



DEVELOPMENT AND NUTRITIONAL EVALUATION OF GLUTEN-FREE HIGH PROTEIN FOOD WRAP UTILIZING PROSO MILLET (*PANICUM MILIACEUM* L.) AND DRUMSTICK SEED POWDER (*MORINGA OLEIFERA*)

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Article Info

Article History:

Published: 26 Sept 2026

Publication Issue:

Volume 3, Issue 9
September-2026

Page Number:

476-485

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Abstract:

The growing demand for nutrient dense and functional convenience foods has encouraged the development of innovative food products using underutilized plant-based ingredients. High protein food wraps have emerged as a promising alternative to conventional wheat-based wraps due to their versatility, nutritional value and potential to meet the dietary needs of health conscious consumers. Proso millet (*Panicum miliaceum* L.), a gluten free cereal, is recognized for its rich content of complex carbohydrates, dietary fibre, essential minerals and bioactive compounds. Drumstick seed powder (*Moringa oleifera*) is an excellent source of plant protein, healthy lipids, antioxidants and micronutrients, making it a valuable ingredient for nutritional enhancement. The potential role of these ingredients in developing sustainable, gluten free and value-added functional foods is highlighted. Existing research indicates that the incorporation of proso millet and drumstick seed powder can improve the nutritional profile and functional quality of food wraps while supporting clean label product development and dietary diversification. By providing a convenient and wholesome option, it promotes healthier dietary habits and underscores the benefits of incorporating nutrient-rich ingredients into everyday food choices.

Keywords: Proso millet, Drumstick seed powder, High-protein food wrap, Functional foods, Nutritional evaluation

1. INTRODUCTION

The increasing prevalence of lifestyle-related diseases and protein malnutrition has created a growing demand for foods that provide both nutritional value and health benefits. Functional foods have gained considerable attention because they contain bioactive compounds that promote health beyond basic nutrition. Among these, high-protein convenience foods have become increasingly popular due to their ability to improve satiety, support muscle maintenance and enhance overall well-being. Consequently, researchers are focusing on developing sustainable plant-based food products with superior nutritional quality (Marti & Tyl, 2021).

Plant-based protein sources have emerged as suitable alternatives to animal proteins because they are sustainable, economical, and nutritionally rich. Cereals, millets, legumes and edible seeds are increasingly incorporated into food products to enhance protein content, dietary fibre, vitamins, minerals and bioactive compounds. Their utilization also

aligns with the growing consumer preference for clean-label, environmentally sustainable and health-promoting foods (Hassan et al., 2021).

Convenience foods such as wraps are widely consumed because of their portability and ease of preparation. However, conventional wheat-based wraps are generally rich in refined carbohydrates and comparatively low in protein and dietary fibre. Replacing refined wheat flour with nutrient-dense ingredients provides an effective strategy for developing healthier wraps with improved nutritional and functional properties, thereby meeting the increasing consumer demand for nutritious ready-to-eat products (Marti & Tyl, 2021).

Millet has gained global recognition as climate-resilient cereals owing to their excellent nutritional composition, adaptability to harsh environmental conditions and lower water requirements. They are naturally gluten-free and are rich in complex carbohydrates, dietary fibre, minerals, vitamins and antioxidant compounds. These characteristics make millets valuable ingredients for the development of functional foods and sustainable food systems (Hassan et al., 2021).

Among the different millet species, **proso millet (*Panicum miliaceum* L.)** has attracted considerable attention because of its high nutritional value and functional properties. It is a good source of protein, slowly digestible starch, dietary fibre, essential minerals and bioactive compounds that contribute to antioxidant activity and improved metabolic health. These nutritional attributes make proso millet a promising ingredient for the development of nutrient-enriched food products, including high-protein wraps (Marti & Tyl, 2021).

Similarly, **drumstick seed (*Moringa oleifera* Lam.)** powder has emerged as a valuable functional ingredient because of its high-quality plant protein, healthy lipids, essential amino acids, vitamins, minerals and phytochemicals. The incorporation of drumstick seed powder into cereal-based formulations has been reported to improve protein quality, micronutrient content, antioxidant capacity and the overall nutritional value of food products, making it suitable for functional food development (Leone et al., 2022).

