

ABSTRACT

Breakfast is where you 'break the fast' of a night without any food. So it is very important to have a very nutritious meal for the breakfast. There are so many types of breakfast cereals readily available in Sri Lankan market. But their prices can not be affordable to rural people. Therefore introduction of a nutritious product for an affordable price for the local market is very important.

Corn(*Zea mays* L.), rice(*Oryza sativa* L.), Wheat(*Triticum vulgare*), and barley(*Hordeum vulgare* L.) are the major cereals used in breakfast cereals. Common pulses are soybean(*Glycine max* L.Merr.), green gram(*Vigna radiata* L.) and chickpea(*Cicer arietinum* L.). Corn, rice, soybean, green gram and chickpea were used for this breakfast cereal. The main steps involved in this breakfast cereal manufacturing are mixing of the flour of cereals and pulses according to the ratio of the developed formula, then extrusion cooking, drying and blending into powder form.

Whole corn, polished rice, soybean, green gram and chickpea were milled to 1mm in particle size. The ratio of cereal component soybean, green gram and chickpea taken for the development of product was 59:24:12:5 on wet basis. The feed moisture of the ingredients was adjusted to 20% on dry basis and extrusion cooked in a double screw extruder at temperatures ranging from 150 to 160 °C. The pressure was adjusted to 1bar. The diameter of the die was 3mm. The screw speed was 400rpm. The cooking time was 10 to 12 seconds. The feed rate was 2.8(Dial reading). Then the extruded product was dried in an oven at 200 °C for about 3 hours. They were blended into 0.5mm particle size and packaged.

The moisture content of breakfast cereal during the shelf life should not exceed 8%. Water activity should be below 0.6 to avoid microbial contamination. The moisture content of this new breakfast cereal is in the range of 6 to 7%. On dry matter basis the protein content is 18.86% and fat content is 6.5%. The carbohydrate content is 68.79%. The fibre and ash contents are 1.6% and 2.82% respectively. This product provides 409.1 kcal/100g. During extrusion cooking heat sensitive vitamins are destroyed. So fortification is essential. And also iron and calcium enrichment is important.

Shelf life evaluation of this type of breakfast cereal is based on the physical and chemical changes which are caused due to the moisture absorption. Moisture and light resistant packages can be used to protect these products. Aluminium foiled laminated packs are the most suitable packages.

In this study both metalized polythene and aluminium foiled laminated packs were used. But metalized polythene can not act as a complete barrier to oxygen and light. Slight changes in colour and aroma were occurred in metalized polythene packages. No colour and odour changes were occurred in aluminium foiled laminated packs during that three months.

During the study it was found that there was no post fecal contamination in the product and no rancidity after three months in storage life. This product can store for about three months without any preservative. The cost for 200g of packet is 15/=.

This product can consider as a natural product. It does not contain any artificial colourings or flavours. To develop the colour can add reducing sugars or artificial colourings. Sweetness can be increased by adding sweetners.