

Activity 9.1.3 Dairy Products Guide

Description and Causes of Off-Flavors in Milk

Flavors of milk may be caused, in general, by five factors: Health of the cow, feeds consumed by the cow, bacteriological action, chemical changes, and absorption of foreign flavors after the milk is drawn. Taste sensations include sweet, sour, salt and bitter. Odor sensations occur at the upper portion of the nasal cavity. In order to correctly identify odor, inhale slowly and deeply before and after you put the sample in your mouth.

Table 1. Off-Flavors in Milk

Off-flavor	Description
Bitter	Bitterness is only detected by taste and not by smell. Bitter milk is sometimes confused with rancid milk. Detected on the base of the tongue as an aftertaste and tends to persist. The bitter sensation may be compared to coffee bitterness. Caused by feeding strong feeds or weeds, which may carry through into the milk or by conditions present in milk from cows in late lactation, Bitter taste may also result from certain bacterial growth, but normally this will not occur unless the milk is held several days at low temperatures.
Cooked	Taste may range from lightly cooked or nutty-like flavor to scorched or caramelized. Flavors may include sweet, pleasant, slightly sulfurous or cabbage-y. Results from heating milk and appears when all or part of the milk has been heated too high or too long.
Feed or Weedy (Transmitted Flavors)	Tastes and odors range from pleasant to unpleasant; specific flavors include hay, mown grass, silage, cowy, or barny; unpleasant odor and may have unpleasant medicine or chemical aftertaste. The weedy flavor is not included among the usual feed flavors. It generally has a bitter characteristic, varying with specific weeds of certain localities. It may include obnoxious flavors caused by such plants as ragweed, bitter weed, or peppergrass, and may become a very troublesome flavor defect. Strong feeds will carry through more noticeably than others will. Green grass, silage, turnips, and alfalfa hay are outstanding examples of feeds that affect flavor.
Flat (watery)	The flavor may be described as tasteless but watery. The characteristic flavor or normal milk is lacking, but the milk has no off-flavor. No associated odor. Flat-flavored milk resembles normal milk that has been partially diluted with water, even though this may not have been done.
Foreign	Any seriously objectionable flavor foreign to milk, such as disinfectants, sanitizers, fly spray, paint, oil, kerosene, creosote, or a medicinal substance, will render the milk unpalatable or unfit for use. Such a flavor may either directly contaminate the milk or be absorbed. Sanitizers are included in this flavor category.
Fruity/Fermented	Taste may be pronounced and similar to pineapple, strawberry, apple or other fruits; fermented may be similar to sauerkraut or vinegar. Caused by strains of psychotropic <i>Psuedomonas</i> bacteria.
Garlic or Onion	Pungent odor or flavor and is very unpleasant in milk. The garlic or onion flavor is recognized by the distinctive taste and odor suggestive of its name. The obnoxious weed flavor, imparted to milk when the cow eats garlic, onions, or leeks, is not classified as one of the usual feed flavors described above.
High Acid	Unpleasant, disagreeable odor and acid or sour taste. Milk that has developed some acidity as a result of bacterial growth will have a detectable acid flavor long before it may be classified as sour.
Malty	May taste or smell like malted milk or grapenuts. Not a common flavor but may be encountered in milk not properly cooled. Certain bacteria from improperly cleaned equipment, especially milking machines, may contaminate the milk and cause the objectionable malty

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	flavor.
Metallic	Taste sensations may range among metallic, wet cardboard, oily, tallow, fishy or chalky; you may feel pucker or astringent taste in your mouth (similar to the sensation from cranberry juice). "Papery" or cardboard, sunlight, and tallowy are forms of oxidized flavors with varying degrees of intensity. Rough and puckery on the mouth and tongue. It is caused when milk comes into contact with corrodible metal, such as exposed copper on equipment or rusty milk cans or lids.
Musty	This flavor is suggestive of must or mold. It may be absorbed directly by the milk, but is more likely to come from feed or stagnant water consumed by the cow.
Oxidized, UV-Light Induced	Tastes sensations may include burnt-protein or burnt-feather-like to almost a medicine-like flavor caused by exposure to UV-rays from sunlight or fluorescent lighting. Diminishes after several days' storage. The oxidized flavor embraces many other flavors, which represent various stages of oxidation or partial changes in the fatty portion of milk.
Rancid	Rancid milk will give taste sensations that range among soapy, blue cheese, slightly bitter, foul, pronounced aftertaste and will not clear up readily from the palate. "Lipase" is closely associated with bitter flavor; but unlike the common bitter flavor, it has an odor resembling rotten nutmeats. Resembling the flavor of stale fat is not encountered in its extreme form in fresh milk.
Salty	Salty taste, which may be present in milk from cows in the late stages of lactation, is often characteristic of milk from cows infected with mastitis. Salty sensations are detected along the sides of the tongue. It is not commonly found in herd milk or mixed milk received at a dairy plant. This defect cannot be detected by odor.
Unclean	Unpleasant odor and taste; mouth feels the flavor after being emptied. May be similar to musty, putrid, dirty rag or other unclean odors. The unclean flavor is seldom found except in pasteurized milk that has been stored too long or at a slightly high refrigerator temperature.

