

Molecular Characterization of Lactic Acid Bacteria from Selected Tau Fu Fa in Malaysia

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Structured Abstract

Background: "Tau Fu Fa" is a tofu product that has been fermented in the presence of lactic acid bacteria and has several health benefits for individuals. The makeup of the microflora in soybeans is influenced by a few variables, including as climate fluctuations, cultural practices, and geographic origin. The purpose of this study is to detect and isolate LAB species from two tau fu fa products in Malaysia that contain different kinds of syrup—brown and white. MRS agar is the selective culture medium used to extract lactic acid bacteria. To identify the *Lactobacillus* sp. that are present and isolate the bacteria, morphology, biochemistry, and molecular biology will be employed.

Methods: In this study, the process of isolating LAB from the samples will involve serial dilution and anaerobic incubation at 30°C for a duration of 24 to 72 hours. In addition to closely observing its physical morphological traits, biochemical tests such as coagulase, catalase test, and gram staining will be employed to ascertain the characteristics of the bacterium species. Furthermore, the molecular identification of LAB is accomplished using the 16S PCR method, which comprises DNA extraction, DNA concentration and purity, DNA gene amplification, gel electrophoresis, and DNA sequencing.

Results: The morphology of the tau fu fa samples in this study are described as having a circular shape, convex elevation, shining white colour, and an entire edge. Gram staining results show that both strains of bacteria are gram positive, however brown syrup tau fu fa is rod-shaped like a bacillus, whilst white syrup tau fu fa is sphere-shaped like a coccus. Furthermore, the results for coagulase and catalase test are both negative, suggesting a high possibility of *Lactobacillus* sp.. Unfortunately, due to limited time and contamination occurs, the DNA sequencing cannot be carried out.

Conclusion: In conclusion, the findings of this study show from the morphological characteristics and biochemical tests of the tau fu fa samples, indicates a high likelihood of *lactobacillus* species presence. However, due to time constraints and the occurrence of contamination in the sample, molecular identification cannot proceed. Thus, more investigations and research must be done.

Keywords: Tau Fu Fa, Lactic Acid Bacteria (LAB), Biochemical tests, *Lactobacillus* sp., 16S Polymerase chain reaction (PCR)

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