

Formulation and nutritional evaluation of a mung bean incorporated cheese spread

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The demand for product diversification in the food industry has increased due to evolving dietary patterns and growing interest in plant-based foods. Traditional spreads are often high in fat and low in protein and dietary fiber, which raises nutritional and health concerns. In response, there is a growing need to develop alternative spreads that align with healthier eating habits. This study aimed to formulate and evaluate a nutrient-rich cheese spread by incorporating mung beans. The cheese was prepared using a standard cheese-making method with locally sourced, fresh milk. The milk fat was separately prepared and used as a homogenizing and thinning agent. Raw, roasted, and double-roasted mung bean powder were evaluated for their suitability in various formulations. The double-roasted mung bean powder (initial roasting of beans at 160°C for 10 min; powder roasting at 50°C for 8 min) was selected through preliminary testing. Bee honey and white pepper were tested as flavoring agents. Six different formulations were subjected to a standard sensory evaluation for the attributes of colour, flavour, taste, mouthfeel, spreadability and overall acceptability. The formulation containing 16% double-roasted mung bean and honey flavor was selected based on the overall acceptability score of 4.4/5. The selected formulation was subjected to physicochemical and proximate analyses and shelf stability test. Physicochemical properties included a pH of 5.53 ± 0.11 , moisture content of $21.4 \pm 0.34\%$ (wb), and water activity of 0.93 ± 0.005 . The proximate composition of the selected double-roasted mung bean powder incorporated cheese spread is: 405.04 ± 0.06 kcal/100 g of energy, 27.39 ± 0.43 g/100 g protein, 22.11 ± 0.26 g/100 g fat, and 2.98 ± 0.03 g/100 g fiber. The shelf life was reported as 18 days at refrigerated storage of 5°C with no added preservatives of any form. The formulated double-roasted mung bean incorporated cheese spread offers a nutritious alternative to traditional dairy-based spreads.

Keywords: *Cheese spread, Dairy product, Mung bean*