



Improved Low-Fat and Fat-Free Cheese

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The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a method for producing low- and non-fat processed cheese with improved properties.

Overview

As Americans try to reduce the amount of fat in their diets, non- and low-fat cheese has become more popular. However, despite many attempts to improve the quality of these cheeses, a number of undesirable attributes remain. Problems with currently manufactured reduced fat and fat-free cheese include pale, translucent color; tough, chewy texture; poor melt; scorching or browning during baking; and/or stickiness.

The Invention

UW-Madison researchers have developed a method for producing low-fat and fat-free processed cheese with improved texture, color and baking properties. One key to this method is to acidify, with calcium chelating acids, the fat-free or skim milk source used in the cheese manufacturing process to a pH of about 5.4 to 5.8 to obtain the cheese base curd. This improves melt and reduces curd stickiness. It also eliminates the need to add phosphate- or citrate-based salts during cheese making because the calcium content is sufficiently lowered in this cheese base. The other key is to add glycerides, including monoglycerides and diglycerides, to the cheese base during the manufacturing process. The glycerides are emulsifiers with low water solubility. They change the way the milk proteins interact, leading to improvements in the textural and functional properties of the cheese.

Applications

- Production of low- and non-fat processed cheese

Key Benefits

- Produces low- and non-fat processed cheese with excellent melting and baking characteristics
- Cheese is white, non-sticky, soft, stretchable, acceptably chewy and shelf-stable.
- Contains less than six percent fat and may have a moisture content of 59 to 64 percent
- Cheese has lower sodium content than other processed cheese because no emulsifying salts are needed.
- Cheese is low in cholesterol due to the low milk fat content.
- Suitable for the frozen food industry
- Particularly well suited for use in food chains, institutional settings such as schools, and generally anywhere dietary and health requirements for fat or sodium limit the types of foods that can be served

Because the cheese is non-sticky, it can be used in slice-on-slice applications, where slices of processed cheese are stacked on top of one another without a plastic wrapping. We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. [See our privacy policy.](#)

- Cheese does not need to be aged.
- Flavors may be added during processing.

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- Glycerides are generally recognized as safe (GRAS) for inclusion in food products.
- The concentration of glycerides or other fat emulsifiers can be adjusted to modify the chewiness, hardness and other functional attributes of the cheese.

Additional Information

For More Information About the Inventors

- [John Lucey](#)
- [Eileen Salim](#)

Tech Fields

- [Animals, Agriculture & Food : Food processing](#)

For current licensing status, please contact Emily Bauer at emily@warf.org or 608-960-9842

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