

Effect of fractional crystallization on composition and thermal behavior of coconut oil

ABSTRACT

This study was aimed to fractionate coconut oil into its high- and low-melting fractions and determine the compositional and thermal property changes. A sample of coconut oil was dissolved in acetone, and allowed to crystallize isothermally at a desired temperature to separate into the low- and high-melting components. The isolated fractions were compared to the original sample with respect to fatty acid and triacylglycerol compositions as well as thermal behavior. There were considerable deviations in the fatty acid and triacylglycerol compositions of the two components with respect to those of the original sample. As a consequence, the overall melting behaviors of the two components differed considerably from that of the original sample. In the high-melting fraction, the onset and endset were shifted toward the higher temperature region with a concurrent reduction in its melting range, and vice-versa, the onset and endset of the low-melting fraction had shifted toward the low-temperature region with an increase in its melting range. The reduction of the melting range of the high-melting fraction could make it a specialty fat for applications in confectionery.

Keyword: Coconut oil; Confectionery fat; DSC; Fractional crystallization; Thermal analysis