

**Characteristics of fat, saponin and tannin contents of 11 varieties of rambutan
(*Nephelium lappaceum* L.) seed**

ABSTRACT

Rambutan seed is discarded during fruit processing. However, the seed contains a considerable amount of crude fat. Hence, the objective of this study was to determine two anti-nutritional constituents, namely saponin and tannin, and to characterize the fat of the seeds of 11 varieties of rambutan fruit. Results showed that the range of crude fat content is fairly narrow (36.13–39.13 g/100 g dried seeds). The iodine value and free fatty acid content of the fat were 38.50–50.61 g I₂/100 g fat and 0.99–2.18% as oleic acid, respectively. Oleic (33.35–46.64%) and arachidic (26.03–33.27%) acids were the main fatty acids in the fat. HPLC analysis showed that the fat comprised mainly five unknown triacylglycerols (83.94–95.33%). The melting and crystallization curves showed that the fat exhibited four to nine non-distinct peaks. The complete melting and crystallization onset temperatures of the fat were 24.8–50.6°C and 24.1–39.4°C, respectively, while the melting and crystallization enthalpies of the fat ranged from 71.2 to 141.7 J/g and from 60.4 to 88.9 J/g, respectively. At 0°C, the solid fat index of the fat ranged between 87.4% and 91.6% and the fats of some varieties melted completely at human body temperature. The saponin and tannin contents of the seed were 14.27–18.96 mg soya saponin/100 g and 4.40–26.68 mg catechin equivalent/100 g, respectively. Findings showed that rambutan seed fat has potential to be used in various sectors of food industry.

Keyword: Rambutan variety; Wild type; Triacylglycerol; Solid fat index; Saponin content; Tannin content