

PRODUCTION OF PALM BASED ICE CREAM

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INTRODUCTION

In Malaysia, there are various types of ice cream available commercially such as soft and hard ice cream, lolly-pops, chocolate ice cream bars *etc.* Generally, ice cream is made up of milkfat, milk solid non fat, sugar, emulsifier and stabilizer. It can be classified as dairy and non dairy depending on the type of fat used.

The commercial value of ice cream is mainly based on the amount of its milkfat content. Nowadays, the consumers are very aware of the relationship between the consumption of saturated fat and blood cholesterol. For that reason, consumers are therefore highly encouraged to use palm oil as it is now generally known that palm oil has a high nutritive value. Furthermore, there is ample supply of palm oil in Malaysia. The production cost of dairy ice cream is relatively expensive due to the high cost of milk fat. Sixteen kilogrammes of milk fat costs RM108, whereas palm oil can be bought at RM29 per seventeen kilogrammes. Therefore, by substituting milk fat with palm oil the production cost of ice cream can be reduced.

PRODUCTION TECHNOLOGY OF PALM BASED ICE CREAM

Palm oil has been used in ice cream processing, but there is not much information available.

PORIM has discovered the optimum processing condition for the production of palm based ice cream (Figure 1). It was found that 100% overrun could be obtained in a much shorter period (2-3 hrs) and at a lower pressure (3-4 bars) and lower freezing

temperature (-4 to -6°C) in a freezer. Current technology requires a much longer ageing period (24 hours) and higher pressures and freezing temperatures. Products that can be obtained using the optimum processing conditions are shown in Table 1.

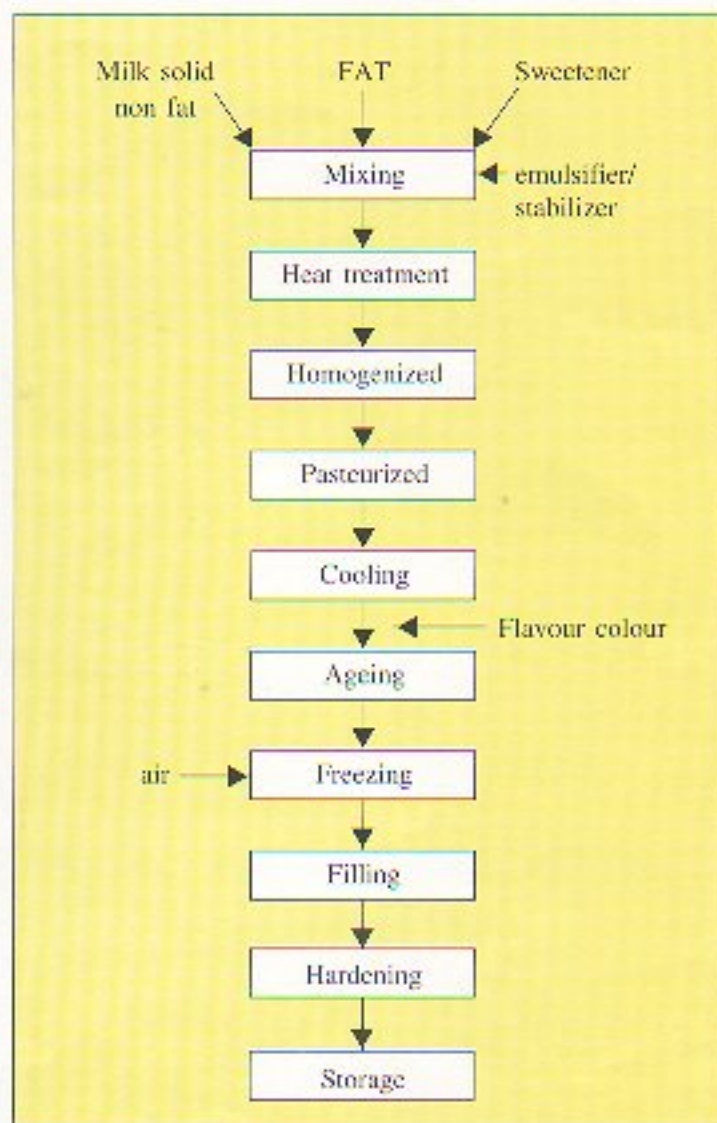


Figure 1. Flow diagram of the production of ice cream.