The combination of proso millet and drumstick seed powder offers complementary nutritional advantages for the development of high-protein food wraps. While proso millet contributes complex carbohydrates, dietary fibre, minerals and bioactive compounds, drumstick seed powder enhances protein content and functional properties. Their combined utilization has the potential to improve the nutritional profile, technological characteristics and consumer acceptability of food wraps while supporting the development of sustainable and health-oriented food products (Marti & Tyl, 2021).

Although several studies have investigated the nutritional and functional properties of proso millet and *Moringa oleifera* individually, limited information is available regarding their combined application in high-protein food wraps. Therefore, this review aims to summarize recent scientific evidence on the nutritional composition, functional

properties, formulation strategies, and nutritional evaluation of food wraps developed using proso millet and drumstick seed powder, while highlighting future research opportunities in this emerging field **(Marti & Tyl, 2021)**.

2. HIGH-PROTEIN FUNCTIONAL FOODS:

High-protein functional foods are products that provide adequate protein along with additional physiological benefits through the presence of bioactive compounds. These foods not only support growth and tissue repair but also contribute to improved satiety, muscle maintenance, metabolic health and immune function. Increasing consumer awareness regarding healthy lifestyles has accelerated the demand for protein-enriched foods prepared from sustainable plant-based ingredients **(Hassan et al., 2021)**.

The shift towards plant-based protein has encouraged the utilization of cereals, millets, legumes, and oilseeds in functional food development. Compared with animal proteins, plant proteins are considered more sustainable, environmentally friendly and economical. In addition, these ingredients provide dietary fibre, essential minerals, vitamins and phytochemicals that enhance the overall nutritional quality of food products **(Saleh et al., 2021)**.

Food manufacturers are increasingly incorporating high-protein ingredients into commonly consumed products such as breads, snacks, beverages, pasta and wraps to improve their nutritional value. Protein fortification not only increases protein intake but also enhances product functionality and supports the growing demand for convenient and health-oriented foods. The selection of suitable protein-rich ingredients plays an important role in maintaining product quality, texture and consumer acceptability **(Boukid et al., 2022)**.

Millets have emerged as promising raw materials for the development of high-protein functional foods because of their balanced nutrient composition, gluten-free nature and climate resilience. Their incorporation into value-added products contributes to improved dietary diversity while supporting sustainable food production systems. Consequently, millet-based functional foods are receiving increasing attention from researchers and the food industry **(FAO, 2023)**.

The combination of protein-rich cereals with nutrient-dense seed powders is considered an effective strategy for developing innovative functional foods with enhanced nutritional quality. Such formulations improve protein content, amino acid balance, antioxidant activity and micronutrient availability while meeting consumer demand for healthier convenience foods. This approach provides a strong scientific basis for the development of high-protein food wraps utilizing proso millet and drumstick seed powder **(Leone et al., 2022)**.

3. FOOD WRAPS: AN OVERVIEW

Food wraps are thin, flexible flatbread products designed to enclose a variety of fillings and serve as convenient ready-to-eat meals. Their portability, ease of preparation and versatility have contributed to their increasing popularity among

consumers seeking healthy and time-saving food options. Traditionally, wraps are manufactured using refined wheat flour; however, the growing demand for nutritious convenience foods has encouraged the development of wraps enriched with whole grains, millets, legumes and other functional ingredients (Yano & Fu, 2022).

In recent years, the formulation of food wraps has shifted from providing basic energy to delivering additional nutritional and functional benefits. Researchers have focused on incorporating plant-based ingredients rich in protein, dietary fibre, vitamins, minerals and bioactive compounds to improve the nutritional profile of wraps. Such value-added formulations are increasingly recognized as functional foods that can contribute to healthier dietary patterns (Xiao et al., 2023).

Plant proteins have become important ingredients in wrap formulation because they improve nutritional quality while supporting sustainable food production. Cereals, millets, legumes and seed proteins not only enhance protein content but also influence dough characteristics, texture, water-holding capacity and overall product quality. Advances in food processing technologies have further improved the functionality and application of plant proteins in cereal-based products (Zhang et al., 2024).

The quality of a food wrap depends on several physicochemical and sensory characteristics, including flexibility, softness, folding ability, moisture retention, texture, appearance, and consumer acceptability. The selection and proportion of ingredients significantly influence these attributes. Therefore, optimizing ingredient combinations is essential for producing wraps with desirable nutritional value and technological performance (Dash et al., 2024).

