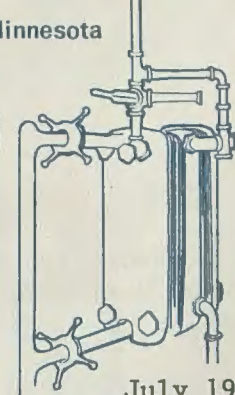


MINNESOTA DAIRY PRODUCTS PROCESSOR



UNIVERSITY OF MINNESOTA
DOCUMENTS
JUL 1 1977
ST. PAUL CAMPUS LIBRARIES

Editor - V.S. Packard
Extension Specialist, Dairy Products

July 1977 No. 67

There has been a stay of the final order of the new ice cream, ice milk, and sherbet standards. Nonetheless, a review of certain pertinent aspects seems in order. The standards called for some changes in labeling, as well as providing new ingredient formulations.

SOURCE AND AMOUNT OF FAT

For ice cream (or frozen custard), ice milk, and sherbet, the only source of fat allowed would be milkfat. Mellorine, however, might contain animal and/or vegetable fat. Only part of the animal fat, if used, would be of milk origin.

Ice cream (or frozen custard) would have to have at least 10 percent fat, ice milk 2-7 percent, sherbet 1-2 percent, and mellorine at least 6 percent, except when bulky flavors, such as strawberries or cherries are used. Then fat minimums would become 8, 2, and 4.8 percent, respectively, for ice cream, ice milk, and mellorine.

AMOUNT OF PROTEIN

Ice cream and mellorine are proposed to have the same minimum level of protein, i.e., 2.7 percent, when the fat content is 10 percent. Ice milk at 2 percent fat would contain at least 2.55 percent protein. At higher levels of fat, in all three products, the maximum protein dilution would allow the following:

| <u>Ice Cream (frozen custard)</u> | | <u>Ice Milk</u> | |
|-----------------------------------|---------|-----------------|---------|
| Milkfat | Protein | Milkfat | Protein |
| ----- percent ----- | | | |
| 10 | 2.70 | 2 | 2.55 |
| 11 | 2.55 | 3 | 2.40 |
| 12 | 2.40 | 4 | 2.25 |
| 13 | 2.25 | 5 | 2.10 |
| 14 | 2.10 | 6 | 1.95 |
| | | 7 | 1.80 |

Reduction in protein as a result of bulky flavor use would not be allowed below 2.2, 1.75, and 2.2 percent, respectively, for ice cream, ice milk, and mellorine.

SOURCE OF PROTEIN

Here let's quote directly from the regulation, because the issues get sticky and these are important: "The protein to meet the minimum protein requirement shall be provided by milk solids not fat and/or other milk-derived ingredients."

Taking that statement literally it means: (1) Protein, at least to the lowest level required, must come from a milk source, which can include not only fresh and dried milk products, but also caseinates, dried whey, and a number of modified whey products, (2) no specific levels of any one milk protein source are set (except as the protein quality requirement imposes limitations, as will be seen). Whey, formerly restricted to no more than 25 percent of the ingredient mix, now carries no specific use limit.

PROTEIN QUALITY

Protein quality is based on a method of analysis called Protein Efficiency Ratio (PER). This method assesses weight gain of rats under prescribed feeding conditions. All results are then rated against a standard protein, which happens to be casein, a protein of milk. The standard requires the finished product protein to have a PER of "not less than whole milk protein, i.e., 108 percent of casein." In essence, then, the milk-derived proteins, from whatever sources used, must be blended to yield a quality level the equal of whole milk. Obviously this limits the amount of any protein (namely casein) of biological value less than that. This is an important point. In effect it allows use of various caseinates -- but only to that level which will not dilute the quality of the total protein present below 108 percent of casein.

What proteins in milk raise the quality above that of casein? The answer is whey proteins (proteins remaining in the whey after curd is removed in the cheesemaking operation). As value to the human body is concerned, these proteins measure better than casein. Give casein a PER of 2.5, and whey protein concentrates would come off at about 3.2. The higher the value, the better the quality.

Whey products could figure much more strongly in future ice cream formulations than in the past. There would be no prescribed minimum. The nutritional quality would not be impaired: the more whey protein present the better that quality.