TABLE 1. OPTIMUM PROCESSING CONDITION FOR PALM BASED ICE CREAM

Pasteurization	: HTST: 85°C/15 sec.
Homogenization	: 1 - stage homogenizer
Cooling	: 3°C to 4°C
Ageing	: 2-3 hrs
Freezing	: -4 to -6°C
Hardening	: -25°C to -35°C/30 min
Storage	: -18 to -20°C before consumption

TABLE 2. COMPARISON OF PALM BASED ICE CREAM WITH DAIRY ICE CREAM

	Dairy ice cream	Palm based ice cream
Viscosity (cp) (Apparent)	30.42	31.82
Overrun (%)	100	100
Melting properties (ml)		
minute		
10	-	-
20	-	8.0
30	19.0	20.6
35	26.0	27.0
40	29.0	35
45	32.7	38
Firmness (penetration depth) (mm)		
minute	99	85
0	121	103
5	130	141
10	133	159
20	195	190

TABLE 3. INGREDIENT FOR ICE CREAM

	Percentage
Fat	10-12%
Milk solid non fat	11-12.5%
Sugar	12-16
Emulsifier/Stabilizer	0.02-0.3%
Flavouring Colouring	Small amount
Water	64%

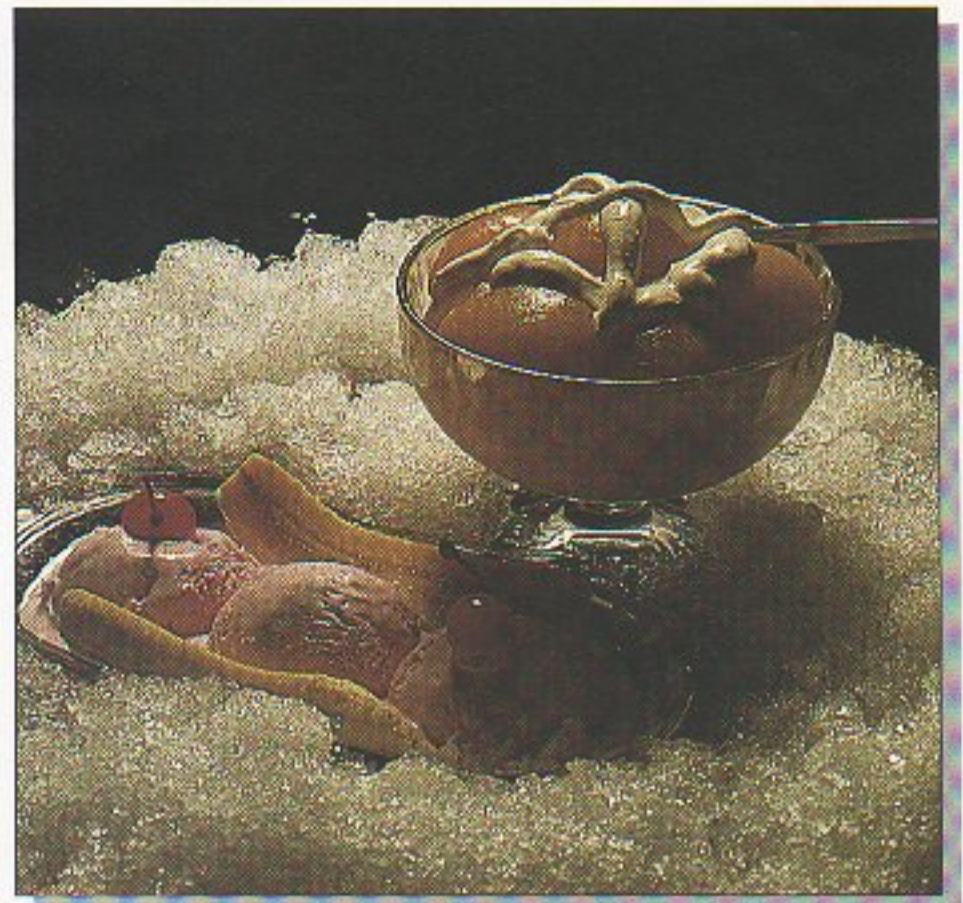


Figure 2. Palm-based ice-cream

BENEFITS OF THE PALM BASED ICE CREAM PROCESSING TECHNOLOGY

The production of palm based ice cream provides the following benefits:

1. It can increase market share of imitation products, based on palm oil. From the pricing view point vegetable fats are considerably less expensive than milk fat.
2. The substitution of unsaturated fats for some saturated fat in the diet is recommended in order to reduce the incidence of cardiovascular heart disease.
3. The consumption of imitation or substitute fluid milk may be beneficial for those who cannot tolerate lactose.

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