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Development of a breakfast cereal and evaluation of shelf life

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It is very important to have a very nutritious meal for breakfast. There are many types of breakfast cereals readily available in the Sri Lankan market. But their prices are not affordable to rural people. Therefore, introduction of a nutritious product at an affordable price for the local market is very important. Whole corn, polished rice, soybean, green gram and chickpea were used for this breakfast cereal. They were blended to 1 mm in particle size. The ratio of cereal component, soybean, green gram and chickpea taken for the development of the product was 59:24:12:5 on wet basis. According to sensory evaluation, it was the most preferable ratio. The feed moisture of the ingredients was adjusted to 20% on dry basis and extrusion cooked in a twin screw extruder at temperatures ranging from 150 to 160 ^{0}C. The pressure was adjusted between 7 to 15 bar. The diameter of the die was 3 mm. The screw speed was 400 rpm. The cooking time was 10 to 12 seconds. The extruded product was then dried in an oven drier between 80 to 100 ^{0}C temperature for about 20 minutes. They were blended into 0.5 mm particle size and packaged in metalized polythene packs and aluminium foiled laminated packs.

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 breakfast cereal was in the range of 6 to 7%. On dry matter basis the protein content was 18.86% and fat content was 6.5%. The carbohydrate content was 68.79%. The fibre and ash contents were 1.6% and 2.82% respectively. This product provides 409.1 kcal/ 100 g. During extrusion cooking heat sensitive vitamins can destroy. 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. In this study both metalized polythene and aluminium foiled laminated packs were used. But metalized polythene could not act as a complete barrier to moisture and light. Slight changes in texture and aroma were observed in metalized polythene packages. No texture and odour changes occurred in aluminium foiled laminated packs during that three months. Aluminium foiled laminated packs are the most suitable packages.

During the study it was found that there was no post faecal contamination in the product and no rancidity after three months in storage life. It can be stored for about three months without any preservatives. Without fortifying the product, the cost for 200 g of packet was Rs 15/= . This product can be considered as a pre cooked natural product. It does not contain any artificial colourings or flavours. To develop the colour reducing sugars or artificial colourings can added. Sweetness can be increased by adding sweeteners.

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