

## **Development of a Fat Spread using Virgin Coconut Oil and Evaluating Its' Physicochemical and Sensory Properties**

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Virgin coconut oil (VCO) extracted from coconut kernel is a natural edible product rich in medium chain fatty acids (MCFA), vitamins, antioxidants, and minerals. This study was carried out to explore the use of fractionation method to develop a fat spread using VCO. It was possible to produce a solid fraction from VCO through slow cooling termed winterization. VCO samples were maintained at different temperatures (19- 21 °C), and resulting solid fractions were collected at different time intervals. The yield of oil fraction removed was calculated, and the physicochemical properties of the solid fractions and liquid fractions were determined. The yield of the liquid fraction decreased with time at any given temperature, indicating increasing crystal growth with time. Solid fraction of VCO at 19 °C for 30 min was identified as the most suitable fraction for the development of the fat spread. Solid fraction recovered at 19 °C for 30 min has the second lowest iodine value ( $1.60 \pm 0.04$ ) and the highest yield percentage ( $72.02\% \pm 0.67$ ) compared to other fractions. Four formulations of fat spreads were developed, and physicochemical properties were determined. A seven-point hedonic test was conducted to evaluate the appearance, colour, aroma, flavour, spreadability, mouth feel and overall acceptability of developed fat spreads, and there was a significant difference ( $P < 0.05$ ) in consumer preference regarding color and the spreadability. Formulation which contained solid fraction of VCO to coconut flour weight ratio of 18:1 (w/w) was identified as the most suitable one for the further development.

**Keywords:** Fat spread, Medium chain fatty acids, Virgin coconut oil, Winterization

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