

Abstract

Non-dairy probiotic yoghurt analogue was formulated using cream variety of soybean (*Glycine max* L) and white variety of acha (*Digitaria exilis*). One kilogram of cleaned soybean and 500 grams of cleaned acha were used to produce soymilk and achamilk. Soymilk and achamilk were blended in different ratios (100:0; 90:10; 80:20; 70:30; 60:40; 50:50; 0:100). The various blends were pasteurized at 80OC for 30 minutes, cooled to 44±2OC, fermented naturally for 8 hours until desired degree of acidity was achieved, cooled rapidly to 8±2OC, packaged in sealed plastic bottles and stored in the refrigerator. Microbiological analyses were done on the isolates obtained from incubation in an anaerobic jar at 30OC for 48 hours. The isolates were stored in sterile agar slants after purification by successive streaking on MRS and ST agar before being subjected to characterization. Microbiological screening (morphological, physiological and biochemical tests) was done to identify working isolates of probiotic status. Further assessment of the performance of probiotic strains (acidifying activity and exopolysaccharide (EPS) production) were performed. Results show that the isolates were Gram-positive, catalase-negative, oxidase-negative, and non-spore forming. A total of 7 isolates produced lactic acid. Among the 5 rods, 3 were able to grow at 45OC, produced acid and gas from glucose (characteristics of *Lactobacillus* spp.); 2 isolates grew between 22 and 37OC at 45% NaCl and pH of 9.6 (characteristic of *Lactococcus* spp). All the isolates showed tolerance to 5% bile and 3.0% NaCl (inhibitory substances). There was no significant difference ($p>0.5$) in the acidifying activities of *Lactobacillus*, *Lactococcus* and *Streptococcus* species. After 6 hours of incubation, an increase in pH from 4.78 to 5.87 (for *Lactobacillus* spp), 4.12 to 5.86 (for *Lactococcus* spp), and 4.20 to 5.60 (for *Streptococcus* spp) were observed. *Lactococcus* spp showed an acid value of 0.29/100ml lactic acid after 6 hours and increased from 0.40 to 0.75 g/100 ml after 12 and 24 hours respectively. These isolates were used for the formulation of probiotic yoghurt analogue.

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