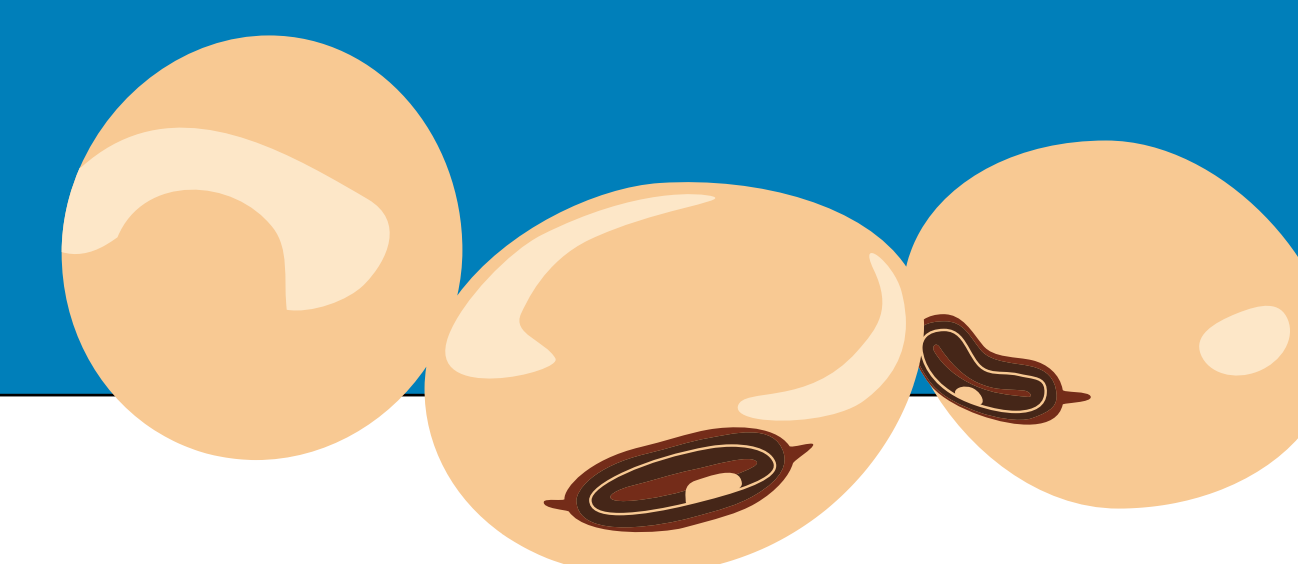


Development of a Nutrient-Dense, Cost-Effective Fermented Nut Spread to Enhance Protein Intake Among Low-Income Populations in Sri Lanka

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BACKGROUND

- Protein deficiency remains a major issue among low-income groups in Sri Lanka.
- Limited dietary diversity and affordability restrict access to nutrient-rich foods.
- Legume-based fermented foods are affordable, local, and nutrient-dense.
- This study developed a low-cost fermented nut spread to improve protein intake.

METHODS

- Formulation: **Peanut, Soybean, Velvet bean**
40 : 40 : 20
- Fermentation: *L. bulgaricus* and *S. thermophilus*
- Analyses: Proximate, antioxidant (DPPH), sensory, and microbial safety
- Sensory analysis by 5 point hedonic test with untrained panel
- Comparison with commercial peanut butter for nutrition and quality

