PALM-BASED NON-HYDROGENATED CREAMER

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Non-hydrogenated creamers are also known as non-dairy creamers and they are widely used in beverages. These are considered as substitutes for dairy creamer, evaporated milk or fresh milk. These products have replaced natural cream to a great extent in tea and drinking chocolate. Apart from dairy substitutes, with a bit of modification, it can also be used as cream in the preparation of local dessert. The products are called non-hydrogenated or non-dairy creamer because they utilize vegetable fat as a base instead of milk fat found in dairy creamers. Some of these creamers do not contain any protein but there are also some that include the milk component casein in the form of sodium caseinate. The non-hydrogenated or non-dairy creamer also contain glucose syrup, emulsifiers and stabilizers to ensure stable product performance. Additives are often added for desired taste.

There are three forms of non-hydrogenated or non-dairy creamers that are available in the market currently which are termed powdered, liquid and frozen. All the emulsion systems and the powdered forms are carefully prepared as an emulsion concentrate. Then, they will form an emulsion again when added to aqueous media. However, among all these three forms, powdered non-hydrogenated or non-dairy creamers are of greater commercial interest due to their ease of handling and storage.

The function of creamers is to develop a desirable colour change and impart body to the food and beverage to which it is added. A properly formulated product would also impart a desirable cream-like flavour and texture.

Non-dairy creamers have been developed to the point where they are virtually indistinguishable from natural cream. Moreover, they have more advantages compared to natural cream. Some of the advantages are longer shelf life, easier storage, transportation and handling. Besides the above advantages, the non-dairy creamers also can fulfill the needs for market segments where religious or health conditions restrict the use of natural dairy cream. It is important to point out that the non-dairy creamers in the market today use hydrogenated vegetable oils that are highly saturated with *trans* fatty acids. The non-dairy creamer that is high in the saturated fat are known to have long-term stability against oxidation and the development of rancidity. This research focused on the development of a non-hydrogenated creamer based on direct blending that had performance characteristics equal to or even better than the commercial creamers.

The product to be revealed in this paper is the non-hydrogenated creamer based on palm oil products. This powdered palm-based non-hydrogenated creamer is developed using palm products that is either plain or flavoured depending on its intended final use.

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TABLE 1. INGREDIENTS FOR PREPARATION OF FLAVOURED OR UNFLAVOURED PALM-BASED NON-HYDROGENATED CREAMER

Ingredients	Percentages
Glucose syrup	35.0
Fat blends	20.0
Stabilizers	1.0
Emulsifier	1.0
Water	43.0
Flavour (optional)	

TYPES OF FATS AND FORMULATION

The non-hydrogenated creamers developed are based on palm products. The palm oil products that are used include palm oil (PO), palm olein (POo), super olein (POoo), palm kernel oil (PKO) and palm kernel olein (PKOo). These palm products are either used directly or blended at different ratios. Three blends have been identified as suitable for the production of palm-based non-hydrogenated creamer with or without flavours. These are blends of POo: PKO, PO:POoo and POoo:PKO. The ingredient in the preparation of the creamer is shown in *Table 1.*

The preparation of the powdered palm-based non-hydrogenated creamer is undertaken using the spray drying technique. The process involves homogenizing the ingredients before it is spray dried. The flow diagram for the preparation of the creamer is shown in *Figure 1*. In order to achieve the desired powder quality, it is extremely important that the mixture must be completely homogeneous before passing through the spray drier. The stability, dryness and dissolvability depend very much on the parameter used on the spray drier.

PRODUCT PERFORMANCE

Plain Palm-based Non-hydrogenated Creamer

Based on the chemical and physical analysis, three blends were judged suitable for the

