

IN VITRO ANTIFUNGAL ACTIVITY OF LEAF EXTRACT OF MYRTLE (*MYRTUS COMMUNIS* L.) AGAINST PHYTOPATHOGENIC FUNGI

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ABSTRACT : The antifungal properties of leaf extract of the medicinal plant, myrtle (*Myrtus communis* L.) against *Pythium aphanidermatum* and *Alternaria alternata* were determined. The methanolic leaf extract of *M. communis* inhibited the mycelial growth of *P. aphanidermatum* in a dose-dependent manner as assessed by poisoned food technique. The leaf extract of myrtle also had inhibitory (17%) effect against conidial germination of *A. alternata*. The antifungal compound(s) in the methanol extract of *M. communis* was partially purified by Thin-layer chromatography (TLC) and identified by Gas chromatography-mass spectrometry (GC-MS). TLC analysis of methanolic extract of *M. communis* revealed the presence of a prominent fluorescent spot under UV light ($\lambda = 254$ nm) having R_f value of 0.84. The compounds eluted from the TLC plate at R_f 0.84 exhibited antimicrobial activity against *A. alternata*. GC-MS analysis of the fraction eluted at R_f 0.84 revealed the presence of dodecane and ethyl fluoroacetate. Further studies are required to determine the role of these compounds in antifungal activity of *M. communis* and the mechanism of action.

Key words : *Alternaria alternata*, antifungal, *Myrtus communis*, plant extract, *Pythium aphanidermatum*.

INTRODUCTION

Myrtus communis L. (myrtle), belonging to the family Myrtaceae, is an evergreen shrub with a height of about 1-5 m, with rough bark, opposite leaves, white flowers and white, purple, blue, or black berries. The leaves and berries have been used in the traditional medicine for the treatment of diarrhoea, headache, peptic ulcers, haemorrhoids, inflammation, uterine bleeding, palpitation, leucorrhoea, urethritis, epistaxis, conjunctivitis, excessive perspiration, and pulmonary and skin diseases (Alipour *et al*, 2014; Mobli *et al*, 2015; Mahboubi, 2017). Leaves of myrtle have been used for healing wounds or disorders of the digestive and urinary systems due to their astringent, tonic, and antiseptic properties (Alipour *et al*, 2014; Sisay and Gashaw, 2017). Antioxidant (Hennia *et al*, 2018) and anticancer (Ogur, 2014) activities of myrtle have also been reported. Essential oils derived from leaves, flowers and fruits of myrtle are commonly used as a component in the food, liquor and cosmetics (Romeilahr, 2016). Despite its antibacterial (Mansouri *et al*, 2001; Akin *et al*, 2010)

and antifungal (Cannas *et al*, 2013) activities against clinical isolates, there is no data available on its effectiveness against plant pathogenic fungi. The objectives of this study were to test the effectiveness of leaf extract of *M. communis* against two agronomically important phytopathogenic fungi *viz.*, *Pythium aphanidermatum* and *Alternaria alternata* and to isolate and characterize the antimicrobial compounds.

MATERIALS AND METHODS

Fungal cultures

The cultures of *Pythium aphanidermatum* and *Alternaria alternata* were obtained from the Department of Crop Sciences, College of Agricultural and Marine Sciences, Sultan Qaboos University and maintained on potato dextrose agar (PDA) medium at room temperature ($26 \pm 2^\circ\text{C}$).

Plant sample

Healthy leaves of *Myrtus communis* L. were collected from Botanic garden, Sultan Qaboos University and brought to the laboratory.

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