But what of caseinates? Are they not "chemicals?" Perhaps, but by legal definition only. Casein is milk protein. Caseinates -- sodium, calcium, etc.-- are salts of casein. In milk, casein exists as a complex of calcium and certain phosphates, also magnesium and citrates. Isolate it from milk and, depending on the method used, a sodium caseinate, calcium caseinate or other mineral/protein salt results. But the protein remains casein. And if a drying operation can produce good quality skimmilk powder (for ice cream manu-

facture, for example), a casein processing plant can also produce high quality casein. Opposition has arisen over the new standards for allowing such foods in ice cream. But foods they are, and only "chemicals" when their use is for some purpose other than a food ingredient and then only as a kind of use defines the product used. All things -- food and otherwise -- are chemical in nature.

WEIGHT AND TOTAL FOOD SOLIDS PER GALLON

There's nothing really new here. All three products (ice cream, ice milk, and mellorine) would be required to weigh 4.5 pounds per gallon. Total food solids per gallon would be 1.6 pounds for both ice cream and mellorine, 1.3 pounds for ice milk.

SWEETENERS

All frozen desserts (including sherbet) would have to be sweetened with "nutritive carbohydrate sweetener." This requirement is to be taken literally, to the extent that sorbitol and mannitol and other sugar alcohols are not considered to be "carbohydrate" within this definition. Those who feel they should be, or who feel the use of non-nutritive sweeteners should be allowed, should write to FDA.

OPTIONAL INGREDIENTS

There has been a change in this aspect of the standards to allow not just a simple, prescribed list of ingredients, but rather a broad category of compounds coming under the general heading "safe and suitable." By legal mandate this means any substance that (1) performs an appropriate function in the food in which it is used, (2) one that is used at a level no higher than that necessary to achieve its intended purpose in the food, and (3) one that is not a food additive, as defined by the Federal Food, Drug, and Cosmetic Act -- unless used in conformity with appropriate regulations covering those additives.

LABELING FLAVOR

Labeling of flavor would not change. The 3-category procedure, using dominance by amount in the finished product, would still be used. That is, if no artificial flavor is present, the food would be named by its flavoring material, i.e., vanilla, strawberry, peach, etc. When both artificial and natural flavors are present, and natural flavors dominate, the name would become " flavored." If artificial flavors dominate, the name would be "artificially flavored ." The blank, of course, would be filled in with the flavor used. When an artificial flavor is used which simulates the characterizing flavor, it would have to be acknowledged except under certain very specific conditions. Artificial color would not need to be declared, but it could be voluntarily.

OTHER LABELING

Nutritional labeling is proposed only for mellorine. For ice cream and ice milk such labeling would be optional. However, ingredient labeling would be mandatory; all ingredients -- emulsifiers, stabilizers, and salts included -- would have to be declared, and in descending order by amount present.

OPENS DOOR

In short the new standards, as originally finalized, would open the door to a broader use, in kind and amount, of milk-derived ingredients. They would allow high quality protein sources previously limited. They would provide for greater use of dairy byproducts in dairy products, certainly as valid there as in non-dairy products. By providing for use of "safe and suitable" ingredients, a new breadth of formulation possibilities could make certain the mix would be put together in a fashion most appealing to consumers, and over a price range that might assure the broadest possible acceptance.

Trade names are sometimes used in this publication to clearly describe products. The use of a trade name does not imply endorsement by the Minnesota Agricultural Extension Service, nor does omission of other trade names imply nonapproval.

We offer our programs and facilities to all people without regard to race, creed, color, sex, or national origin.

V. S. Packard, Jr.

Vernal S. Packard, Jr.
Extension Specialist, Dairy Products

AGRICULTURE LIBRARY
ST PAUL CAMPUS
ST PAUL MINN 55101
DPP

Penalty for Private Use, \$300
6/77-625

AGRICULTURAL EXTENSION SERVICE
U.S. DEPARTMENT OF AGRICULTURE
UNIVERSITY OF MINNESOTA
ST. PAUL, MINNESOTA 55108
OFFICIAL BUSINESS

POSTAGE AND FEES PAID
U.S. DEPARTMENT OF
AGRICULTURE
AGR 101

