

Research Article

Antifungal Activity of Cinnamon and Thyme Oil Against *Colletotrichum gloeosporioides* Causing Anthracnose Disease of Papaya

K Darshan¹, A Kamala Kannan² and S Vanitha¹

Department of Plant Pathology, Centre for Plant Protection Studies, Tamil Nadu Agricultural University, Coimbatore-641 003; E-mail: darshuwas@gmail.com

Abstract

Papaya (*Carica papaya* L) is considered as the “common man's fruit” and it became an important commercial fruit crop owing to its nutritional and pharmaceutical values. Anthracnose disease caused by *Colletotrichum gloeosporioides* is one of the devastating post-harvest diseases in papaya fruit. The antifungal activities of five essential oils were determined by poison food technique. It was observed that, cinnamon and thyme oil exhibited cent per cent inhibition of mycelial growth of *C. gloeosporioides* at all concentrations tested. The volatile compound present in thyme and cinnamon oils were analysed by GC-MS. During analysis, the major compounds detected in thyme oil were Thymol, α -Pinene, o-Cymene, γ -Terpinene, Benzene, 1-methyl-4-(1-methylethenyl)-, Methyl salicylate etc., Similarly, in cinnamon oil viz., Cinnamaldehyde, 2-Propenal, 3-phenyl-, trans-Cinnamic acid, 2-Propenoic acid, 3-phenyl-, α -Pinene. The field spray and post-harvest dipping with different treatments on fruit quality parameters viz., total sugars, reducing sugars and non-reducing sugars were analysed. The results revealed that, in pre-harvest spray with *Bacillus* sp. (BSP1) (5%) + post-harvest dipping with EC formulated cinnamon oil (0.1%) recorded higher content of total sugar content (14.22%) and reducing sugar (11.23%) over control and also maintained quality of papaya fruit during 14 days experimental period. All these outcomes pointed out that, cinnamon and thyme oil is effective as a natural fungicide for controlling anthracnose decay and prolonging the storage life of papaya fruit.

Key words: Anthracnose, cinnamon oil, *Colletotrichum gloeosporioides*, papaya, plant essential oils and GC-MS

Citation: Darshan K, Vanitha S and Kamalakannan A.2019. Antifungal activity of cinnamon and thyme oil against *Colletotrichum gloeosporioides* causing anthracnose disease of papaya. *J Mycol Pl Pathol* 49(3): 273-284