

To study the performance of Palm Kernel Oil in the use of non dairy whip topping

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ABSTRACT

Palm Kernel Oil is most suitable for Non dairy whip topping. The results show that The cream which is produced from PKO is smooth, Glossy and Shine, which has more shelf life than dairy whip topping. This study also shows that, the foam which is produced is more stable in whipping cream. This study also points out advantages of palm kernel oil based whipping cream, particularly when stability of cream is more important.

Keywords - Emulsifiers, Hydrogenated Palm Kernel Oil, Liquid Glucose, Milk Solids (SMP), Polysorbate, Sugar Syrup, Flavours.

I. INTRODUCTION

Non dairy whip topping cream have become more popular both for commercial and consumer used on pudding, sodas, cakes, ice cream, fruit and pastries, and for cream pie pieces. Consumer and some dairy industry has some expectations about quality of Non dairy whip topping cream with regard to taste, shelf life, whipping characteristic such as speed of whipping, overrun, consistency and stability.

Palm kernel oil is the product of nut in the palm fruit also widely used in combination of with palm oil. Non dairy whipping cream is the product which attracts the attention of any researcher and many study (studies) have been undertaken so far on dairy and non dairy whipping cream; The most promising blends in the term of whipping performance and stability is the addition of PS and HPKO ratio is PS:HPKO=34.66 (poly sorbate/palm stearin)

The whipping process forms the air cells that are stabilized by globules (air water interface). During the whipping process the globules attached to air bubbles, as these air bubbles break and coalesce the fat clumps. As whipping continues air cells become smaller and more numerous, fat clumping continues and foam increases in volume and rigidity. If whipping continues still further the fat clumps become so large that they rupture the lamellae enclosing the air cells. Air bubbles start to coalesce, overrun decreases and churning results.

Functional properties of whipping cream mostly depend on following:

1. Fat content
2. Cream temp
3. Homogenization
4. Pasteurization condition
5. Presence of stabilizers and emulsifiers

Mostly as per research the most prominent, ambient temperature for whipping is 10°C (9° to 10°) (after homogenization). By using palm kernel oil (PKO). The performance of whipping cream is too much good. The texture of products is smooth and shiny and glossy.

The objective of this study is comparing the foam stability of dairy whipping cream and non dairy i.e. palm kernel oil based whipping cream.

II. MATERIALS AND METHODS

Material:

Palm kernel oil (fact), liquid glucose, sugar syrup, caseinate, milk solids (SMP), stabilizer and emulsifier, acidity regulator, also for flavors vanilla and polysorbate is added.

Method:

1. Melt oil at fat melting area – 60-65°C (PKO)
2. Add flavor Then prepare sugar syrup as per batch. Concentration brix -42-45% then calculate the other.
3. Add Polysorbate.
4. Add Liquid Glucose (80%) .After addition wait for 10 min. holding time.
5. Add SMP (milk solid)
6. Add preservative, emulsifier and stabilizer.
7. Wait till batch temp. 74°C
8. Homogenization process ,Homogenization Pressure is at 1 st stage - 5500 psi and at 2 nd stage is 500 psi. Homogenization temp. is at 1 st stage 4-6 °C and at 2nd stage is 8-10 °C
9. After passing to Homogenization. The product 8°-10° not more than 10°C
10. Check the performance of product.

III. INDENTATIONS AND EQUATIONS

The Overrun is calculated by

$$\% \text{ Overrun} = \frac{\text{Liquid weight of quantity of cream}}{\text{Weight of quantity of cream after whipping}}$$

If we used other than PKO i.e. raw cream the overrun is 20% less than PKO.

This study of investigated show that. The fact crystals and it's effect on emulsion stability and found that crystals on structure of cream.

IV. FIGURES AND TABLES

Batch checking results:

Sample taking for whipping is 1/3rd quantity i.e. 25:100 then start whipping –time is the first stage at speed ->

Speed	Time
Medium	3 min
High	4 min
Medium	0.10 min

V. RESULT

Using PKO is in the (Non Dairy Whipping), the results is as below-

CONCLUSION

The conclusion of this study is show that, The performance of palm kernel oil in the non dairy whipping cream is better than dairy whipping cream. The textural quality of cream is shiny, glossy and forms without air bubbles and coalesced into a stable product.

Testing cream on roset time it is a 30-35 min. i.e. too is much more than dairy whipping cream also conclusion is one that ,Non dairy whipping cream is mixed matrix of soft in oil in water emulsion (structure) and stiffer in water in oil structure.

ACKNOWLEDGEMENTS

I have taken efforts in this project. However, it would not have been possible without the kind support and help of many individual and organizations. We would like to extend our sincere thanks to all of them. It gives us proud privilege to complete the project on” **Performance of palm kernel oil in the use of non dairy whip topping**". We are highly indebted to our internal guide **Prof.Dr.G.A.Usmani** for his guidance and constant supervision as well as for providing necessary information regarding the project and also for his support in completing the project.

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SR.NO	PARAMETERS	AT 8°C	AT 9°C	AT 10°C
1	Viscosity (1100-1400)	1120	1235	1335
2	Whipping Time (max 7min 15sec)	7 min 4 Sec	7 min 6 sec	7 min 2 sec
3	Overrun (420-460)	425	440	445
4	Total Solids (48-49)	48.25	48.92	48.78
5	Fat Content (19-21)	20.4	20.2	20.32
6	Roset Time (45-75)	48 Min	50 Min	55 Min
7	Bowl Stability (24 Hrs)			
	7.1 At Refrigeration Temperature	Good	Good	Good
	7.2 At Room Temperature	Good	Good	Good
	7.3 At High Temperature	Colapsed	Colapsed	Good
8	Bench Time(2+0.5)	1 Hrs.45 Min	1 Hr.50 Min	2 Hr.10 Min