

Document details

1 of 1

[Export](#)
[Download](#)
[Print](#)
[E-mail](#)
[Save to PDF](#)
[Add to List](#)
[More... >](#)

[Full Text](#)
[View at Publisher](#)

Food Research International
 Volume 55, January 2014, Pages 103-109

Characterization of crystallization and melting profiles of blends of mango seed fat and palm oil mid-fraction as cocoa butter replacers using differential scanning calorimetry and pulse nuclear magnetic resonance (Article)

Jahurul, M.H.A.^a, Zaidul, I.S.M.^b, Norulaini, N.A.N.^c, Sahena, F.^a, Abedin, M.Z.^a, Ghafoor, K.^d, Mohd Omar, A.K.^a

^aSchool of Industrial Technology, Universiti Sains Malaysia, Minden, 11800 Penang, Malaysia

^bFaculty of Pharmacy, International Islamic University, Kuantan Campus, 25200 Kuantan, Pahang D/M, Malaysia

^cSchool of Distance Education, Universiti Sains Malaysia, Minden, Penang 11800, Malaysia

[View additional affiliations](#)

Abstract

[View references \(29\)](#)

Mango seed fat (MSF) and palm oil mid-fraction (POMF) blends were stabilized prior to investigate crystallization and melting behavior, solid fat content (SFC) and triglyceride compositions. Ten blends at various ratios of MSF/POMF, 95/5 (blend 1), 90/10 (blend 2), 85/15 (blend 3), 80/20 (blend 4), 75/25 (blend 5), 70/30 (blend 6), 65/35 (blend 7), 60/40 (blend 8), 55/45 (blend 9), 50/50 (blend 10) were used in this study. Results showed that the major triglyceride ranges in all blends were from 11 to 38.8% 1,3-dipalmitoyl-2-oleoyl-glycerol (POP), from 22.1 to 36.9% 1,3-distearoyl-2-oleoyl-glycerol (SOS), and from 15.4 to 16.2% 1-palmitoyl-3-stearoyl-2-oleoyl-glycerol (POS), respectively. The melting behavior indicated a single curve with only one maximum and one small shoulder for the blends of 3 to 6. The blends having 70, 75, 80, and 85% of MSF showed similar crystallization pattern with a single curve having one maximum peak heights at temperatures of 10.17, 10.58, 11.54, and 11.66. °C. The SFC of the blends no. 1 to 5 was found to be close to these SFC of commercial CB at 10 to 20. °C temperatures. A multiple regression equation was developed which showed strong correlations between triglycerides of blends 1 to 10 and their properties. The studies revealed that preparation of green quality cocoa butter replacers (CBRs) is possible using MSF and POMF. © 2013 Elsevier Ltd.

Author keywords

[Cocoa butter replacer](#)
[Crystallization and melting characterization](#)
[Mango seed fat](#)
[Palm oil mid-fraction](#)
[Solid fat content](#)
[Triglyceride](#)

Indexed keywords

[Cocoa butter replacers](#)

[Mango seeds](#)

[Melting behavior](#)

[Melting profiles](#)

[Multiple regression equations](#)

[Solid fat content](#)

[Strong correlation](#)

[Triglyceride](#)

Engineering controlled terms:

[Differential scanning calorimetry](#)
[Fruits](#)
[Glycerol](#)
[Melting](#)
[Palm oil](#)

Engineering main heading:

[Oils and fats](#)


ISSN: 09639969
 CODEN: FORIE
 Source Type: Journal
 Original language: English

DOI: 10.1016/j.foodres.2013.10.050
 Document Type: Article

Metrics [View all metrics >](#)

19 Citations in Scopus
90th Percentile

3.00 Field-Weighted Citation Impact

 PlumX Metrics
 Usage, Captures, Mentions, Social Media and Citations beyond Scopus.

Cited by 19 documents

[Effect of accelerated storage on chemical compositions of mango seed fat and palm oil mid-fraction blends as cocoa butter replacers](#)

Jahurul, M.H.A., Jing, Y.W., Foong, C.Y. (2017) *LWT - Food Science and Technology*

[Comparison of two stationary phases for the determination of phytosterols and tocopherols in mango and its by-products by GC-QTOF-MS](#)

López-Cobo, A., Martín-García, B.,

Molecular Sciences

[Crystallinity properties and crystallization behavior of chocolate fat blends](#)

da Silva, T.L.T., Grimaldi, R., Calligaris, G.A. (2017) *Journal of Food Science and Technology*

[View all 19 citing documents](#)

Inform me when this document is cited in Scopus:

[Set citation alert >](#)

[Set citation feed >](#)

Related documents

[Hard cocoa butter replacers from mango seed fat and palm stearin](#)

Jahurul, M.H.A., Zaidul, I.S.M., Nik Norulaini, N.A. (2014) *Food Chemistry*

[Mango \(*Mangifera indica* L.\) by-products and their valuable components: A review](#)