

Full Length Research Paper

# First report of leaf blight of Bakul (*Mimusops elengi* Linn) caused by *Pestalotiopsis clavispora* (G.F. Atk.) steyaert in India

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*Pestalotiopsis clavispora* (G.F. Atk.) Steyaert was recorded for the first time on *Mimusops elengi* trees in the University of Mysore campus during 2015-2016. The fungus was isolated from the wilted plant parts and subsequent re-inoculation of the same to healthy plants and its pathogenicity confirmed. Pathogenicity tests showed that *Pestalotiopsis clavispora* could infect *M. elengi*, which developed the same symptoms under artificial inoculation conditions to that observed in the field. The fungus was identified based on morphological and culture characteristics as *Pestalotiopsis clavispora*. Identifications were confirmed using comparisons of DNA sequences of internal transcribed spacers (ITS) regions 1 and 4. This is the first report of *Mimusops elengi* leaf blight disease caused by *P. clavispora*.

**Keywords:** *Pestalotiopsis clavispora*, *Mimusops elengi*, internal transcribed spacers (ITS), Pathogenicity.

## INTRODUCTION

*Mimusops elengi* Linn (Sapotaceae) colloquially known as the Spanish cherry, Medlar and Bullet wood in English is a tree aboriginal to the western peninsular region of South India (Mitra, 1981). However, with time the trees had dispersed and are today found growing in other parts of India, the Andaman Islands, Burma, Pakistan, Thailand and parts of Northern Australia. Reports suggest that in the ancient Indian civilization, the fruits were a staple diet of the sages, hermits and people. Studies suggest the tree contains medicinally-important chemicals, particularly the terpenes and alkaloids. Extracts possessed antibacterial, antifungal, anticariogenic, free radical scavenging, antihyperglycemic, antineoplastic, gastroprotective, antinociceptive and diuretic effects

(Balinga *et al.*, 2011).

## MATERIALS AND METHODS

### Disease symptoms and pathogen description

Leaves showing blight symptoms were collected from *M. elengi* plantations in the University of Mysore campus, Mysore, Karnataka, India (latitude: 12.3 N + longitude: 76.65 E) in October 2015. The initial symptoms were brown, V-shaped, with the widest part of the V toward the margin of the leaflet (Figure 1c). These V-shaped lesions 1.0–1.5 × 2.0–4.5 cm (n = 30), on the leaf margin or leaf tip are characteristic of the disease and forms brown “crusty” surface. Lesions enlarged and coalesced causing diseased leaves to become blighted and desiccated, diseased leaves eventually dropped off (Fig. 1A). In a

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with an even to undulating, glabrous, colourless margin; immersed mycelium was pale buff, aerial mycelium pure white and woolly-cottony. Acervuli formed on the aerial mycelium and contained black, slimy spore masses.

### Molecular identification

For phylogenetic analysis, genomic DNA of the fungus was extracted using the SDS-CTAB method described by Suwannarach *et al.* (2010) and the ITS1/ITS4 region was amplified using primers ITS4 and ITS5 under the following thermal conditions: 95°C for 2 min, 30 cycles of 95°C for 30 s, 50°C for 30 s, 72°C for 1 min and a cycle of 72°C for 10 min. Three PCR products of size 600 bp were directly sequenced. The partial ITS sequence, containing 548 bp, was deposited in GenBank as JQ396429. BLAST searches of the database showed that the pathogen had 99 and 100% similarity with *P. clavispora* EU047945 and AY924282, respectively. The results confirmed that the fungus was *P. clavispora*.

### Pathogenicity test

To confirm pathogenicity, 6-month-old healthy plants of *M. elengi* was selected and the spore suspension of the fungus was adjusted to  $2 \times 10^5$  /  $12 \times 10^6$  spores/mL and later inoculated to *Mimusops* plants (10) were covered with plastic bags to build humidity upto 70% in the green house. After a period of one month, the inoculated plants showed typical symptoms on the leaves initiated with V shaped blight, eventually withered, confirmed the leaf blight of *M. elengi* trees caused by *Pestalotiopsis clavispora*. 90% of the plants were found dead during four weeks of post inoculation. No symptoms were observed on control plants, in which the plants were

sprayed only with distilled water. Recumbent reisolated of the fungus from the symptomatic plants, proved the Koch's postulates in all instances, confirmed the causal organism, *P. clavispora*. The test was repeated thrice. Here, we report that the leaf blight disease of *M. elengi*, caused by *Pestalotiopsis clavispora*, is a new disease in India.

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