Volatile Organic Compound Analysis Of Durian Infected By Phytophtera Palmivora As Early Detecting Method Approach

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ABSTRACT

Durian stem rot and shoot death caused by *P. palmivora* are the most feared diseases, where the plant death rate due to attacks can reach 50% The use of fungicides with metalaxyl-mancozeb mixture, cyprofuram, milfuram and fosetyl-A, gave a possitive effect in seedling stage. However, the disease on adult tres are always to late to be recognized. Molecular, serological and sensor-based detection system were expensive, complicated and time consuming. Metabolomics analysis can help read the interaction profile of plants and pathogens from the beginning of infection. These análisis used to determined the volatile organic compounds (VOCs) of the plant part that infected by the fungus as a plant-desease respond.

Based on the GC-MS-MS analysis on both healthy leaf and infected leaf, there were some differences on the chemical compound detected. In healthy leaves there were three major compounds detected. The compounds were (E)-3-Hexen-1-ol, (Z)-3-Hexenyl acetate and (E)-3-Hexenyl butanoate. Those there compounds were known as volatile organic compound that induced plant respond. The increasing of these three compounds happened due to changing in phenylpropanoid pathway. The increasing of these compounds are related to the defense mechanism that happened while plants in a biotic or abiotic stress condition.

From the unhealthy leaf samples, there were to major volatile organic compounds detected, that were (Z)-4-hexenyl butyrate and Hexadecanal. In compare with the healthy leaves, the unhealthy one did not produce higher green leaves volatile organic compound related to stress tolerance mechanism. The (Z)-4-hexenyl butyrate is volatile organic compound related to the antimicrobial mechanism. This compound could also be found in some extracts such as in ginger.

Kata Kunci: *Durian, Phytophtera palmivora, volatile*