Original Research Articles

Formulation and Quality Evaluation of Composite Biscuits Incorporated with Dried Blue Pea (*Clitoria ternatea*) Flower Powder

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Abstract

The flowers of blue pea, a nutrient-rich yet underutilized crop in Sri Lanka, holds potential as a natural food colourant and health-enhancing ingredient. Therefore, Blue pea flower (BPF) provides an attractive natural blue colour to the biscuits and enhances their antioxidant and anti-inflammatory properties. Similarly, peanut butter enhances the biscuits' palatability and improves their nutritional value, including protein, healthy fats, essential vitamins, and minerals. This study aimed to develop healthy composite biscuits by incorporating dried BPF powder at varying levels (9, 10, 11, and 12%) along with peanut butter. A sensory evaluation with 30 semi-trained panellists using a 5-point hedonic scale identified the 9% dried BPF formulation as the most preferred. Proximate and physicochemical analyses confirmed that biscuits incorporated with 9%dried BPF powder exhibited superior nutritional properties, including 0.84% moisture, 7.27%crude protein, 1.9% crude fibre, and 17.67% fat, compared to the control biscuit. Incorporation of dried BPF powder enhanced the antioxidant properties of the composite biscuits, including total phenolic content (29.89%), flavonoid content (32.43%), and DPPH antioxidant capacity (69%). It also improved physicochemical characteristics such as a lower pH (7.30) and reduced water activity (0.51). After two months of storage, microbial analysis confirmed that the biscuits remained within safe limits, with a total plate count of 4×10^2 CFU/g and no detectable levels of yeast or mold. These findings suggest that the addition of dried BPF powder can significantly improve the nutritional, sensory, and functional qualities of biscuits, offering a healthier alternative to conventional options.

Keywords: Antioxidant, Blue pea flower, Colourant, Composite biscuit, Microbial analysis