and medicinal

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