

## ABSTRACT

Medicinal properties and food values of the cereals, legumes, vegetables and fruits are known to all, but the nutrient benefits of the obtained plant based by-products like bran, husk (i.e., choker, bhoosa, churi), peel are not much acknowledged. They are either discarded or used as animal food. Improper discard of these by-products leads to environmental pollution. In spite of rich nutrient composition, these by-products are not utilized properly. Aim of this work is to study about the food value of legume husks such as chana (chickpea/ Bengal gram/ Garbanzo Bean) husk and moong husk mainly along with other by-products such as rice bran, wheat bran, orange peel, and banana peel. Besides formulation of food products from these by-products, popularization of the formulated value-added products is also necessary.

Raw ingredients are being processed through general domestic cooking methods. Formulated Products are bakery products (bread, cookies), health drinks & beverages, snack bar, dairy-based product, roasted product, fermented products. Nutrient composition (AOAC), sensory parameters (9-points Hedonic Scale) of the developed products are studied along with the determination of microbial load. Obtained data indicated that the developed products are rich in dietary fibre along with minerals like Calcium, Phosphorus, Iron. Estimated data also shows presence of high antioxidant activity and phenol content. Sensory profiling according to the data indicated satisfactory sensory profile of the products. Acceptable sensory quality of the developed products also opposes the stigma associated with edible agricultural by-product consumption. Microbial load of the products is also found to be within acceptable limits.

The shelf life of the formulated products, stored at different conditions for 90 days at room temperature has been observed. The peroxide value and free fatty acid value of the same are determined at the interval of 15 days during the storage of these products and according to the estimations, formulated products show appreciable shelf-life which was three months except bread, dairy product, and fermented product. To enhance the shelf-life of these products, food irradiation process has been used in this study instead of chemical preservatives. The products are irradiated using  $^{137}\text{Cs}$  and  $^{60}\text{Co}$  gamma reference sources.

Exposed dose to the products is detected using NaI (TI) scintillation counter. The irradiated products (stored at room temperature) show enhanced shelf-life with retained nutrient composition. Popularization of the developed products has been carried out in collaboration with KrishiVigyan Kendra.

**Keywords:** Milling by-products, Value-added products, Baked products, Fermented products, Detox Drinks, Snack products, Food irradiation, Gamma sources