

Title Effect of steaming method and time on the physico-chemical properties of flour from four species of yam (*Dioscorea spp*) tubers

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Abstract

Yam flour has the advantage of being a product that keeps well and is easy to market at great distances, thus reducing post harvest losses. Pre-gelatinized flours are used as puddings and can be incorporated into baby food formulation especially where normal cooking methods are not employed. Research has been carried out on processing of pre-gelatinized yam flour but more research work needs to be conducted on underutilized species of yam to ascertain their usefulness in various areas. Effect of steaming method and time on the physico-chemical properties of flour from four species of yam (*Dioscorea*) tubers was investigated. Raw and pre-gelatinized flour were produced from four species of yam (*D. dumetorum*, *D. alata*, *D. rotundata* and *D. cayenensis*). Pre-gelatinization was done by steaming diced cubes in autoclave at 68,950 Nm⁻² for 5 min and in Barlett steamer at 98±2 °C for 10, 20 and 30 min. Hour samples were analyzed for amylose content, swelling index, consistency, solubility, water absorption capacity, and iodine affinity for starch. Results showed that the properties of the flours were affected by both species and steaming time. The amylose content of the raw flour was higher (18.40 - 23.98 %) than the pre-gelatinized flour (17.82 - 20.30 %) in all the species. Values also decreased with increase in steaming time. The swelling index of raw flour ranged from 2.23 (in *D. rotundata*) to 3.14 (in *D. dumetorum*). Raw flour of *D. dumetorum* had highest values for consistency (13.50) and solubility (5.53%) when compared to other species. In all species, consistency values of pre-gelatinized flour increased with increase in steaming time till 20 min while solubility values increased till 30 min. Pre-gelatinized flour samples from all the species had higher values, with significant difference (p<0.05), for iodine affinity for starch than their corresponding raw flour samples. Values also increased with increase in steaming time. Values obtained in autoclaved samples were closer to those obtained in samples that were steamed in Barlett steamer for 10 and 20 min for all the parameters measured, except consistency.