Abstract

Formulation and Evaluation of Bio-Protective Probiotic Starter Culture for the Production of *Ergo* and *Ayib*

Probiotics are live microorganisms that confer a beneficial effect on the host when administered in enough amounts. They have the ability to modulate the intestinal biome of the consumer. The aim of this study was to formulate bio-protective probiotic starter culture, evaluating their antagonistic effect against some foodborne pathogens such as *E. coli*, *S. aureus*, *S.* Typhimurium and *L. monocytogens*. The study also aimed at evaluating the impact of the formulated starter cultures on the sensory acceptance and shelf life of *ergo* and *ayib*. Accordingly, seven lactic acid bacteria and one yeast isolates were screened among previously isolated 243 lactic acid bacteria and 26 yeast isolates. The selected isolates were combined in different proportions to formulate starter cultures for the production of *ergo* and *ayib.* Nine formulations were made in different proportions based on the compatibility of the isolates. *Ergo* prepared in this study was shown to have pH of 3.99 - 4.38, titratable acidity of 0.60 - 0.97 at 48 hrs of fermentation, total solid of 15.97 - 17.87%, protein 3.19 - 4.28%, fat 4.16 - 5.50%, ash of 0.60 - 0.98%, solid nonfat of 11.63 - 13.43%, lactose 2.49 - 5.07% and syneresis (whey) content of 9.46- 10.58%. The formulate F2 and F6 showed inhibition to all the test pathogens completely at 48 hrs of fermentation except *S. aureus* in F6. The *ergo* products F2, F4, F6, and *ayib* product F2(AY2) were found to have better overall sensory acceptability with a mean score of 3.75, 3.56, 3.73 and 4.03/5.00, respectively. *Ergo* products F2 and F6 and *ayib* products F2(AY2) were found to have a shelf life of more than 15 days and 18 days, respectively, at an ambient temperature of 18-24oC. The use of this formulated starter culture for homemade production of *ergo* and *ayib* could improve the quality and organoleptic consistency of the final product as well as safety by preserving the typical sensory quality of the traditional fermented product and inhibiting the growth of undesirable microorganisms.

Keywords: *Ayib*; Bio-protective; *Ergo*; Shelf life; Starter Culture