

Influence of Physical Parameters on Growth and Bacteriocin Activity by Species of Lactic Acid Bacteria Isolated from Fermenting Foods

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Predominant lactic acid bacteria (LAB) strains of (NS9, IMAU62205, KLDS1.0733, IMAU62166), (PON10014, OP, FSHS2, B23) and (NRIC1836, NBRC12011, OP4Dan) previously identified and isolated from fermenting cassava and maize were evaluated for the effect of physical parameters on their growth and bacteriocin production. The optical density (OD) and pH of the LAB strains were measured against time of growth in MRS broth. The effect of time, pH and temperature on the bacteriocin production was determined. The inhibitory activity of the bacteriocin produced by the LAB against some food spoilage microorganisms was evaluated. All the LAB strains showed similar growth pattern. Growth was at its peak at 12 h of incubation. There were variations in the OD of the different strains. The pH decreased with increase in the time of growth from 6.5-7.0 to 4.0-4.3. Optimum bacteriocin production (800-1000 AU/ml) occurred at 18 h of growth, pH 3.0-4.0 and at 40°C. The bacteriocin inhibited (7-12 mm) the test bacteria food pathogens but AT410231 was resistance to the bacteriocin. Time, temperature and pH had a profound effect on the growth and bacteriocin activity of LAB strains in the fermenting foods. The bacteriocin produced was inhibitory to many food spoilage microorganisms. This result is a guide to the control of fermentation needed to achieve safety in traditionally fermented foods.

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