The incorporation of nutrient-dense ingredients such as proso millet and drumstick seed powder offers an effective strategy for developing innovative high-protein food wraps. Proso millet provides complex carbohydrates, dietary fibre and micronutrients, whereas drumstick seed powder contributes high-quality plant protein and bioactive compounds. Their complementary nutritional properties make them promising ingredients for developing functional wraps that meet current consumer preferences for healthy, plant-based convenience foods (Munialo, 2024).

PROSO MILLET (*PANICUM MILIACEUM* L.):

Proso millet (*Panicum miliaceum* L.) is one of the oldest cultivated cereal grains belonging to the Poaceae family. It is widely recognized for its short cultivation period, drought tolerance and adaptability to diverse climatic conditions, making it an environmentally sustainable crop. Owing to its low water requirement and high resilience, proso millet has gained increasing attention as an alternative cereal for ensuring food and nutritional security (Habiyaemye et al., 2022).

Proso millet is considered a nutrient-rich cereal because it contains appreciable amounts of protein, complex carbohydrates, dietary fibre, essential fatty acids, vitamins and minerals such as iron, phosphorus, magnesium, and potassium. Unlike refined cereals, it also contains significant quantities of phenolic compounds and flavonoids, which

contribute to its antioxidant activity and nutritional quality. Its naturally gluten-free nature further enhances its suitability for developing functional and specialty food products **(Taylor et al., 2021)**.

The proteins present in proso millet possess good nutritional quality and contribute to improved satiety and muscle maintenance. In addition, its slowly digestible starch and dietary fibre help regulate postprandial blood glucose levels and promote gastrointestinal health. The presence of bioactive compounds further supports antioxidant and anti-inflammatory activities, reducing the risk of chronic metabolic disorders such as obesity, diabetes and cardiovascular diseases **(Saleh et al., 2021)**.

Besides its nutritional benefits, proso millet exhibits desirable functional properties, including water absorption, oil absorption, emulsification and gel-forming ability, making it suitable for incorporation into various food formulations. These characteristics improve dough handling, texture, and overall product quality in bakery and cereal-based products. Consequently, proso millet has been successfully incorporated into breads, biscuits, noodles, pasta, breakfast cereals, snacks and gluten-free products to enhance their nutritional value **(Sharma et al., 2023)**.

Recent research has highlighted the potential of proso millet as an ingredient for developing innovative functional foods due to its balanced nutrient composition and sustainability. The incorporation of proso millet into convenience foods such as wraps can improve protein content, dietary fibre, antioxidant capacity and micronutrient availability while supporting the growing demand for healthy plant-based foods. Therefore, proso millet is considered a promising raw material for the development of high-protein functional food wraps **(Amadou et al., 2021)**.

DRUMSTICK SEED POWDER (*MORINGA OLEIFERA* LAM.):

Moringa oleifera, commonly known as drumstick, is a multipurpose plant belonging to the family Moringaceae. It is widely cultivated in tropical and subtropical regions because of its exceptional nutritional composition and medicinal value. Although the leaves are extensively utilized in food products, recent studies have highlighted the importance of drumstick seeds as a rich source of plant protein, healthy lipids, essential amino acids, vitamins, minerals and various bioactive compounds. These characteristics make drumstick seed powder a promising ingredient for the development of functional foods **(Leone et al., 2022)**.

Drumstick seed powder contains considerable amounts of protein with a balanced amino acid profile, making it suitable for improving the nutritional quality of cereal-based products. In addition to protein, the seeds are rich in oleic acid, calcium, magnesium, potassium, iron and phosphorus. The presence of phenolic compounds, flavonoids, and tocopherols further enhances its antioxidant potential and nutritional value, supporting its application as a natural functional food ingredient **(Abd Rani et al., 2023)**.

Several studies have reported that drumstick seed powder exhibits antioxidant, antimicrobial, anti-inflammatory, antidiabetic and cardioprotective properties due to its diverse phytochemical composition. These bioactive compounds

help reduce oxidative stress, improve metabolic health, and may contribute to the prevention of chronic diseases. Consequently, *Moringa oleifera* seeds have gained increasing attention in the formulation of health-promoting food products (Falowo et al., 2024).

