Title Biochemical and molecular characterization of pectate lyase in ripening Nangka (AAB) bananas

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Keyword Nangka; banana; Pactate lyase; molecular

Abstract

Biochemical and molecular analysis were carried on Nangka (AAB) banana, a cooking variety banana which is widely distributed in Malaysia. Physiological tests revealed that pulp firmness decreased due to disassembly of cell wall and starch degradation. Total Soluble Solids (TSS) value increases continuously as more starch were converted into soluble sugars and iodine test showed that starch reduction starts from the core of the pulp. Peel colour index (L* a* /b* value) increased, indicating peel colour change from green to yellow as the fruit ripens. Further analysis was focused on pectate lyase which is a cell wall hydrolase enzyme. The enzyme was assayed from crude extract to measure its activity in pulp softening during ripening of Nangka banana. Pectate lyase showed trends of increasing activity which may contribute to cell wall degradation during ripening. This may give insight into the function or the redundancy of pectate lyase enzymes in pulp softening during ripening. Total DNA was extracted from the pulp and pectate lyase gene was isolated and amplified. Further characterization of the isolated gene using bioinformatics tools showed more than 90% homology with PL1 gene from Williams (AAA) cultivar and Dwarf Cavendish (AAA).