

Cream cheese is the most favoured unripened soft cheese in North America, Asia, and Oceania. It is usually made fresh and with a mild, rich and slightly acidic taste (Guinee *et al.*, 1993). Cream cheese is commonly made by acidification with a mesophilic starter culture and incubated until the pH values reach approximately 4.5 to 4.8 (Fox *et al.*, 2000). Cream cheese is often used as a spread on bread, bagel, salad dressing, and an ingredient for desserts such as cheese cake and tarts.

Cream cheese is made from milk and milkfat, which is added to meet the required fat content. The abundantly available cholesterol in meat and dairy products, especially milkfat, is one of the foremost concerns as the consumption of diet containing high level of cholesterol is detrimental to health.

Currently, there is still no palm-based cream cheese available in the Malaysian market. Palm oil has very similar physical characteristics to milkfat in terms of melting point and solid fat content. Palm oil melts at 36.4°C, while milkfat melts at 34.2°C, both melt below the body temperature. The solid fat content of palm oil is also similar to that of milkfat. For these reasons, palm oil is an excellent substitute for milkfat in cheese production. Currently, the cream cheese sold in the Malaysian market is made using milkfat.



Figure 1. Palm-based spreadable cream cheese.

THE INVENTION

The invention is a palm-based spreadable cream cheese produced using direct acidification technique. Cost-effective and less time-consuming direct acidification technique does not require starter cultures. Palm-based spreadable cream cheese has comparable physical characteristics to the commercial cream cheese (Table 1).

Palm-based spreadable cream cheese also has sensory properties equal to commercial cream cheese (Table 2). The overall acceptance of palm-based spreadable cream cheese indicated that the palm-based spreadable cream cheese was

TABLE 1. LIGHTNESS AND TEXTURAL PROPERTIES OF PALM-BASED AND COMMERCIAL CREAM CHEESE

Samples	Lightness value (L*)	Firmness (N)	Spreadability (N/S)	Stickiness (N)	Adhesiveness (N/S)
Palm-based spreadable cream cheese	90.8 ± 0.4	9 244.5 ± 306.8	11 965.8 ± 234.4	-4 996.3 ± 262.1	-1 270.7 ± 249.7
Commercial	91.5 ± 0.7	7 844.8 ± 226.6	8 676.1 ± 406.6	-5 551.4 ± 410.2	-457.9 ± 147.8

accepted by the panellist. *Table 2* shows the sensory acceptance scores of cream cheese and cream cheese tart filling.

TABLE 2. MEAN SCORE OF THE SENSORY ACCEPTANCE FOR CREAM CHEESE

Parameters	Palm-based spreadable cream cheese	Commercial cream cheese
Cream cheese		
Colour	5.8 ± 0.7	5.7 ± 0.9
Appearance	5.3 ± 1.0	5.6 ± 1.0
Spreadability	4.9 ± 1.4	4.5 ± 1.4
Cream cheese fillings in tart		
Texture of cream cheese filling	5.3 ± 0.9	5.8 ± 1.0
Creaminess	4.9 ± 1.2	5.5 ± 1.8
Oily taste	4.5 ± 1.2	4.8 ± 1.6
Overall acceptance	5.2 ± 1.1	5.4 ± 1.8



Figure 2. Palm-based cream cheese can be used as spread on bread.

ADVANTAGES

- The sensory properties of palm-based spreadable cream cheese are equal to the dairy-based cream cheese.
- Cost-effective price of palm-based spreadable cream cheese.
- Reduced processing time.
- Utilisation of palm oil for higher value added products.
- Flavour of palm-based spreadable cream cheese can be tailored to the consumer's preferences.

NOVELTY OF THE PRODUCT

Cream cheese made from palm oil by direct acidification method does not require starter culture and has a shorter processing time compared to fermentation method.

ECONOMIC ANALYSIS

The estimated expenditure and other economic evaluation are shown in *Table 3*. This economic evaluation is based on the assumption that the palm-based spreadable cream cheese is sold at RM 7.00 per pack of 250 g, with a consistent production capacity of 1 013 760 packs/year (capacity utilisation from 20% to 60%, gradual increment in 10 years). Current prices of commercial cream cheese are RM 9.50 to RM 10.50 per pack of 250 g.

TABLE 3. ECONOMIC VALUES OF PALM-BASED SPREADABLE CREAM CHEESE

Economic analysis	Value
Cost (materials), RM/ 250 g	2.88
Selling price, RM/ 250 g	7.00
Capital expenditure, RM	989 870
Net present value (NPV) at 10%, RM	4 735 614
Internal rate of return (IRR), %	59.38
Discounted payback period	2 yr 7 mth
Discounted benefit to cost ratio	1.42

CONCLUSION

Palm-based spreadable cream cheese has a great potential to be commercialised due to its cost-effectiveness and simple production process. Palm-based spreadable cream cheese can be sold at an affordable price compared to commercial milkfat-based cream cheese.

REFERENCES

- Fox, P F; Guinee, T P; Cogan, T M and Mcsweeney, P L H (2000). *Fundamentals of Cheese Science*. Aspen Publ., Gaithersburg, M D.
- Guinee, T P; Pudja, P D and Farkye, N Y (1993). Fresh acid-curd cheese varieties. In *Cheese: Chemistry, Physics and Microbiology* (P.F. Fox, ed), Chapman and Hall, London. p. 363-419.

For more information, kindly contact:

Head of Corporate Implementation
and Consultancy Unit, MPOB
6, Persiaran Institusi, Bandar Baru Bangi,
43000 Kajang, Selangor, Malaysia
Tel: 03-8769 4574
Fax: 03-8926 1337
E-mail: tot@mpob.gov.my
www.mpob.gov.my