

**Abstract:**

Sixteen lactic acid bacteria, eight *Lactobacillus plantarum*, three *L. pentosus*, 2 *Weissella paramesenteroides*, two *L. fermentum* and one *Leuconostoc mesenteroides* ssp. *mesenteroides* were previously isolated from cassava fermentation and selected on the basis of their biochemical properties with a view to selecting appropriate starter cultures during cassava fermentation for gari production. In this study, the potential of these pre-selected strains as suitable freeze-dried cultures was evaluated. Their ability to tolerate the freeze-drying process was assessed by dehydration in a glycerol solution of increasing concentration, followed by staining with two fluorescent markers: rhodamine 123 and propidium iodide. Twelve strains that recovered more than 50% of their population value after visualisation on an epi-fluorescent microscope were produced in a bioreactor and freeze-dried. The technological characteristics identified after the freeze-drying process, were a high cell concentration or high survival rate. The ability of the freeze-dried strains to recover their acidification activity was evaluated through the determination of the pH, titratable acidity (% lactic acid/g Dry Weight) and cell count over 24 h on MRS broth. Ultimately, the strains *L. plantarum* VE36, G2/25, *L. fermentum* G2/10 and *W. paramesenteroides* LC11 were selected to be developed as freeze-dried starter cultures for gari production.