

PALMIANIS LOTION AND CREAM

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INTRODUCTION

Hand and body lotion or cream are cosmetic products applied topically on the skin to obtain one or all of the following desired effects: moisturizing, moisture-retaining, softening, and sun protecting. Lotion and cream are basically similar in terms of appearance and there is no clear distinction between the two, except viscosity. In general, lotion is expected to have lower viscosity than cream.

Lotion and cream are emulsified products of either oil in water (O/W) or water in oil (W/O). The former being the most predominantly available in the market. The

differences in the types of emulsions formed come from the mode of adding the oil and the water phases, the formulations, and the types of emulsifiers used.

Hand and body lotions/creams have been in existence for a long time, but majority of the raw materials used have been synthetically derived. In recent years, due to increasing consumer's preference for mildness, and awareness towards environmental issues there is a growing demand for natural or naturally derived lotion and cream. Natural or naturally derived lotion/cream are products made from plant or plant extracts which do not contain animal fats or placental extracts. For some religious faction, natural products are often associated with "halal" and/or "suci".

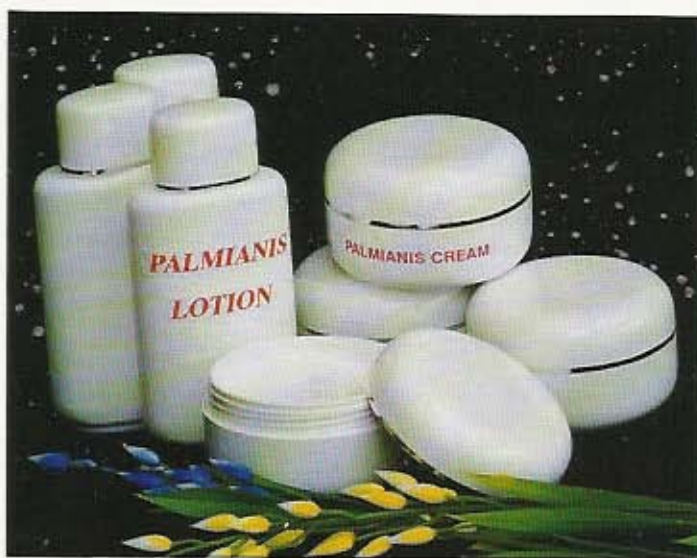
This natural trend has opened up opportunities for the oleochemical industry to be a major raw materials producer for the cosmetic industry. Oleochemicals are chemicals derived from oils and fats but in Malaysia, majority of them are derived from palm oil and palm kernel oil. Oleochemicals such as glycerine, palmitic acid, lauric acid, myristic acid and their esters are widely used in lotion and cream formulations for various purposes. Since palm based oleochemicals are plant

derived, products formulated using them are expected to be mild, environmentally friendly and acceptable to all religions.

Palmianis lotion and cream have been formulated using palm based oleochemicals. They are basically similar in appearance but differed in terms of viscosity and feel. Palmianis lotion is pourable, shiny, non-

oily and easily spreadable, having viscosities ranging from 15 000 cPs to 20 000 cPs. Palmianis cream on the other hand, is more viscous and nonpourable at room temperature with viscosity slightly above 25 000 cPs. Palmianis cream is also shiny, non oily, and spread easily on the skin giving a lustrous, velvety feeling.

Palmianis lotion has been enriched with palm based vitamin E. Vitamin E has been proven to have anti aging properties by acting as preradical scavenger and antioxidant on the skin. In addition vitamin E also gives



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the skin protection against UV radiation (Moller *et al.*, 1988).

RAW MATERIALS

Palmianis lotion and cream are formulated with 98% palm based oleochemicals with the other 2% comprising of preservatives and perfume. The oleochemicals used are of highest grade (> 99% purity) and they are listed below. Various lotion/cream formulations with different characteristics and feel can be created by varying the percentage of the raw materials used. In the example below, the Palmianis lotion formulation contains palm based vitamin E, while the Palmianis cream does not.

