

JUDGING OF DAIRY PRODUCTS





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Module 12. Objective methods for sensory evaluation and milk products with defect

Lesson 32

PREPARATION OF MILK AND MILK PRODUCTS WITH DEFECTS, TECHNIQUES FOR SIMULATION

32.1 Introduction

The students as well as panel members can be trained by providing the defective samples of milk and milk product to make them acquainted. Therefore it is necessary to know the techniques for the preparation or simulation of defects in samples of milk and milk products.

The techniques are provided to prepare the defects in some of the milk and milk products like ice cream, butter, cottage cheese, etc.

32.2 Preparation of Defective Samples in Milk

32.2.1 Acidic or sour milk

1. Add about 2% volume of cultured butter milk to fresh milk or
2. Add 6–7 ml of a 10% lactic acid solution to the milk

32.2.2 Bitter

1. Add 2–2.5 ml of a 0.1% quinine sulfate solution to 600 ml of milk, which will yield milk with a bitter off-taste within the range of “pronounced.”

32.2.3 Cooked flavour

A cooked flavor may be produced by heating a working quantity of milk in a vessel to 80°C (176°F) and holding for 15 min. Be aware that elements of the cooked attribute are volatile and will evaporate shortly after the container is opened.

32.2.4 Feed

Adding 4–7ml of a prepared “tea’ to 600ml of milk will impart a pronounced feed flavor upon the milk. An expanded intensity range is a result of variability in the strength quantity

of the tea.

32.2.5 Flat

Add about 20% water to 2% milk.

32.2.6 Foreign/chemical

1. Add about 2ml of a 200 ppm chlorine solution to 600 ml of milk immediately before presenting to the student. This off-flavor does not remain “stable,” so it can be prepared freshly.

32.2.7 Fruity/fermented

1. The fruity/fermented defect can be closely approximated by using a mixture of six parts pineapple juice and one part vinegar. Add 3–4ml of this mixture to 600 ml of milk to yield a pronounced defect or
2. Add 1ml of a 1% stock solution of food grade ethyl hexanoate to 600ml of milk.

32.2.8 Garlic/onion

1. Add 2ml of a 1% garlic powder mix (in water) to the milk or
2. Add a clove of garlic to infuse for about 2 hr; then either decant the milk or retrieve the clove.

32.2.9 Lacks freshness

1. Open a carton of milk and store in the refrigerator for 7 days, or
2. Use an unopened carton of milk that is 1 week beyond the pull date or
3. Add 10–15 g of skim milk powder to 600 ml of milk.

32.2.10 Light oxidized

1. Exposing milk in transparent and/or translucent plastic jugs to fluorescent lighting will quickly produce light-oxidized milk. or
2. Milk can be transferred into a clear glass milk bottle and placed on a window will exposed to direct, bright sunlight for the 5–7 min, 9–10 min and 13–15 min to get slight intensity definite and pronounced oxidized flavour.

32.2.11 Metal oxidized

1. Immerse a copper penny or a copper wire in milk overnight.

2. Add one or two drops of a 1% solution of copper sulfate to 600 ml of milk and leave in a refrigerator for about 8 hr.

32.2.12 Salty

Dissolve 0.25 – 0.5 g of table salt into 600 ml of milk.

32.2.13 Unclean (Spoiled)

1. Combine rancid, fruity, and bitter milks or
2. Most commercial milks will eventually become naturally “spoiled” or unclean (≥ 7 –10 days beyond sell by date).

32.2.14 Rancid

1. Add 0.5g of lipase power to ~600 ml of milk, agitate and hold at 21°C (70°F) for an hour or
2. Add ~ 20 mg lipase to the same volume of milk and store at refrigerator temperature for ~ 48 hr or
3. Add few drops of a dilute solution of butyric acid to ~ 600 ml milk base.

32.3 Preparation of Defective Samples in Butter

32.3.1 Garlic

Store a sample of butter in a closed container with a clove of garlic for 6 hr.

32.3.2 Musty

Store the butter in a closed container aside an agar slant of the yeast microorganism *Streptomyces odorifer*.

32.3.3 Onion

Remove the garlic, re-close the container and refrigerate the butter and allow time for the onion aroma to penetrate the butter’s center mass

32.3.4 Oxidized

Store in a refrigerator aliquot sticks of butter lightly wrapped in paper, ranging from several weeks to a month. The surface of the butter will undergo oxidization and the distinct off-flavor will, in time, diffuse into the butter’s interior, although most of the oxidized flavor will be surface concentrated.

32.3.5 Storage

1. Select grocery store “house brand” butters to either refrigerate for 4–6 months or frozen for 8–12 months, and then examine for a range of storage-like flavors. or
2. Store the butter in a rarely cleaned refrigerator for a few weeks until enough of the aroma has penetrate to emulate this butter off-flavor.

32.2.6 Rancid

1. Place a stick of butter in a closed container with a small jar containing butyric acid for about 6 hr. Remove the butyric acid, re-seal the container and permit the butyric acid to equilibrate throughout the butter for a week or more. or
2. Store the butter for a few days in an enclosed container with a slice of Romano or blue cheese.

32.3 Preparation of Defective Samples in Ice Cream

32.3.1 Acidic/Sour

Add 10 ml of buttermilk to 200 ml of the basic mix

Cooked

Heat basic mix in a double boiler to 80°C (176°F) for 15 min. Filter if any particles or chunks result.

High flavor

Add 1ml vanilla extract to 200 ml of basic mix

High sweetness

Add 5 g of sugar to 200 ml of basic mix

Low sweetness

Use the basic mix to illustrate

Lack fine flavor

Add 25 ml whole milk to 200 ml basic mix.

Low flavoring

Use the basic mix.

Oxidized

The metal oxidized variant is called for, so utilize metal oxidized milk or cream as the base.

Salty

Add 1 g of table salt to 200 ml basic mix.

Whey

Add 10 g of whey powder to 200 ml basic mix.

32.5 Preparation of Defective Samples in Cottage Cheese

Bitter

Add 2–3 ml 0.1% quinine sulfate to a pint of cottage cheese to get a pronounced bitter flavor.

Cooked

Heat ingredients to be used for dressing to 80°C (176°F) for 15 min in a double boiler.

Fruity /fermented

The fruity/fermented defect can be closely approximated by using a mixture of six parts pineapple juice and one part vinegar. Add 3–4ml of this mixture per pint of cottage cheese.

Acidic/Sour

1. Add approximately 2% butter milk to a pint of cottage cheese. or
2. Titrate cottage cheese to the desired acidity by using a 10% lactic acid solution.

Rancid

1. Treat cottage cheese with 0.5 g of lipase per pint and allow to react at room temperature for an hour or in the refrigerator for 24–48 hr. or
2. Finely ground Romano or Kasseri cheese can be incorporated into the cheese sample to simulate rancidity.

Salty

Add 0.5 g of table salt per pint.

Unclean (spoilage)

1. Store commercial cottage cheese samples for 7–14 days beyond the sell by date.
or

2. Blend bitter, fruity/fermented, and rancid samples together.

Yeasty

Add baker's yeast to cream dressing and hold at room temperature overnight, and then add the "treated" dressing to dry cottage cheese curds.

Whey

1. Acquire sweet liquid whey from a hard cheese manufacturer and use to "doctor" cottage cheese samples "to taste." or
2. Add reconstituted (1:9 dilution) whey powder to achieve the desired whey flavor intensity.

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