Study of later separation time duration of coconut milk in storage tanks during coconut milk powder production

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Introduction

Coconut milk is a milky fluid obtained by manual or mechanical extraction of fresh coconut kernel with or without addition of water. It is a white, opaque protein-oil-water emulsion and essentially free from fiber. Coconut milk powder is a preservation method for coconut milk and also coconut milk powder substitute for coconut milk. In coconut milk powder production, coconut milk store in milk tanks during storage coconut milk destabilize and separate in to layers (cream phase, fat phase and aqueous phase). This layer separation adversely affect to the quality of the spray dried coconut milk powder. Therefore coconut milk layer separation in storage tanks is a major problem in the production of spray dried coconut milk powder. To overcome this problem some modification of the processing line were studied in the present work.

Methodology

Effect of homogenization and use of a stabilizer prior to storage were tested. Sodium Caseinate was used as emulsifier. To find out optimum Sodium Caseinate percentage five different Sodium Caseinate percentages were used (0.5%, 1.0%, 1.5%, 2.0%, and 2.5%). With those percentages coconut milk homogenized and stored for 24 hours and separation heights were measured. Quality of the coconut milk powder was compared with the existing production line. All spray dried samples were tested for fat and moisture.

Results and Discussion

According to the results of this experiment the "p" value of pH was 0.215 ($0.05 < 0.215$). There was no significantly different between pH values of coconut milk treated by different percentages of Sodium Caseinate. The "p" value of separation height of coconut milk was 0.000 ($0.05 > 0.000$). There is a significantly differences between pH values of coconut milk. Separation height of T1 and T2 were significantly different from T2, T3, T4 and T5. T1 and T2 also significantly different from each other. T3, T4, and T5 were not significantly different each other and mean value of T3, T4 and T5 were 0.000. There were no separation T3, T4 and T5. Reason was T3, T4, and T5 were treated with Sodium Caseinate and homogenized. (T1, T2, T3, T4, T5 all are different treatment levels)

Table 01: Different Treatments

Treatments	pH mean	Separation Height
T_1	6.16000 A	1.4000 A
T_2	6.08000 A	0.6333 B
T_3	6.18000 A	0.0000 C
T_4	6.23333 A	0.0000 C
T_5	6.22000 A	0.0000 C

Coconut milk layer separation can be prevented using homogenization with Sodium Caseinate. The optimum Sodium Caseinate percentage was 1.5% to minimize the layer separation of coconut milk in storage There is no significant difference of microbial growth between Sodium Caseinate treated coconut milk and fresh coconut milk storage in cool room temperature (<10 ^{0}C) There is no considerable growth of microbes in Sodium Caseinate treated coconut milk storage under 10 C. ^{0} Coconut milk homogenization with Sodium Caseinate can prevent fat accumulation of the top layers in storage. With suggested processing steps change coconut milk powder fat percentage fluctuation can be prevented.

Conclusions

Properties of coconut milk (total solid and pH) were not considerably vary day by day.Coconut milk layer separation can be prevented using homogenization with Sodium Caseinate**.** The optimum Sodium Caseinate percentage was 1.5% to minimize the layer separation of coconut milk in storage**.** According to the studies there was no significant difference of microbial growth between Sodium Caseinate treated coconut milk and fresh coconut milk storage in cool room temperature (<10 0C).Coconut milk homogenization with Sodium Caseinate can prevent fat accumulation of the top layers in storage.

References

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