Improve the quality of indigenous *Ramonnana* cowpeas through solid state mold fermentation

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In Botswana, cowpea occupies an important position in local food habits especially among the rural community which forms the majority of the population. *Ramonnana* cowpea is the most harvested variety. The high protein level of cowpea represents its major advantage for use in nutritional products and compensates for the high proportion of carbohydrate traditionally consumed. The nutritional problems linked with antinutrient compounds such as protease inhibitors and phytate can be avoided by using appropriate treatments such as soaking, dehulling, heat treatment and fermentation. In this study, solid state fermentation (SSF) of cowpea was employed using the edible mold *A. oryzae,* *Rhizopus oryzae* and *Rhizopus oligosporus.* Fermented samples were analysed for protein content and digestibility, amino acid content and profile, phytate content, phytase activity as well as trypsin inhibitors according to the AACC methods. Statistical analysis of data was by the analysis of variance. Means that differed significantly were identified by the least significant difference (lsd) test.

Levels of phytate and other antinutrients reduced throughout the fermentation period, irrespective of the nature of the fungal inoculum. Phytase activity was markedly improved although the extent of the improvement was significantly (p<0.05) influenced by the mold inoculum. In-vitro Protein digestibility, and levels of individual amino acids increased for all fermentation products. Methionine in particular had a high increase. Trypsin inhibitor activity was mainly reduced by soaking and heat treatment.

Results indicate the potential to improve the nutritional quality of *Ramonnana* cowpeas, through solid state fermentation. This will reduce protein-energy malnutrition in Botswana.