# MICROBIAL PRODUCTION OF L-PHENYLALANINE AND L-ALANINE USING SOIL-BORNE BACTERIA ISOLATED FROM PULIYANKULAMA IN ANURADHAPURA

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Amino acids are vital to all the mechanisms of life in plants, animals, humans and other living entities. Essential amino acids are not synthesized by mammals. Therefore, the essential amino acids like L-phenylalanine need to be synthesized to include in food and feeds. The present study was designed to find the microbial production of L-phenylalanine and L-alanine from different substrates using locally isolated bacteria. Nine soil-borne bacterial isolates (I1 to I9) from the farm of the Faculty of Agriculture, Rajarata University of Sri Lanka at Puliyankulama, Anuradhapura were tested for the production of L-phenylalanine and L-alanine in FM1, M1 and L6 fermentation media at 24, 48 and 72 hour intervals in a three factor factorial experiment in Completely Randomized Design (CRD) in triplicate. The effect of the interaction between bacterial isolate, fermentation medium and time on L-phenylalanine and L-alanine production was found to be significant at 0.05 probability level. None of the isolates produced L-phenylalanine or L-alanine in L6 medium. All the bacterial isolates produced L-phenylalanine in FM1 medium. Only isolate I4 produced L-phenylalanine in medium M1. Isolate I4 produced the highest amount of L-phenylalanine (1.96 g $l^{-1}$) after 24 hours in M1 medium. Out of nine bacterial isolates, eight isolates produced L-alanine in FM1 medium. The isolate I4 did not produce L-alanine in any medium. Only isolate I5 produced L-alanine in M1 medium. The highest L-alanine production was shown by the isolate I5 (1.875 g $l^{-1}$) after 24 hours in FM1 medium. Some bacterial isolates available in other countries have proved to produce higher levels of L-phenylalanine and L-alanine compared to the promising isolate recorded in this study. Therefore, the study needs to be extended further to screen some other strains from other parts of the country to isolate a potential strain to produce significantly higher amount of L-phenylalanine and L-alanine.

***Key words***: Amino acids, Bacterial isolates, Fermentation, L-alanine, L-phenylalanine