Palmianis hand and body lotion with palm vitamin E

- A. Water phase
 Isopropyl palmitate
 Stearic acid triple pressed
 Glyceryl monostearate
 Triethanolamine
 Propyl paraben
 Medium chain triglycerides
- B. Oil phase
 Glycerine
 Methyl paraben
 Deionized water
- C. Perfume
 D. Vitamin E

Palmianis cream

- A. Water phase
 Isopropyl palmitate
 Stearic acid triple pressed
 Glyceryl monostearate
 Triethanolamine
 Propyl paraben
 Medium chain triglycerides
 Cetyl alcohol
- B. Oil phase
 Glycerine
 Methyl paraben
 Deionized water
- C. Perfume

PROCESSING TECHNOLOGY

Palmianis lotion and cream is O/W emulsion produced through emulsification process. In this process phase A and B is prepared separately and then heated to 75°C until all ingredients are dissolved to form a clear solution. Upon reaching the desired temperature, in a heated jacketed vessel, the oil phase is slowly added to the water phase and emulsified using a homogenizer with the mixing speed gradually increased from 1000 rpm to 7500 rpm. After approximately five minutes or until all the oil phase is thoroughly dispersed in water, the mixing speed is gradually decreased and the formulation is allowed to cool down to 40°C. At this temperature, perfume is added while stirring is continued to mix the perfume and to cool the emulsion down to room temperature. During this process, fine bubbles might be produced, which if too much, can be scooped out. This whole process is further illustrated in *Figure 1*.

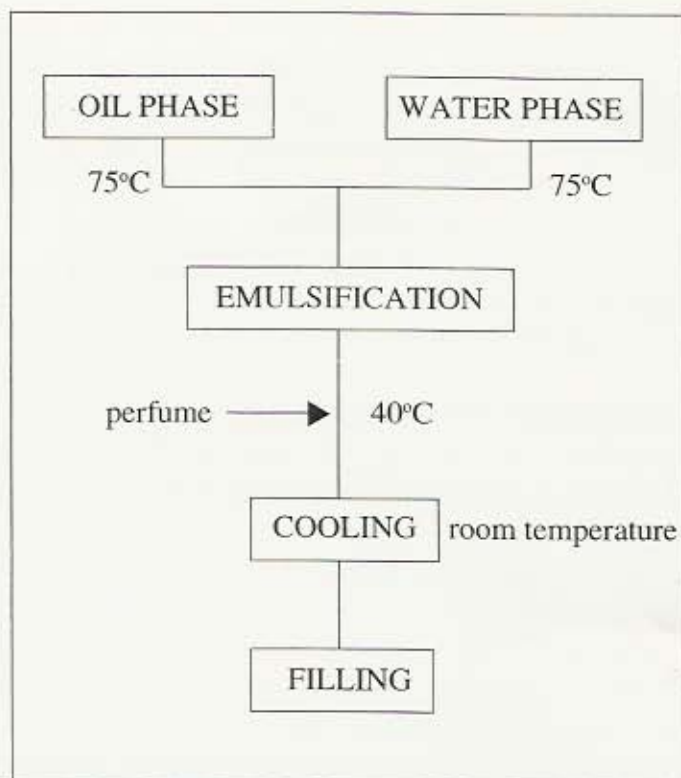


Figure 1. Emulsification process for making lotion/cream.

EQUIPMENT REQUIRED

In the normal manufacturing process of making hand and body lotion and cream, the instruments/equipments required are homogenizer, filling and sealing machine, deionizer, UV light to treat the water, balances, bulk storage container and product container. The cost of this equipment supply is estimated to be RM120 000.

MARKET SIZE

Cosmetic chemicals for expensive cosmetics such as elegant skincare preparations are showing high average annual growth rate of 5%, especially in regions with high GDP. Reason for this growth is attributed to population growth, youths influence, increase in disposable income, urbanization and continued promotion. In addition, claims that some skin care

Note :

It is important to note that greatest hygienic care must be taken throughout the process to prevent contamination from bacteria, fungi or yeast since the formulations are very rich medium, optimum for their growth. Strict adherence to quality will ensure the finish products are safe and free from any microbial contamination. Contaminated lotion/cream are easily deteriorated and if use might be harmful to the users.

preparations can prevent skin damage due to exposure to strong sunlight has sparked growth in the demand for products which can inhibit ageing and drying of the skin. Another contributing factor is the increase in the number of older population in high income countries. These consumers have sufficient buying power to buy sophisticated and expensive preparations.

