

DEVELOPMENT OF LEGUMES AND NUTS BASED HIGH PROTEIN BISCUIT TYPES FOR CHILDREN AND ADULTS

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Protein deficiency is highly prevalent among all age groups in Sri Lanka. Thus, the present study aimed to develop two biscuits; for children (CB) and adults (AB) with considerable amount of proteins. The primary ingredients used were soybean curd, chickpea, groundnuts, margarine and baking powder. In addition, sugar was added to CB while spices and salt were added to AB. The best proportions of ingredients were selected for two biscuits based on sensory evaluation. Protein, moisture, ash, dietary fibre, and fat contents were estimated as analysis. The protein contents of two biscuits were compared with commercial biscuits and hen egg. Glycemic index (GI) of AB was estimated following the standard protocol for GI studies (n=10) compared to the standard (anhydrous glucose). Post-prandial blood glucose level of selected participants was estimated at 30 min intervals, for 2 h, using glucose oxidase colourimetric method. Percentage crude fat ($26.49\pm 0.21\%$), ash ($2.36\pm 0.01\%$), crude fibre ($1.24\pm 0.11\%$), and crude protein ($20.39\pm 0.17\%$) in CB were significantly lower ($p < 0.05$) from AB (crude fat $31.40\pm 0.17\%$, ash $3.73\pm 0.25\%$, crude fibre $1.98\pm 0.07\%$, crude protein $25.86\pm 0.34\%$) except moisture ($6.51\pm 0.41\%$) in CB and ($4.19\pm 0.40\%$) in AB, However, both CB and AB had significantly higher ($p < 0.05$) protein content than the commercial biscuit ($6.88\pm 0.08\%$) and hen egg ($12.43\pm 0.5\%$). The CB provided approximately 9.1 g and AB provided 12 g of protein with two servings per day (serving size=30 g) compared to the hen egg (60 g) as 7 g. The GI of AB was 11.01 ± 4.36 thus can be categorized as low GI. A peak reduction ($22.27\pm 11.6\%$) in the postprandial blood glucose was observed in AB compared to standard. It can be concluded that both CB and AB are rich in protein and two servings per day would provide proteins more than a hen egg. The AB can be introduced as a low GI food is much suitable for adults.

Keywords: High protein biscuit, Legumes, Low glycemic index, Nuts, Protein deficiency