Microbiology and quality assessment of '*burukutu'* a Nigerian fermented alcoholic beverage

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Abstract

Burukutu is an indigenous alcoholic beverage made in Nigeria from guinea corn. Microbial quality of the brewed burukutu was investigated using standard spread plate method. Ten (10) samples of commercially prepared burukutu were aseptically collected in 500 mL sterile bottles in triplicate from ten randomly selected brew houses in Army barracks and Angwan kaje, Minna, Niger state, Nigeria. The total viable counts, coliform counts and fungal counts ranged from 6.7×10^7 cfu/mL – 7.9×10^7 cfu/mL, 1.6×10^6cfu/mL – 2.6×10^6 cfu/mL and 2.3×10^4cfu/mL – 1.54×10^5 cfu/mL respectively for all locations sampled. The microorganisms isolated from commercially produced burukutu are Esherichia coli, Staphylococcus aureus, Bacillus subtillis, Aspergillus niger, Aspergillus flavus and species of Enterobacter, Klebsiella, Saccharomyces, Streptococcus, and Fusarium. Staphylococcus aureus, Bacillus subtillis, E. coli, Aspergillus flavus and Saccharomyces species were isolated from burukutu prepared in the laboratory. The proximate analysis revealed that, pH values ranged from 3.0-3.9, temperature ranged from 27.20 - 29.00, titratable acidity ranged from 0.14-0.16, alcoholic content ranged from 1.8-3.6%, dry matter content ranged from 3.6-8.0%, ash content ranged from 0.16-0.36% and crude protein content ranged from 3.18-3.29%. While the mineral analysis revealed that, magnesium content of the samples ranged from 119.30–1073.61ppm. Laboratory prepared burukutu was found to contain the highest calcium (3532.10ppm) and the lowest (917.28ppm) was found in burukutu from Angwan Kaje. The iron content of the samples ranged from 76.00-113.20ppm. The data obtained from proximate and mineral analysis were subjected to a One-Way Analysis of Variance (ANOVA) which showed that there were no significant differences ($p>0.05$) in levels of crude protein, ash content, temperature, magnesium and iron. While there were significant differences ($p<0.05$) in levels of pH, total titratable acidity, dry matter content, alcohol content and calcium analyzed. Consumption of burukutu may pose a public health hazard because of reported abilities of some fungi isolated to produce mycotoxins. There is therefore need for training local brewers on basic hygiene and measures to reduce risk of contamination by microorganisms.

Keywords: Alcoholic beverage; Burukutu; Microorganisms; Mineral analysis; Proximate analysis; Quality assessment

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