

Isolation and antagonistic ability of lactic acid bacteria from some indigenous Nigerian fermented foods

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This study aims to isolate lactic acid bacteria (LAB) from some Nigerian indigenous fermented foods (ogi, eko, fufu, iru) in order to exploit their antimicrobial potential.

A total of 347 LAB strains were isolated from 150 samples of the fermented foods using standard procedures. These were characterized as LAB based on their biochemical, morphological and physiological studies. Ogi from sorghum (sogi) had the highest number of isolates with the isolation rate of 4.45 per sample while eba had the least with an isolation rate of 0.15. Generally fresh fermented foods had a higher number of LAB isolates than cooked ones. The LAB strains were majorly rods (86.74%) while only 13.27% were cocci. The predominant *Lactobacillus* species was *L. plantarum*.

Preliminary screening of the 347 isolates against 3 indicators (*Bacillus subtilis*, *Escherichia coli* and *Lactobacillus casei*) organisms revealed that about sixty per cent (205) of the LAB strains exhibited antagonistic activity against at least one of the indicator organisms, using the agar spot method. *Bacillus subtilis* was the best indicator as it was inhibited by 136 of the 205 LAB isolates. Only 98 isolates with inhibition zones greater than 5mm were selected for further screening. Sixty three of the 98 isolates retained the ≥ 5 mm inhibition zones when treated with the cell free culture filtrate (CFCS). Neutralisation and treatment of the CFCS with catalase revealed that the antagonistic activity of 16 of the 63 isolates were bacteriostatic. Forty percent of the bacteriocidal isolates were from sorghum ogi while cooked fufu recorded the least (4%). Sensitivity test of the antibacterial substances produced by 25 of the bacteriocidal LAB strains showed that they were inactivated by at least one proteolytic enzymes, which indicate their protein nature.

Keywords: Lactic acid bacteria, bacteriocin, fermented foods, Nigeria, Antimicrobial activity.

Biography

Adebayo Cecilia is a Ph.D. holder in Food/Industrial Microbiology from Ekiti State University, Nigeria. She is presently a Lecturer/Researcher at the Science Technology Department of the Federal Polytechnic, Ado-Ekiti, Nigeria. She is the Coordinator of Women in Science and has published more than 28 papers in reputed journals.

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