From a food processing perspective, drumstick seed powder has been incorporated into bakery products, composite flours, snack foods, noodles and other cereal-based formulations to enhance protein content and micronutrient density. Appropriate incorporation levels have been shown to improve nutritional quality while maintaining acceptable sensory characteristics, making it a suitable fortification ingredient for value-added food products (Gopalakrishnan et al., 2023).

The complementary nutritional characteristics of drumstick seed powder and proso millet provide an excellent opportunity for developing high-protein food wraps. While drumstick seed powder contributes high-quality plant protein and functional phytochemicals, proso millet supplies complex carbohydrates, dietary fibre and essential minerals. Their combined utilization is expected to improve the nutritional profile, functional quality, and health benefits of protein-enriched wraps, thereby meeting the growing demand for sustainable plant-based convenience foods (Dhakad et al., 2019).

4. NUTRITIONAL SYNERGY OF PROSO MILLET AND DRUMSTICK SEED POWDER:

The combination of proso millet and drumstick seed powder provides a complementary nutritional profile that is highly suitable for the development of high-protein functional foods. Proso millet is rich in complex carbohydrates, dietary fibre, minerals and bioactive compounds, whereas drumstick seed powder contributes high-quality plant protein, essential amino acids, healthy fatty acids and antioxidant phytochemicals. The incorporation of these two ingredients in a single formulation improves the overall nutritional quality of the product by providing a balanced composition of macronutrients and micronutrients (Boukid et al., 2022).

Protein quality is an important factor in the development of functional foods. Although cereals generally contain moderate amounts of protein, they are often limited in certain essential amino acids. Supplementing cereal-based formulations with protein-rich seed powders helps improve amino acid balance and enhances the biological value of the final product. Therefore, the combination of proso millet and drumstick seed powder represents an effective strategy for developing protein-enriched food products with improved nutritional quality (Amadou et al., 2021).

Apart from improving protein content, the combination of these ingredients also enhances the functional characteristics of food products. Dietary fibre from proso millet contributes to improved digestive health and glycemic control, while the natural antioxidants present in drumstick seed powder help reduce oxidative deterioration and improve the functional value of the product. These combined effects contribute to the development of healthier convenience foods with additional physiological benefits (Sharma et al., 2023).

From a product development perspective, proso millet provides desirable dough-forming characteristics, whereas drumstick seed powder serves as a natural protein fortifier. Appropriate optimization of their proportions can improve texture, nutritional composition, and consumer acceptability without compromising product quality. Such formulations also support the increasing consumer preference for clean-label, plant-based, and sustainable food products (**Munialo, 2024**).

Considering the complementary nutritional and functional properties of both ingredients, their utilization in high-protein food wraps offers significant potential for developing innovative functional foods. Such products may contribute to improved protein intake, dietary diversification and the utilization of underexploited plant resources while addressing the growing demand for nutritious ready-to-eat foods. Therefore, the combination of proso millet and drumstick seed powder provides a strong scientific basis for the formulation of nutrient-dense food wraps (**FAO, 2023**).

5. DEVELOPMENT OF FUNCTIONAL FOOD WRAPS:

Food wraps are thin, flexible flatbread products that have become increasingly popular because of their convenience, portability, and versatility. Traditionally, wraps are prepared using refined wheat flour; however, the growing consumer demand for healthier foods has encouraged the development of functional wraps using whole grains, millets, legumes and other nutrient-rich ingredients. These functional wraps are designed to provide improved nutritional quality while maintaining desirable texture, flexibility and sensory characteristics (**Yano & Fu, 2022**).

Recent studies have focused on developing high-protein wraps by incorporating plant-based ingredients to enhance protein content, dietary fibre and micronutrient composition. Successful wrap formulation depends on maintaining appropriate dough properties, flexibility, moisture retention, and folding ability while ensuring good consumer acceptability. Therefore, selecting suitable ingredients and optimizing their proportions are essential for producing nutritionally enriched wraps with desirable quality attributes (**Xiao et al., 2023**).

The development of functional food wraps has gained considerable attention because they can serve as convenient vehicles for delivering essential nutrients and bioactive compounds. Despite the increasing research on functional cereal-based products, studies specifically focusing on high-protein wraps remain limited. This creates opportunities for developing innovative wraps using nutrient-rich plant ingredients to meet the growing demand for healthy, ready-to-eat convenience foods (**Yadav et al., 2024**).

