

Novel Sucrose Fatty Acid Ester for Quality Improvement of Milk Coffee

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Background and Purpose

Sucrose fatty acid esters are emulsifiers produced exclusively from plant materials, more specifically by the ester exchange reaction of sucrose and methyl fatty acid. They are used in beverages for their bacteriostatic and emulsion stabilizing effects. Sucrose fatty acid esters conventionally used in emulsion stability improvement have the problem of a slight bitter taste in beverages. This study, aiming to achieve both taste and stability, we developed new products "RYOTO Sugar Ester S-470" (HLB:4, stearic fatty acid) with reduction of bitter taste by controlling the fatty acid ester distribution, and we tested the ability of the product in terms of its impact on beverage taste and emulsification stability.

Method

Instant coffee, sodium hydrogen carbonate, nonfat milk powder, powdered oils and various stabilizers including S-470 were heat-mixed and homogenized by a high-pressure homogenizer. The adjusted liquid was filled into beverage cans and retort sterilized at 121°C for 30 minutes to prepare canned milk coffee. After storage at high temperature for a certain period, taste evaluation by taste sensor, and stability evaluation by appearance observation and particle size distribution measurement were conducted.

Results

The results of taste sensor measurements of milk coffee revealed that milk coffee containing S-470 tended to have less emulsifier-derived bitterness compared to milk coffee containing conventional sucrose fatty acid esters. After storing the milk coffee at 55°C for 4 weeks, it became clear that the addition of S-470 alone as a stabilizer had insufficient stabilizing effect. The combination of S-470 with an ionic emulsifier such as diacetyl tartrate monoglyceride was found to provide sufficient emulsification stability for milk coffee (Fig.1).

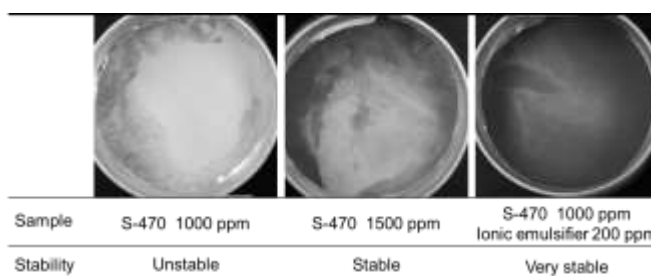


Fig.1 Appearance evaluation of canned milk coffee creaming after long term storage.

Conclusion

Sucrose fatty acid ester S-470 is an excellent emulsifier in beverages in terms of both emulsion stability and taste, and it works best when used with ionic emulsifiers.