

Phenotypic and molecular characterisations of lactic acid bacteria isolated from Malaysian fruits

ABSTRACT

Lactic Acid Bacteria (LAB) are gram-positive, catalase-negative and non-spore forming bacteria known to have many advantages such as starter culture in food fermentation, as antimicrobial agent and plant growth promoter. Limited information on various LAB present in Malaysian fruits hampers further study to explore their potential as autochthonous inoculants in food fermentation, plant disease control and growth promotion. Therefore, the objectives of this study are firstly to isolate and identify LAB from honeydew, ciku, mango and mata kucing by investigating their morphological and biochemical characteristics, secondly to determine the identity of the isolates using 16S rRNA gene sequencing and finally to examine phylogenetic relationship of the LAB present in the fruits. The isolates were subjected to Gram staining, acidity and catalase tests, followed by molecular identification and phylogenetic analysis of the bacteria. Out of 33 isolates, eight isolates were gram- positive, catalase-negative and acid producers, suggesting that they are potentially LAB. 16S rRNA sequencing and NCBI Blast analysis identified the presence of *Lactococcus* sp., *Leuconostoc* sp., *Weissella* sp. and *Aerococcus* sp. in the fruit samples with sequence identity 94-97%. Phylogenetic tree was constructed based on the 16S rRNA sequences using Neighbor-Joining method. This study has assisted in collecting more information about the diversity of LAB in Malaysian fruits, which can be further explored in future for their application as bioinoculant in food fermentation or as biocontrol agent and plant growth promoter in agricultural field.

Keywords: Fruits; Lactic acid bacteria; Phylogenetic analysis; 16S rRNA sequencing
