

## **PROCESSING OF HARD TO COOK BEANS FLOUR AS RAW MATERIAL FOR THE PREPARATION SOME COMMON AFRICAN URBAN FAST FOODS.**

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Rapid urbanisation is one of the major forces contributing to food insecurity and inadequate protein nutrition in African countries. Use of appropriate postharvest processing technologies can contribute to reducing the magnitude of the problem. Beans constitute a cheap source of protein for most urban dwellers within the central African region. However, in poor harvest storage conditions beans develop the hard-to-cook defect which is known to not only renders it difficult to cook (leading to excessive use of wood fuel and its attendant effects on the environment due to deforestation) but also affects its chemical and nutritional composition. Biscuits, sorghum porridge, akara, moinmoin, koki, etc. are some common African fast foods made mostly from sorghum, wheat and/or cowpea flour. A number of studies were carried out to evaluate the effect of some processing technologies to produce bean flours that could be used as raw material for the preparation of some of these foods. In this respect hard-to-cook beans were subjected to different processing technologies (extrusion-cooking, soaking, germination, bio-processing and milling, etc) to obtain flours that were subsequently used alone or in combination with sorghum, cowpea, or wheat flours for the preparation these foods. The effect of processing and supplementation on the chemical composition, the nutritional and functional properties of the hard-to-cook bean flours and on the foods made from composites containing these flours was assessed. The results obtained show that the different processing technologies used produced significant changes in the composition and physicochemical properties of hard-to-cook bean flours. In particular, germination significantly reduced the foam and emulsion capacity and stability while the protein solubility was increased; soaking at 37°C for 9h or 45°C for 6h considerably reduced the cooking time of HTC beans, increased water absorption and swelling capacity of the beans; extrusion-cooking at 170-180°C, speed 25 and 25-30°C moisture content was efficient to destroy trypsin inhibitors while all conditions totally inactivated the  $\alpha$ -amylase inhibitors and also causing a decrease (23-30%) in insoluble fibre and increase in soluble fibre and protein digestibility. The incorporation of the HTC beans flours in the preparation of wheat-, cowpea or sorghum-based foods was highly successful leading in most cases to an improvement in the protein content of the products made. Products containing extruded hard-to-cook beans were highly digestible as compared to untreated or boiled beans. It is concluded the use of appropriate processing technologies could improve the potential of HTC bean flour as a good nutrient source and raw material for preparation of some common African fast commonly eaten in urban areas.