HEALTH BENEFITS OF THE DEVELOPED PRODUCT:

The developed high-protein food wrap prepared using proso millet and drumstick seed powder has the potential to provide several nutritional and health benefits due to its balanced composition of protein, dietary fibre, essential

minerals and bioactive compounds. The incorporation of these plant-based ingredients enhances the nutritional quality of the product and supports the development of healthier convenience foods **(Boukid et al., 2022)**.

The high protein content of the developed wrap may help improve satiety, support muscle growth and maintenance and contribute to tissue repair. Adequate dietary protein is also associated with improved metabolic function and overall nutritional status, making protein-enriched foods suitable for children, adults and elderly individuals **(Phillips et al., 2023)**.

The dietary fibre naturally present in the developed wrap may promote digestive health by improving bowel function and supporting a healthy gut microbiota. Fibre also contributes to better glycemic control, reduces postprandial blood glucose response and enhances the feeling of fullness, which may assist in body weight management **(Reynolds et al., 2022)**.

In addition, the presence of phenolic compounds, flavonoids, and other natural antioxidants may help protect the body against oxidative stress by neutralizing free radicals. Regular consumption of antioxidant-rich foods has been associated with a lower risk of chronic diseases such as cardiovascular disease, diabetes and certain inflammatory conditions **(Shahidi & Ambigaipalan, 2023)**.

The developed wrap also provides essential minerals and bioactive compounds that support normal physiological functions, including bone health, immune function and energy metabolism. Therefore, the formulation of a high-protein food wrap utilizing proso millet and drumstick seed powder may serve as a nutritious, plant-based convenience food with potential health-promoting properties for a wide range of consumers **(FAO, 2023)**.

6. CONCLUSION

The development of a high-protein food wrap utilizing proso millet and drumstick seed powder represents a promising approach to producing nutritious, sustainable and plant-based functional foods. The complementary nutritional properties of these ingredients can enhance the protein content, dietary fibre, essential minerals and bioactive compounds of the final product while supporting consumer demand for healthier convenience foods. This formulation has the potential to improve nutritional quality and promote the utilization of underutilized functional ingredients. Further research on formulation optimization, nutritional evaluation, physicochemical properties, sensory acceptability and consumer preference will contribute to the successful development and commercialization of this innovative food wrap.

