# ISOLATION, SCREENING AND CHARACTERISATION OF LACTIC ACID BACTERIA ISOLATED FROM LOCAL FOOD SOURCES

BY

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Sincerely

**Faris**

# ABSTRACT

126 bacterial isolates were isolated from several local food sources. Out of these, 55 isolates were subsequently identified as lactic acid bacteria i.e. they were gram-positive and catalase negative. These 55 isolates were put through gel plug test to distinguish between homofermentative and heterofermentative isolates. 16 of the 55 lactic acid bacteria isolates were found to be homofermentative. From the 16 homofermentative isolates, seven were chosen on the basis of origin and sugars used in the enrichment process for preliminary physiological characterisation. Several conditions were chosen such as variable temperature, lactic acid tolerance, NaCl concentration and initial pH. These serve as rapid discriminatory test whereby pH indicator was used to show growth and acid production. Out of the seven isolates, three that performed better than the others were chosen for further physiological studies. In this segment, the biomass yield, end point pH, glucose consumption and lactic acid production were determined. Environmental conditions such as temperature, initial pH and NaCl concentration were varied. These three isolates were subsequently put through a time course study using shake flask to monitor their performances over a 54hour period. The biomass yield, end point pH, glucose consumption and lactic acid production were monitored. From these sequences of isolation, screening and characterisation, one isolate was found to be suitable for industrial purposes. The isolate, TapLac displayed desirable characteristics such as producing single lactic acid isomer i.e. L-isomer, a high lactic acid production at higher temperature (37°C-45°C) and a good conversion rate of glucose into lactic acid at pH 7 i.e. a conversion ratio of 1.97. It also displayed good lactic acid tolerance i.e. at 7.5% (w/v) and the ability to grow at low initial pH i.e. at pH 4.5.

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