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### Development of a desiccated coconut-incorporated gluten-free, vegan coconut cookie

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#### Abstract

Cookies are consumed as a snack, ready-to-eat and convenient food. Making cookies with alternatives to wheat flour, whether entirely or in part, may enhance the product's sensory and nutritional qualities. Demand from specific customer segments interested in non-dairy, vegan, or gluten-free snacks is also growing. The present study aimed to develop gluten-free, coconut-based vegan cookies using desiccated coconut and rice flour as the main ingredients. Three treatments were prepared by incorporating desiccated coconut and rice flour in different percentage combinations of 75:25, 50:50, and 25:75 (w/w) and fixed quantities of sugar, vegetable shortening, sodium bicarbonate, water, and salt. The sensory properties of the cookies were evaluated using 34 untrained sensory panelists using a 7-point hedonic scale. These samples were evaluated for appearance, texture, colour, taste, aroma, and overall acceptability. Based on sensory attributes, cookies prepared with 50% desiccated coconut and 50% rice flour combination were the best treatment compared to other combinations. The developed coconut-incorporated cookies were then assessed for proximate composition and found that they contained  $26.26 \pm 1.36$  % of fat,  $4.537 \pm 0.006$  % of protein,  $2.163 \pm 0.18$  % of fiber, and  $1.676 \pm 0.006$  % of moisture. Physical parameter values such as average weight, thickness, diameter, and spread ratio of cookies were 4.3 g, 6.55 mm, 38.9 mm, and 5.9, respectively. Then, cookies were freshly prepared from the selected best treatment for the shelf-life evaluation, packed in low-density polyethylene packages, and stored under  $30 \pm 2$  °C temperature and  $75 \pm 5$  % RH condition. Storage quality evaluation (sensory attributes, shelf-life stability, and microbial safety) was done weekly for four weeks of storage. The total plate count and yeast and mold count of the coconut-incorporated cookies were within the acceptable limits in the SLS standards. Coliforms were never reported throughout the storage period. The rancidity level of the cookies during storage concerning the free fatty acid content was observed. The free fatty acid percentage was increased from 0.12% to 0.19% in the 4<sup>th</sup> week of storage. However, according to the sensory analysis during the storage period, there were no significant differences ( $p < 0.05$ ) over the weeks regarding colour, taste, texture, aroma, and overall acceptability. Therefore, based on the nutritional, sensory, and microbial attributes, cookies prepared with 50% desiccated coconut and 50% rice flour remain within the acceptable range throughout the end of 4 weeks storage period. Further quality assessment can be recommended before commercializing the coconut-incorporated, gluten-free, vegan rice cookies.

**Keywords:** Cookie, Desiccated coconut, Gluten-free; Keeping quality, Rice flour

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