



PROCEEDINGS

of the Sixth
Undergraduate Research Symposium
UReS 2019

"Towards Sustainable Food Systems:
Opportunities and Challenges"

December 10, 2019



Faculty of Livestock, Fisheries & Nutrition
Wayamba University of Sri Lanka

Glycemic response and quality evaluation of coconut flour incorporated crackers

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Coconut (*Cocos nucifera*) flour is the residue remaining after virgin coconut oil extraction. It is considered a good source of protein and dietary fiber. This study was conducted to develop a sugar-free cracker using coconut flour as a substitute for wheat flour and to determine the physicochemical, sensory, microbial properties and glycemic response of the cracker. Crackers were prepared by incorporating coconut flour in different proportions (0, 10, 20, 30, and 40%) and evaluated by a 30-member semi-trained panel using a 7-point hedonic scale to determine the critical limit of coconut flour substitution. Crackers were evaluated for the physicochemical properties such as moisture, fat, protein, ash, crude fiber contents, color, texture, thickness, diameter and spread ratio. In addition, microbial load and water activity were tested to determine the shelf-life of the product. Glycemic response of best-accepted crackers was investigated in 10 normal healthy subjects by giving 25g of glucose and cracker with 25g of available carbohydrates. Fasting and postprandial blood glucose levels were measured at 15, 30, 45, 60, 90 and 120 minutes post consumption of the control and the cracker. Results showed that wheat flour substitution with coconut flour up to a level of 20% could be achieved without affecting the overall quality. According to the proximate composition cracker substituted with 20% coconut flour contained 2.95% moisture, 3.18% ash, 13.95% crude protein, 18.68% crude fat, 13.23% crude fiber and 47.94% carbohydrate. When substitution level increased, protein and fiber contents of the crackers were increased. During 6 weeks of the storage period, total plate count and yeast and mold counts were not detected and water activity was ranged between 0.23-0.26. Glycemic index and glycemic load of 20% coconut flour incorporated crackers were 56 and 4, respectively. Hence, these crackers could be considered as intermediate glycemic index food.

Keywords: coconut flour, crackers, glycemic index, physicochemical properties.