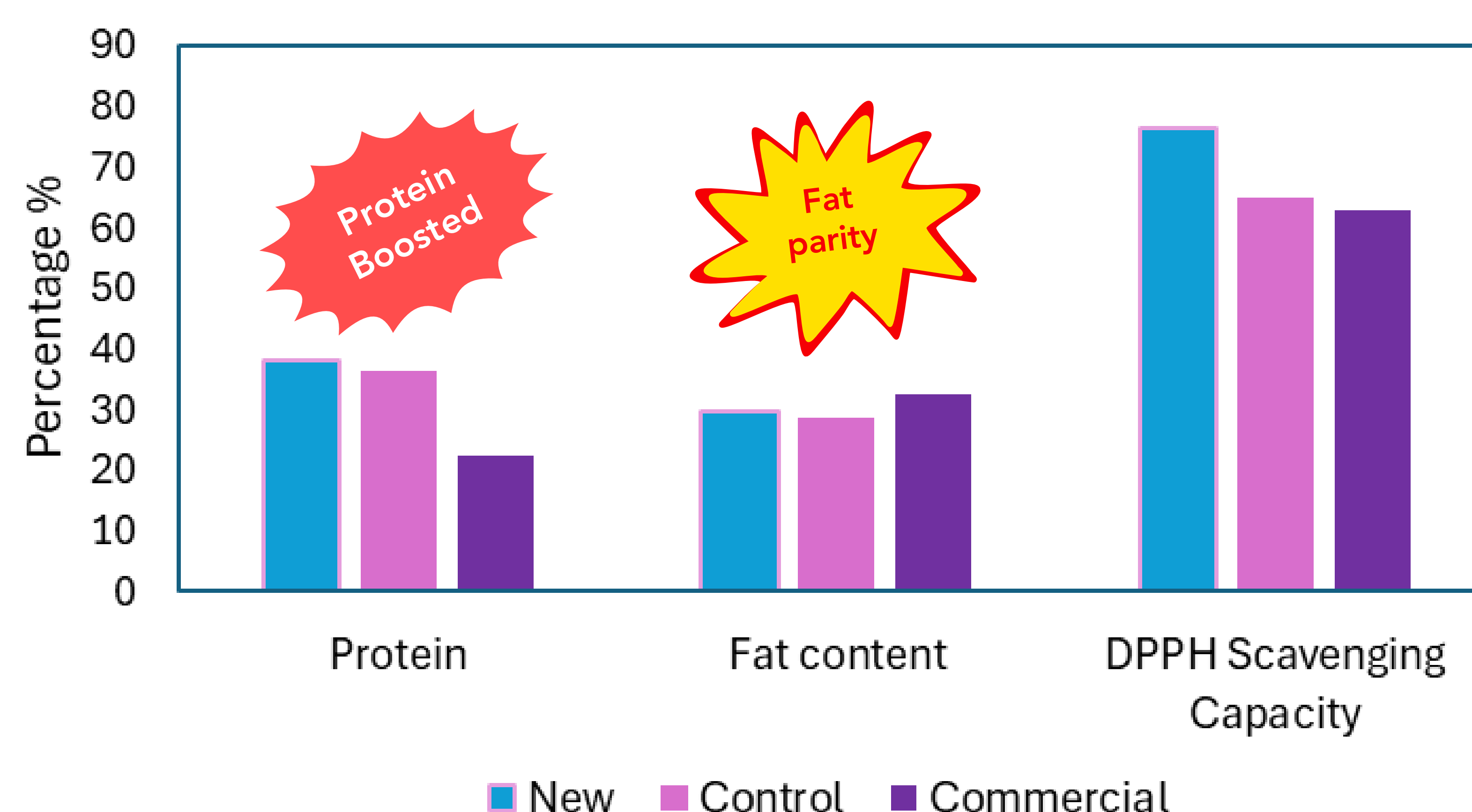
RESULTS

- Protein: **37.98%** (higher than control 22.5%)
 - Antioxidant activity: 76.50% DPPH
 - Fat content: Comparable to peanut butter
 - Sensory: Good acceptability (taste, texture, aroma)
 - Microbial safety: Confirmed
- Fermentation improved digestibility and bioactive content.



Control Commercial Peanut Butter New

Fermentation Effects on Nutritional Quality



COST ANALYSIS

- Velvet bean, though underutilized, is a hardy and low-maintenance crop with strong potential for easy cultivation.
- By incorporating low-cost soybean and reducing the peanut content, the new nut spread can be produced at a significantly lower cost.
- COP - LKR 904.00 per 1 kg of nut spread.

CONCLUSION

- A **nutritious, affordable, and scalable** legume-based spread was developed.
- Suitable for **small-scale enterprises, school feeding, and nutrition programs.**
- Supports **Sri Lanka's food security and malnutrition reduction goals.**
- Further studies: cost-effectiveness, market feasibility, and policy integration.

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