ABSTRACT

Pearl millet is comparable and even superior in some of the nutritional characteristics to major cereals, with respect to its energy value, protein, fat and minerals content. Pearl millet is mostly used as whole flour for traditional food preparation and hence confined to traditional consumers and to people of lower economic strata. Its utilization is limited due to the presence of various anti-nutrients. Studies on the commercially available (market sample) pearl millet are lacking. Pearl millet grains are usually processed (dehusking and polishing) before they reach the market, in order to make them edible and suitable for human consumption. Generally, dehulling or dehusking and milling process are known to affect the taste and keeping quality of millets. Two commercially available pearl millet varieties such as Kalukombu (K) & Maharashtra Rabi Bajra (MRB) were subjected to various processing methods [milling, wet and dry heat treatments (Pressure cooking, boiling and roasting) and germination] commonly adopted practices in Indian households and were analysed for physico-chemical properties, antinutrient protein profile, antioxidant components, antioxidant activity, iron and calcium bioaccessibility, nutritionally important starch fractions, and protein digestibility. The starch from pearl millet was isolated and studied for nutritional and functional characteristics. Food products (breakfast items, traditional sweets and baked products) were prepared for the two pearl millet varieties and a few selected products were subjected to storage and acceptability studies. Semi refined flour and bran rich fraction were obtained by milling. Semi refined flour displayed desirable nutritional qualities comparable to the whole flour. This processing method can promote the utilization of pearl millet in baked products. Bran rich fraction can serve as a functional ingredient for better health benefits. Heat treatments were effective in reducing the
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antinutritional factors such as phytic acid and oxalate content thereby enhancing mineral bioaccessibility. Roasting & germination respectively were beneficial in improving the nutritive value of pearl millet. The isolated starch from pearl millet may be used as a low cost and nutritional ingredient in infant foods and functional food products such as beverages, custard and soup mixes etc. Due to its gluten free nature, pearl millet can be successfully used in breads, cookies or breakfast items. Utilization of pearl millet flour in food product preparation significantly improved the nutritional quality by contributing to higher protein, ash and mineral content (iron, calcium and phosphorus). Products prepared from the two pearl millet varieties (K&MRB) flour had similar sensory profiles however they differed significantly from traditional products in key attributes such as taste, aroma, and overall acceptability indicating that products prepared from pearl millet were highly acceptable. This study has shown a potential use of inexpensive and underutilized pearl milled flour in the preparation of various breakfast items, traditional sweets and bakery product.