Development of spicy masala biscuit enriched with cavendish banana blossom (*Musa acuminata*) flour by mitigating the bitterness

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Cavendish banana blossom is a rich source of dietary fiber and other bioactive materials such as vitamins, minerals, and antioxidants. Nevertheless, due to the bitterness, its nutritional potential is not satisfactorily exploited in the food industry. In large scale banana cultivations, banana blossoms are stripped by farmers, and wasted without commercial scale utilization. The objective of the present study was to reduce the bitterness and include its worthiness as a food material. Based on preliminary studies, the optimum practice to remove the bitterness was dipping 3 mm size diced banana blossom in 0.3% citric acid for 15 hours at 50°C, which considerably reduced bitterness without affecting nutritional integrity. Citric acid treated (CAT) Cavendish banana blossom dice were ground to make flour and investigated as a functional food component in producing spicy masala flavoured biscuits; four preparations of biscuits were made using 0%, 10%, 30%, and 50% CAT Cavendish banana blossom flour (CBBF). Nutritional analysis revealed when increasing the amount of CAT CBBF, fiber level in biscuit increased from 18.15 – 61.1, and ash from 5.9 – 6.35. It also decreased the level of protein from 31.15 – 18.8, fat from 15.5 – 12.2, total carbohydrates from 89.6 – 63.2, and moisture from 5.65 – 2.65, revealing its potential for a satisfactory shelf life. Though CAT CBBF enrichment added fiber to the diet, sensory properties were negatively influenced. According to the sensory analysis with 40 panelists, 10% and 30% levels of substitution were selected as optimum and therefore it can be recommended for commercialization. Packaging trial revealed that laminated aluminum pouch maintained the shelf life of biscuits for two months, while polypropylene (PP) and polyethylene terephthalate (PET) packets provided shorter shelf lives. This study brings into focus the possibility of utilizing tons of wasted banana blossoms in the circular economy by producing nutritious foods. In addition to proposing a waste minimization approach to Cavendish banana blossom, this study offers a novel approach towards production of healthier, higher-fiber spicy masala biscuits.

Keywords: *Cavendish banana blossom, Musa acuminata, Mitigating bitterness, Spicy masala biscuit*