



TECHNOLOGY

Natural Additives to Stabilize Food During Freeze-Thaw Cycles

OVERVIEW

Hydrocolloid Gum Mixture as Freeze-Thaw Stabilizer and Moisture Retainer

Xanthan and Curdlan gums are food additives produced by microbial fermentation. They are widely used in the food industry to increase the quality of foods by stabilizing, thickening and emulsifying products such as ice cream, salad dressings and surimi. The currently available thickening agents are not robust enough to withstand the multiple freeze thaw cycles that foods endure during their journey from the manufacturer to the supermarket.

Researchers at University of Maryland, College Park have created a unique combination or hydrogel complex of these gums to generate not only a desired texture for frozen foods but also stability in food and other products. Hydrocolloids formed by this mixture of xanthan and curdlan gums at specific combinations provide excellent water retention capability with zero syneresis (the separation of liquid from a gel) through several freeze-thaw cycles.

Advantages

The combination of the xanthan and curdlan gums in a hydrogel complex enables the formation of desirable products with improved texture, syneresis, heat stability, stabilization and fat replacing properties. Compared to other gum combinations this mixture was able to maintain physical properties including high gel strength, adhesiveness and stability in viscosity, storage and loss modulus and, water loss through multiple freeze-thaw cycles.

The excellent water retention capability would benefit not only the food and feed industry by extending the shelf life of frozen products and eliminating water loss during transportation, distribution and thawing processes, but also help the personal care industry to produce creams, lotions and so on.

Applications

- 1) Improved "mouth feel" for frozen foods by allowing products to maintain their textural properties stably through multiple freeze-thaw cycles.
- 2) Potential improvement in the texture and moisture retention capabilities for frozen foods and for other wide-ranging applications from high-value animal feeds, thin-film products used for personal care, cosmetics & pharmaceutical purposes.

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Additional Information

INSTITUTION

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PATENT STATUS

Patent(s) pending

LICENSE STATUS

Contact OTC for licensing information

CATEGORIES

- Natural Compounds

EXTERNAL RESOURCES

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