

Local Official Gives History of Butterfat Test

Milk-O-Tester May Be Industry Breakthrough

By Victor Plastow
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The price of milk is determined by its fat content.

Millions of fat tests on milk are carried out every month in this county alone.

Dairies, the Dairy Herd Improvement Association, and federal, state and local control agencies are all interested in milk fat tests in order to establish the price of milk shipments, to evaluate cow performance and to check whether market milk has the required minimum fat content.

Several decades ago milk used to be bought and sold by weight or volume alone. But ever since Dr. S. M. Babcock of the Wisconsin Agricultural Experiment Station developed and perfected a method for the determination of the fat content of milk and cream in 1890, the chemical fat test has become widely accepted in North America.

The Babcock test, as it is generally referred to, is based on the digestive action of sulfuric acid on the milk solids and the concomitant liberation of all the fat in the milk sample. Centrifugation causes this fat to be forced into the graduated narrow portion of a standardized milk test bottle where it can be measured.

The test is usually carried out on several samples at a time. It is fairly easy, requiring only some skill but strict compliance with several details in the procedure, such as techniques, temperatures and timings. It takes about 20 minutes to determine the fat content of a milk sample by the Babcock method. Sulfuric acid is not particularly expensive and the equipment and glassware may last many years if cared for. The Babcock test has been hailed as one of the milestones in American milk and dairy history.

An alternative to the Babcock method is the Gerber test. It was also developed in the 1890's, but in Europe, by the Swiss chemist Dr. N. Gerber. This test was introduced to this county about 15 years ago and has found wide acceptance in several states. It is based on similar principles as the Babcock test, except for variations in certain details. Especially the testing equipment and glassware are different.

For several years now, a new method for the determination of fat in milk has been gaining attention from the dairy industry. The method requires an instrument developed and built by a Danish firm. It is called the Milk-O-Tester and determines the fat percentage of milk sample in about 30 seconds. The device has been checked by various people in research and industrial laboratories of several countries, including workers at the Pennsylvania Agricultural Experiment Station.

It is believed that the Milk-O-Tester will revolutionize milk fat testing, especially for such routine testers as large dairies with many milk shippers and the state Dairy Herd Improvement Associations.

Operating Principles — The opaqueness of milk is caused both by the presence of colloidal dispersed protein and fat globules naturally emulsified throughout the milk. The fat and protein cause light to be dispersed and absorbed. When the milk protein is dissolved, thus made invisible, and when the remaining fat globules are homogenized to a uniform size, light dispersion and absorption will depend only on the number of fat globules which are now homogenized.



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ed proportional to the fat content of the milk. The light passing through the sample is picked up by a photometer and indicated as milliamperes on a scale reading 'per cent fat.

Operating Method — The manufacturer of the instrument, A/S N. Foss Electric, indicates an error of only 15 per cent for milk testing 3 to 8 per cent fat, that would be 0.06 per cent fat for a 4 per cent milk and 0.075 per cent for a 5 per cent milk. Normally, the Milk-O-Tester is calibrated with milk samples of known fat content, as determined by the Babcock test, the presently approved and required milk fat testing method.

Reproducibility of the instrument is about the same as that of other fat testing methods.

Pros and Cons — Before more research is done with the Milk-O-Tester, it can only be accurately used for unhomogenized, raw or pasteurized, whole milk with a fat content of 2 to 6 per cent which, however, covers practically all milk samples. It is possible to test milk with a higher fat content or cream by diluting the sample so that a readable fat content is obtained.

Sour or even slightly sour,

samples may cause problems, because coagulated casein could plug the intake screen or even the homogenizer. Chemical preservatives can be used in samples without effect on the results or danger of corrosion.

Proper calibration of the instrument is extremely important and the details of the instruction must be adhered to. Apart from this operation of the Milk-O-Tester is fairly easy.

Milk samples that have been churned out during transit should not be tested, as the results will always be below the true fat percentage.

There is no disposal problem as with sulfuric acid, since the Veisene solution — milk mixture is noncorrosive.

The few existing publications dealing with work on the Milk-O-Tester all praise its simplicity of operation, the speed with which results are obtained, the low cost per sample, provided a substan-

tial number of tests are completed every day, the complete lack of danger, since no flammable solvents or acids are used; and, all factors considered, the definite superiority of the Milk-O-Tester over other fat tests.

A Cool-Cooler Beverage

Fruit flavors, ice cream and milk get together in this summer sipper. It might do double duty as beverage and dessert for a quick sandwich meal.

Keep it in mind, too, for any time "something good" is called for.

STRAWBERRY PINEAPPLE COOLER

In a mixer or blender, combine 2 cups milk, 2½ cups (1 lb., 4½ oz. can) chilled crushed pineapple, and ½ pint vanilla ice cream until just blended. Pour into tall glasses and top with scoop of strawberry ice cream. Garnish with mint, if desired. Yield 6 servings.

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