Effect of Cowpea Addition and Fermentation on the Biochemical and Sensory Characteristics during Co-Fermentation of Cassava (*Manihot esculenta* Crantz) and Cowpea (*Vigna unguiculata*) into Gari, a Roasted Fermented Cassava Meal

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Abstract

Processing cassava into gari enhances the palatability as well as the shelf life of the otherwise highly perishable fresh cassava roots. However, cassava has low protein content and hence fortifying it with cowpea would help improve its nutritive value. This study investigated the influence of cowpea addition and fermentation on the biochemical, chemical and sensory characteristics of cowpea-fortified gari. A 4 x 4 factorial experiment was conducted with fermentation time (0, 24, 48 72h) and cowpea concentration (0, 10, 20 and 30%) as variables. Samples were analyzed for their biochemical and sensory characteristics. Starch and reducing sugars decreased from 62.27% to 55.57% and 406 mg/g to 153.5 mg/g respectively, with cowpea fortification and fermentation time from 0% to 30% cowpea fortification after 72h. Amylose content increased from 9.8% to 40.9% with increasing levels of cowpea fortification but no significant difference with fermentation time. Protein content increased with cowpea fortification from 2.60% for the unfortified gari sample to 9.85% with the 30% cowpea fortification whilst fat content increased from 0.38% to 0.79%. Crude fiber however reduced from 3.15% to 2.35% with increasing level of cowpea fortification. The degree of lightness (L) decreased with consequential reduction yellowness (b*) with increase cowpea levels irrespective of the fermentation time. L-value decreased from 90.09 in the 0% cowpea gari to 74.65 with 30% cowpea fortification. The 10% cowpea fortified gari was the most preferred in terms of colour, taste, mouth-feel and overall acceptability. Cowpea fortified gari can contribute to food security in financially deprived communities.