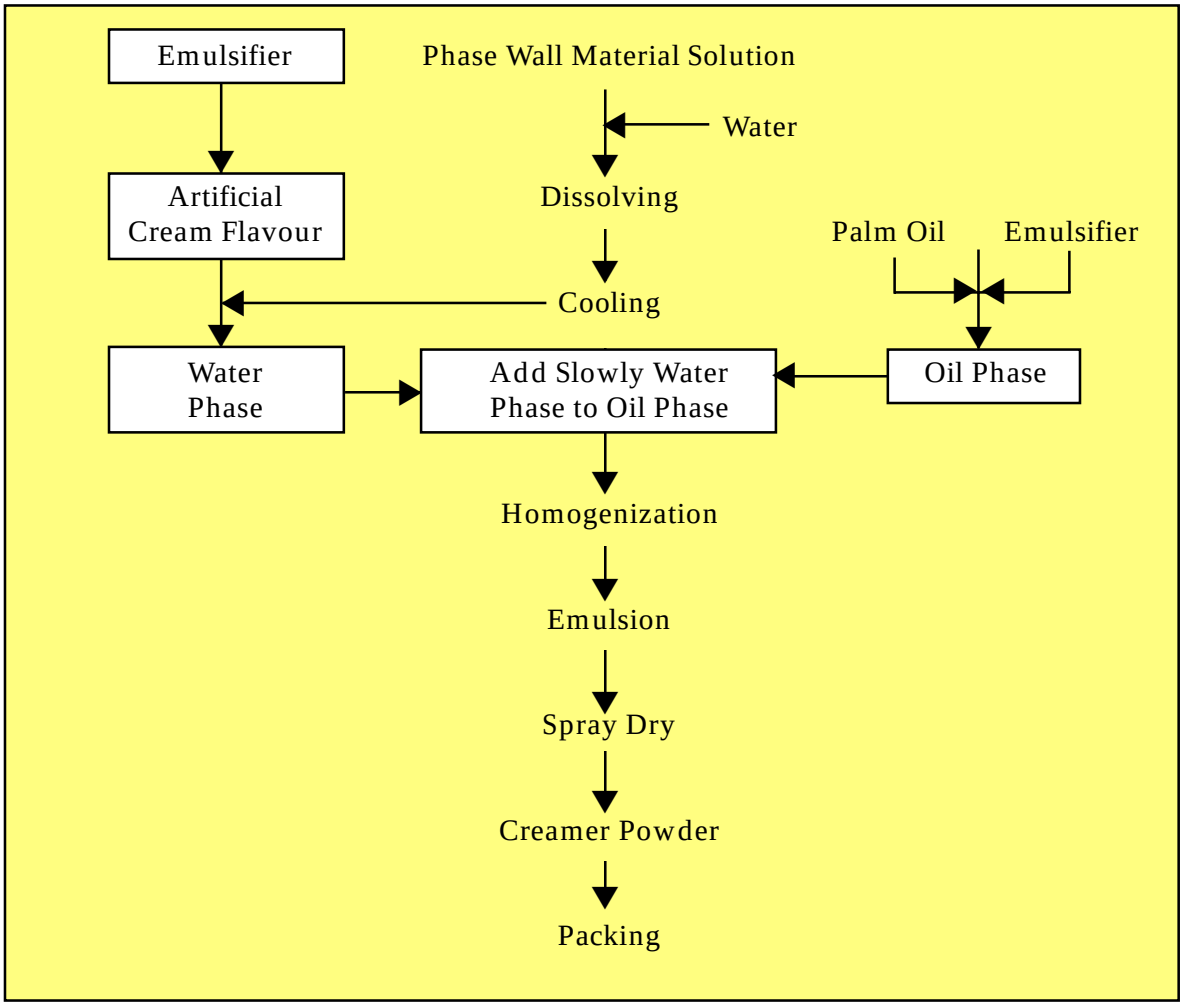

Figure 1. Flow diagram of creamer powder by spray-drying technique.

production of non-hydrogenated creamer. The blends contain the POo and PKO, PO and POoo, and POoo and PKO, in appropriate proportions

Sensory evaluation on the formulated palm-based non-hydrogenated creamers showed that the products blends were comparable to the commercial creamers. Sensory evaluation was conducted using a panel of trained judges. The formulated palm-based non-hydrogenated creamers and the control were dissolved in tea and served. The palm based non-hydrogenated creamers received comparable scores to the commercial creamer in terms of colour, taste, aroma, solubility properties and overall acceptability. The results indicated that excellent quality non-hydrogenated creamers can be made from palm-based products by direct blending.

Flavoured Palm-based Non-hydrogenated Creamers

Based on the acceptable non-flavoured palm-based non-hydrogenated creamer, some flavours were added to increase their application especially in the local desserts. Three flavours selected were strawberry, vanilla and *pandan*. Local dessert, that is jelly, was prepared and the flavoured palm-based non-hydrogenated creamers were added. Sensory evaluation was conducted on the jelly added with flavoured palm-based non-hydrogenated creamer. Attributes that were evaluated included colour, odour, taste, solubility and overall acceptance. The results showed that jelly produced using flavoured palm-based non-hydrogenated creamer gave higher scores in terms of taste, colour, odour and texture than jelly made with commercial creamer. It was also noted that the formulated palm-based non-hydrogenated creamer had solubility characteristic similar to commercial creamer. The overall acceptance scores showed that all jelly made from flavoured palm-based non-hydrogenated creamer was higher. The choice of flavoured palm-based non-hydrogenated creamers against the types of food is very important. Other food products that are suitable for the flavoured palm-based non-hydrogenated creamers include ice cream and other local desserts that contain coconut creamer.

CONCLUSION

Plain and flavoured palm-based non-hydrogenated creamers could be produced by direct blending of palm oil products. Sensory evaluation conducted showed that formulated palm-based non-hydrogenated creamer was comparable to the commercial creamer in term of taste, colour, flavour, solubility and overall acceptance. These creamers were formulated using direct blending. Since no additional modification such as hydrogenation is required, they are free from *trans* fatty acids and the process is more economical.

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