References

1. Boukid, F. (2022). Plant-based foods: Innovation, trends, and challenges. *Foods*, 11(9), 1302.

2. Divya, S., Pandey, V. K., Dixit, R., Rustagi, S., Suthar, T., Atuahene, D., Nagy, V., Ungai, D., Ahmed, A. E. M., Kovács, B., & Shaikh, A. M. (2024). Exploring the phytochemical, pharmacological and nutritional properties of *Moringa oleifera*: A comprehensive review. *Nutrients*, 16(19), 3423.
3. Food and Agriculture Organization of the United Nations. (2023). *The International Year of Millets 2023*. FAO.
4. Hassan, Z. M., Sebola, N. A., & Mabelebele, M. (2021). The nutritional use of millet grain for food and feed: A review. *Agriculture & Food Security*, 10, 16.
5. Jacob, J. J., Krishnan, V. K., Antony, C. A., Bhavyasri, M., Aruna, C., Mishra, K., Nepolean, T., Satyavathi, C. T., & Visarada, K. B. R. S. (2024). The nutrition and therapeutic potential of millets: An updated narrative review. *Frontiers in Nutrition*, 11.
6. Marti, A., & Tyl, C. (2021). Capitalizing on a double crop: Recent advances in proso millet's transition to a food crop. *Comprehensive Reviews in Food Science and Food Safety*, 20(1), 819–839.
7. Mathanghi, S. K., Perasiriyana, V., & Karthiyayini, A. (2021). Functional, phytochemical and processing properties of proso millet (*Panicum miliaceum* L.)—A potential nutri millet. *Recent Progress in Plant and Soil Research*, 3, 33–41.
8. Munialo, C. D. (2024). Alternative plant protein sources, functional characteristics, application, nutritional value and challenges for sustainable food production. *International Journal of Food Science & Technology*.
9. Oyeyinka, A. T., & Oyeyinka, S. A. (2021). *Moringa oleifera* as a food fortificant: Recent trends and applications. *Food Science & Nutrition*.
10. Saleh, A. S. M., Zhang, Q., Chen, J., & Shen, Q. (2021). Millet grains: Nutritional quality, processing, and potential health benefits. *Comprehensive Reviews in Food Science and Food Safety*.
11. Bangar, S. P., Ashogbon, A. O., Dhull, S. B., Thirumdas, R., Kumar, M., Hasan, M., Chaudhary, V., & Pathem, S. (2021). Proso-millet starch: Properties, functionality, and applications. *International Journal of Biological Macromolecules*, 190, 960–968.
12. Verma, R., & Karakannavar, S. (2024). Characterization of physicochemical, functional and antioxidant properties of proso millet (*Panicum miliaceum*). *AATCC Review*, 12(2), 64–69.
13. Yano, H., & Fu, W. (2022). Effective use of plant proteins for the development of new foods. *Foods*, 11(9), 1185.
14. Xiao, X., Zou, P. R., Hu, F., Zhu, W., & Wei, Z. J. (2023). Updates on plant-based protein products as an alternative to animal protein: Technology, properties, and health benefits. *Molecules*, 28(10), 4016.
15. Zhang, X., et al. (2024). Recent progress in plant-based proteins: From extraction and modification methods to applications in the food industry. *Food Science and Human Wellness*.
16. Adhikari, S., Yadav, B. S., & Singh, R. (2022). Development and quality evaluation of millet-based functional food products: A review. *Journal of Food Science and Technology*, 59, 3215–3227.
17. Arora, S., Saxena, D. C., & Singh, S. (2021). Nutritional and functional properties of gluten-free cereal-based products: Recent advances. *Food Research International*, 140, 109857.
18. Bressiani, J., Oro, T., & Santetti, G. S. (2021). Technological and nutritional aspects of gluten-free and cereal-based functional foods. *Trends in Food Science & Technology*, 112, 171–183.

19. Chandra, S., Singh, S., & Kumari, D. (2022). Evaluation of nutritional, physicochemical and sensory properties of composite flour-based food products. *Journal of Food Measurement and Characterization*, 16, 1250–1262.
20. D’Amico, V., & Pugliese, M. (2023). Plant-based proteins and their role in sustainable food development. *Foods*, 12(7), 1456.
21. Devi, R., Sharma, P., & Kaur, R. (2022). Functional properties and nutritional significance of millet-based foods: A review. *Food Chemistry Advances*, 1, 100020.
22. Gopalakrishnan, L., Doriya, K., & Kumar, D. S. (2021). *Moringa oleifera*: A review on nutritive importance and its medicinal application. *Food Science and Human Wellness*, 10(3), 323–332.
23. Gupta, N., & Srivastava, S. (2021). Nutritional composition and health benefits of millets: A review. *Journal of Food Science and Technology*, 58, 3457–3468.
24. Kaur, P., Sharma, S., & Kaur, A. (2023). Development and nutritional evaluation of high-protein cereal-based food products using plant ingredients. *LWT – Food Science and Technology*, 184, 115026.
25. Kumar, A., Tomer, V., Kaur, A., Kumar, V., & Gupta, K. (2021). Millets: A solution to agrarian and nutritional challenges. *Agriculture & Food Security*, 10, 1–15.
26. Muthamilarasan, M., Dhaka, A., & Prasad, M. (2021). Advances in millets as functional foods and nutraceutical crops. *Frontiers in Plant Science*, 12, 724.
27. Nadeem, M., Anjum, F. M., Khan, M. R., Saeed, F., & Riaz, A. (2022). Nutritional and functional characteristics of plant-based functional foods. *Food Reviews International*, 38(6), 1100–1120.
28. Prasad, R., & Shivay, Y. S. (2023). Millets for sustainable nutrition and health promotion. *Journal of Cereal Science*, 112, 103720.
29. Sharma, P., Saxena, D. C., & Riar, C. S. (2024). Development and quality assessment of millet-based functional foods: Current trends and future prospects. *Food Chemistry*, 432, 137192.
30. Singh, S., & Sharma, S. (2022). Nutritional evaluation and sensory acceptability of protein-enriched cereal-based products. *International Journal of Food Properties*, 25, 2150–2164.