ISMAH FIRZANAH ISHAMSHAH B. MEDICAL LABORATORY TECHNOLOGY (HONS.) JULY 2019

UNIVERSITI TEKNOLOGI MARA

BIOCHEMICAL AND MOLECULAR IDENTIFICATION OF *Lactobacillus spp.* ISOLATED FROM GOAT MILK AND PROBIOTIC POWDER

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DECLARATION

I hereby declare that this thesis entitled "Biochemical and Molecular Identification of *Lactobacillus spp.* isolated from goat milk and probiotic powder" is a presentation of my original research work and has not been submitted previously or currently for any other degree at UiTM or any other institutions.

Student's signature:

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ABSTRACT

Probiotics are living, and non-pathogenic microorganism, which gives health benefits to the human when administered in adequate amount. *Lactobacillus spp.* is one of the probiotic organism, which plays a major role in food fermentation and also take a part in therapeutic aspects of human health. There are various possible sources to isolate these bacteria. The purpose of this study is to isolate and identify the probiotic properties of the *Lactobacillus spp.* found in goat milk and probiotic powder by using biochemical and molecular technique. Isolates were phenotypically and genotypically characterized. The isolates were initially identified by their growth on MRS agar, gram staining and followed by testing their catalase and oxidase reactions. The isolates were then subjected to probiotic test, which includes bile salt tolerance test and antibiotic susceptibility testing. Further identifications were executed by molecular detection involving DNA extraction, PCR amplification of 16S rRNA gene. A total of 11 isolates designated as (M1, M2, M3, M4, M5, M6, M7, M8, S1, S2 and S3) expected to be *Lactobacillus spp.* was successfully identified based on the characteristics of growth on MRS agar and biochemistry reactions, Gram positive, catalase and oxidase negative. Amplification of 16S rRNA gene produced amplicon size of 566 base pairs (bp). Isolate M1 have least tolerance towards bile salt whereas isolate S3 are found to have slightly greater tolerance towards bile salt. Due to the ability to tolerate bile and an antibiotic susceptibility profiles, the isolates can be taken into consideration to be determined as probiotics bacteria.

Keywords: *Lactobacillus*, probiotic properties, goat milk, probiotic powder, bile salt tolerance