Identification of Cheese

Use your senses to identify cheese. Observe the sample visually, texturally with your hands and your mouth, and with your sense of taste. Use Table 2. to identify your sample.

Table 2. Cheese Identification

Variety	Color	Description
Blue	White interior, marbled or streaked with blue veins of mold	This blue-vein mold ripened variety is usually made from cows' milk. It has a tangy peppery flavor after aging two to six months. The body and texture is semisoft, pasty, and sometimes crumbly.
Brick	Creamy yellow	The semisoft ripened variety is made from cows' milk. It has a mild to moderately sharp flavor after aging two to four months. The body and texture is semisoft to medium firm, elastic, and has numerous small mechanical openings.
Brie	Creamy yellow interior with an edible thin, brown and white crust	This soft ripened variety is usually made from cows' milk. It has mild to pungent flavor after aging four to eight weeks. The body and texture is soft and smooth when ripened.
Cheddar (mild)	White to medium-yellow orange	This firm ripened variety is made from cows' milk. It has a mild to slightly developed characteristic nut-like Cheddar flavor after aging usually for two to three months. The body and texture is firm and smooth with some mechanical openings.

Cheddar (sharp)	White to medium-yellow orange	This firm ripened variety is made from cows' milk. It has a sharp typically nut-like Cheddar flavor after aging usually eight to twelve months. The body and texture is smooth and waxy with some mechanical openings.
Colby	White to medium-yellow orange	This firm ripened variety is made from cows' milk. It has a mild to mellow flavor after aging one to three months. The body and texture is softer and more open than Cheddar cheese. It is characterized by numerous irregularly shaped openings.
Cream	White to light cream	This soft unripened variety is made from cream from cows' milk. It has a mild, acid flavor and is not aged. The body and texture is soft and smooth.
Gouda	Creamy yellow or medium-yellow orange interior, and may have a red wax coating	This firm ripened variety is made from whole or partly skimmed cows' milk. It has a mellow, nut-like flavor after aging two to six months. The body and texture is semisoft to firm, smooth, and has small irregularly shaped or round holes. It has a cannonball or oval shape.
Monterey (Jack)	White to light cream	This firm ripened variety is made from cows' milk. It has a mild to mellow flavor after aging one to three months. The body and texture is soft to semisoft and has small openings evenly dispersed throughout the cheese.
Mozzarella	Creamy white	This firm, unripened variety is made from whole or partly skimmed cows' milk. It has a mild delicate flavor and is not aged. The body and texture is slightly firm and is plastic.
Munster	Creamy white interior with a yellow tan surface.	This semisoft, ripened variety is made from cows' milk. It has a mild to mellow flavor after aging one to eight weeks. The body and texture is semisoft and has small openings throughout the cheese.
Provolone	Light creamy interior with a light brown or golden yellow surface	This firm ripened variety is made from cows' milk. It has a mellow to sharp flavor with smoky and salty overtones after aging two to twelve months or longer. The body and texture is firm and smooth.
Ricotta	White	This soft, unripened variety is made from whole or partly skimmed cows' milk, or whey from cow's milk with whole or skim milk added. It has a sweet, nut-like flavor is not aged. The body and texture is soft and may have a grainy consistency.
Swiss	Light yellow	This firm ripened variety is made from cows' milk. It has a sweet, nut-like flavor after aging three to nine months. The body and texture is firm and smooth with medium to large round eyes distributed throughout the cheese.

Source: United States Department of Agriculture. (2008). *Judging and scoring milk and cheese*. Agricultural Marketing Service Farmer's Bulletin No. 2259. Washington, D.C.: Author. Retrieved from <http://www.ams.usda.gov/AMSV1.0/getfile?dDocName=STELDEV3004794>

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