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THE FLAVOR AND ODOR OF MILK, CREAM AND BUTTER

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Milk usually has a definite characteristic flavor and odor. These may either be pleasing or objectionable.

The flavors and odors in milk are usually the result of one or more of four causes; namely, (1) the physical condition of the individual cow, (2) highly flavored feeds, (3) absorption of odors after the milk is produced, (4) growth of definite kinds of bacteria causing changes in the milk.

Flavors and odors out of the ordinary in milk are objected to by milk plant operators, creamerymen and consumers. It is therefore important that the dairyman understand the causes of the off-flavor in milk so that he can take steps to prevent such flavors developing in so far as he is able. The flavor is apparently absorbed by the fat in the milk, consequently cream and butter show the off-flavor even more distinctly than does whole milk.

Flavors and odors caused by the physical condition of the cow are found in the milk at the time it is drawn and consequently are fairly easily detected by the dairymen. Such off-flavors are more pronounced in the case of cows in advanced stages of lactation and gestation. In some cases it is known that the development of an enzyme known as lipase in milk of cows in the advanced stages of lactation and gestation produces a bitter milk very objectionable in flavor and odor. The milk from cows showing any sickness or cows that have been given drugs likewise may be off-flavor and odor and should not be used.

The second consideration resulting in flavors and odors in the milk; namely, highly flavored feeds, is probably the most important so far as the ordinary dairyman is concerned. Succulent feedstuffs are the most highly flavored and consequently usually have more effect on the flavor and odor of milk and other dairy products than do concentrates and roughages.

Experiments have shown that when green alfalfa, kale, turnips, cabbage, rape, silage made from alfalfa or soy beans, are fed to dairy cows one hour before milking, that the flavor and odor of the milk produced is seriously affected. Green rye, potatoes, dried beet pulp, carrots, and corn silage affect the flavor and odor of milk to a slight degree. Green corn, green oats and peas, green soy beans, pumpkins and sugar beets have practically no effect.

Most dairymen are acquainted with the highly flavored milk produced when cows graze on pastures containing weeds such as bitter-wood, wild garlic or wild onions. In case such weeds are found in the pasture the weeds should either be destroyed, or fenced off, or the cows removed from the pasture three or four hours before milking so as to allow time for the objectionable flavors and odors to be eliminated from the body of the cow.

Experiments have shown that in the case of the succulent feedstuffs mentioned above the objectionable flavors and odors can be controlled by proper systems of feeding. The primary consideration is that the feedstuffs be fed after milking and not before. When very large quantities of highly flavored feeds are being fed, even after milking, these may affect the milk twelve hours later. However, in this case the intensity of the flavor has usually decreased so that it will not be objected to by the creamerymen and consumers.

The milk and butter produced from cows receiving a ration consisting largely of alfalfa hay has a definite characteristic feed flavor. This flavor is being objected to on some markets. Undoubtedly attention will have to be given to this problem soon if the market continues to discriminate against alfalfa flavored butter.

Milk produced in a feed tainted barn may absorb some of the flavors and odors of the stable. Thus, it is important to keep all highly flavored feedstuffs out of the milking barn in so far as storage is concerned and if these feeds are fed in the barn to remove any uneaten portions several hours before the period of milking. The milking barn should be well ventilated. Aeration and cooling of milk will reduce strong flavors and odors and sometimes eliminate slight flavors and odors.

Recent experiments at the University of British Columbia and elsewhere have shown that some of the characteristic off-flavors and odors that have been ascribed to feed in the past, are due to the growth of specific bacteria in the milk. Thus investigators at the University of British Columbia have isolated from corn silage specific bacteria which caused a definite off-flavor and odor in milk. This further emphasizes the need for sanitary precautions in producing milk. Prompt cooling aids in preventing the growth of bacteria that may result in off-flavors and odors in milk.