
Selection of starter cultures for the production of ugba, a fermented soup condiment

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Abstract

Ugba is a traditional fermented African oil bean condiment that serves as flavouring in soups or as low-cost protein snack in Nigeria. A total of 56 strains of spore-forming bacteria were isolated from 21 ugba samples purchased from retail markets in southwestern Nigeria. *Bacillus subtilis* (26 strains) was identified as the dominant microorganism of the fermented samples. The total viable count for the ugba samples obtained from the retail outlets was in the range of 1.4×10^7 – 2.8×10^9 cfu/g, while the spore-forming bacteria had a count of 1.8×10^{10} cfu/g. Strains of *B. subtilis* were selected as potential starter cultures based on their enzymatic activities and ability to produce stickiness. The nine selected strains had a range of scores of proteolytic activity (5.2–7.4mm), amyolytic activity (4.4–5.6mm) and stickiness (15.1–17.3cm). Relative viscosity was in the range of 2.3–5.3U/ml, while protease activity was from 30.1–51.4U/ml. However, *B. subtilis* MM-4:B12 that had the highest scores was chosen as starter culture for the laboratory preparation of ugba, and a viable count of 1.4×10^{10} , pH of 8.1 and 46.5% moisture content were obtained at the end of 72h fermentation period. The fermented product had the peculiar characteristics of the traditionally prepared sample which is usually fermented for about 5 days. There were no significant differences in the protein (17.8–18.1%), fat (40.9–41.2) and titratable acidity (0.11–0.13%) of both starter culture fermented ugba and those obtained from the retail markets. However, organoleptic evaluation scores showed the starter inoculated samples being rated higher by the consumers with regard to consistency, aroma and taste..