Abstract

Volatile organic compounds collected from the headspace of mango cv. Keitt inoculated with *Lasiodiplodia theobromae* (stem-end rot), *Colletotrichum gloeosporioides* (anthracnose), mock (as the first control) and non-wounded-non-inoculated mango (as the second control) were analyzed using GC/MS to investigate the feasibility of automatic detection and diagnosis of diseases of mango in stores. A total of 37 metabolites, relatively consistent in 8 replicates, were identified based on mass spectral match using NIST library. Several of these were specific to a disease/inoculation or when common to all treatments, they varied in their abundances. 1-Pentanol was specific to *Lasiodiplodia*-inoculated mangoes while thujol was detected only in *Colletotrichum*-inoculated mangoes. Discriminant analysis models based on normalized abundances of 35 consistent metabolites and normalized abundances of 150 mass ions correctly classified 67 and 75% of the observations, respectively, based on cross-validation. The study has shown for the first time that it is possible to detect and differentiate between anthracnose and stem-end rot diseases of mangoes (cv. Keitt) based on their volatile production patterns using GC/MS. The methods developed here have the potential applications to mango industry to detect and diagnose diseases of mango fruits, at relatively early stages of the disease progress, after validation under commercial conditions.