RESISTANCE OF IMMATURE MANGO FRUITS TO ANTHRACNOSE AND STEM-END ROT

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Immature mango (*Mangifera indica*) fruits are resistant to anthracnose and stem-end rot, however, during ripening the resistance declines and ripe rots occur. In mango, preformed antifungal compounds found in the peel, implicated for fruit resistance, are reported to be a mixture of 5-substituted resorcinols. The antifungal activity of these, are reported to decline during ripening. Another factor to be considered is the presence of latex in unripe fruit, which also declines during ripening. Mango latex, once removed from the fruit is seen to separate in to an oil fraction and an aqueous fraction. The oil fraction alone is reported to have antimicrobial activity. In the present study, antifungal compounds and the presence of latex were looked in to in order to explain the resistance of unripe mango fruit.

The outermost peel was taken from healthy, unripe mango fruit (cultivar Karuthacolomban) and extracted into dichloromethane: methanol (1:1). The extract was evaporated to 1/3 of its volume and then partitioned into a dichloromethane phase and an aqueous methanol phase. Once these phases were subjected to a TLC bio-assay with *Cladosporium* sp. or *Colletotrichum gloeosporioides*, a previously unreported inhibition zone was produced at Rf 0.00 by the dried methanol fraction (developing solvent $CHCl_3$: CH_3OH, 95:5 V:V). Further separation of the methanol phase was carried out by Medium Pressure Liquid Chromatography, sephadex LH 20 and finally by HPLC. Spectroscopic data of a pure compound having antifungal activity were consistent with a galloyl tannin with glycosidic linkages.

Fruits at harvesting maturity were hand picked with their pedicels intact. Then latex was drained from 50% of fruits by cutting the pedicels at the abscission zone and keeping fruits inverted until latex flow had ceased. In the remainder the pedicels were trimmed to the same length after approximately 48 hours. Fruits were kept under ambient conditions and natural disease development (anthracnose and stem end rot) was assessed daily by measuring the area covered by lesions. Rate of ethylene production was also measured daily as an indication of ripening. The experiment was repeated twice, data were pooled and analyzed by a pooled t-test (SAS ver.6.12). Disease development was found to be significantly higher in fruits devoid of latex, while the rate of ethylene production showed no significant difference when compared with the control. The antifungal activity of the aqueous fraction of latex was assessed by a slide germination assay and the antifungal activity of the non-aqueous fraction was assessed using a seeded plate with PDA enriched with the non-aqueous fraction of latex and also with TLC bio-assay. The non-aqueous fraction of latex was found to inhibit the growth of *C. gloeosporioides*.

The resistance of unripe mango appears to be due to a combination of factors, two of which appear to be the presence of antifungal compounds and latex.