Soap and personal care industries absorb 7.1 million tonnes that is almost two-thirds of the world triglycerides requirement of 10.8 million tonnes. These 7.1 million tonnes represent 9% of total oils and fats productions where about 1.2 million tonnes are needed to manufacture the equivalent amount of oleochemicals. The availability of oils and fats is expected to be good and sufficient in the coming years. Production can be easily adapted to meet the demand. Palm oil and palm kernel oil in particular offer good prospects in terms of yield. The cultivation of green plants in the form of perennials has a number of positive aspects.

COST OF RAW MATERIALS

Basic ingredients to make Palmianis lotion and cream are as listed below. The estimated cost of raw materials for Palmianis lotion/cream is based on the formulation developed in PORIM. The cost breakdown is as tabulated in *Table 1*.

TABLE 1. COST OF RAW MATERIALS

Raw materials	Palmianis Lotion RM/kg Output	Palmianis cream RM/KG Output
Isopropyl palmitate	0.45	0.45
Stearic acid	0.24	0.24
Glycerol monostearate	0.21	0.21
Propyl paraben	0.41	0.41
Triethanolamine	0.043	0.043
Medium chain triglycerides	0.65	0.32
Cetyl Alcohol	-	0.44
Glycerine	0.30	0.30
Methylparaben	1.10	1.10
Deionised water	0.20	0.20
Perfume P 18	0.76	0.76
Palm based vitamin E	*	-
Total	4.36	4.47

Source: Calculated based on PORIM's formulations.

*The price of palm based vitamin E may be negotiated with PORIM/Golden Hope.

ESTIMATED ECONOMIC RETURN

It is estimated that during a full commercial production the business can generate a monthly pretax income of RM 11 332 at a selling price of RM10.00/100 gram as in *Table 2*. This is equivalent to RM135 986 in a year. Nearly two-thirds (RM5766) of the total operating cost (RM9534) is attributed to the production line, with labour forming the major portion of it (RM3 000) and another RM2683 being utilized for administration purposes. Thus, financial management especially with regard to cost control must be consistently monitored during full operation.

TABLE 2. ESTIMATION OF NET RETURN ON INVESTMENTS (RM)

1. PRODUCTION COST		5 766.30
Raw materials	736.00	
Packing	363.64	
Labour		3 000.00
Production	1,600.00	
Driver	400.00	
Supervisor	1000.00	
Processing Cost		1666.67
Electricity	300.00	
Water	200.00	
Depreciation	1000.00	
Maintenance	83.33	
Miscellaneous	83.33	
2. ADMINISTRATION		2 683.33
EPF	300.00	
Rent	2 000.00	
Diesel	200.00	
Insurance	83.33	
Vehicle maintenance	100.00	
3. MARKETING		218.18
4. SUB-TOTAL	8 667.82	
10 % Contingency	866.78	
5. TOTAL	9 534.60	
6. PROFIT ESTIMATION		
Sales	20 000.00	
Less		
Production cost	5 766.30	
Gross profit	14 233.70	
Less		
Marketing	218.18	
Less		
Administration	2 683.33	
PRE-TAX PROFIT	11 332.18	

It is also estimated that an investment in Palmianis lotion/cream would generate a B : C of 1.753 and NPV of RM 360 600. The IRR is estimated to be 56%.

CONCLUSION

The personal care industry, in particular the hand and body lotion/cream, are extremely important outlets for oleochemicals. Growth rate in the personal care industry is higher than in other oleo-related industries. Interest in natural or naturally derived cosmetic products formulated from natural raw materials is increasing due to various reasons. Our calculation indicated that investment in hand and body lotion/cream manufacturing is economically viable, with IRR of 56%, as long as the selling price is above RM 7.00/100 g. The extensive use of palm based oleochemicals in the skincare industry will exert an ever increasing

influence on the development of oleochemical industry in Malaysia as the raw materials supply is in abundance. The personal care industry will remain an important outlet for the oleochemical industry.

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