

## THE IMPORTANCE OF SENSORY ANALYSIS OF CONSUMPTION MILK IN FOOD

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**ABSTRACT:** *Milk is also called "White Blood" because of its nourishing value. It contains over one hundred nutrients necessary for human life (20 amino acids, over 10 fatty acids, 4 types of lactose, 25 vitamins, over 45 mineral elements, proteins). The evaluation of the sensory quality of milk is performed according to the 5-point scale.*

**KEY WORDS:** milk, sensory analysis

### 1. THE IMPORTANCE OF MILK IN FOOD

Milk is a yellowish-white liquid secreted by the mammary gland. In all the old writings referring to the living conditions of the people who lived thousands of years before our era in Europe in the area of the Mediterranean Sea, they knew the milk they consumed as such and in the form of products, especially cheeses.

Milk has been used since ancient times as the main food in the food of different peoples, such as Assyrians, Babylonians, Greeks and Romans. It is the most complex and easily assimilated food of the body, constituting one of the basic foods and in human nutrition. Milk is also called "White Blood" because of its nourishing value. It contains over one hundred nutrients necessary for human life (20 amino acids, over 10 fatty acids, 4 types of lactose, 25 vitamins, over 45 mineral elements, proteins).

Proteins contain amino acids that are necessary for growth and health. Fat, in addition to its energetic role, also contributes to the formation of fat reserves in the body. Vitamins contained in appreciable proportions increase the nutritional value of milk. It is important that the nutrients in milk are found in optimum proportions, so that the milk is assimilated by the body better than any other

food, it can be consumed both fresh and in the form of different dairy products.

Milk and dairy products increase the resistance of organisms to infections and intoxication, raising the health of the population. Food products possess a set of sensory properties, specific and variable in number and intensity, which constitutes for the mass of consumers one of the important criteria in the purchase decision. This explains the participation of these properties with 60% (average) in the general quality coefficient (KG) of food products. On the other hand, the sensory properties constitute the first "analysis bulletin" available to the consumer, with real data related to the freshness of the food products and their quality.

The first contact of the consumer with the product is realized by sensory path and consequently the sensory properties hold, a paramount role in the selection and the decision of purchase.

### 2. APPRECIATION OF THE SENSORY QUALITY OF CONSUMPTION MILK

The assessment of the sensory quality of the milk of consumption begins with the careful examination of the label and the marking of the proposed product for analysis.(fig.1)

It is necessary to observe the information on the packaging, namely:

- Commercial name of the product (pasteurized milk, protein milk)
- Indices and basic characteristics (fat)
- Information about the manufacturing company (address, telephone)
- The nutritional value of 100 g of product (eg: lipids - 2.5g; carbohydrates - 4.85g; proteins - 2.82g)
- Energy value of the product - 52 Kcal
- Storage temperature - 0 - 6 ° C
- Ingredients (eg normalized milk)
- volume
- Date of production
- Expiration date



Fig.1 Sensory analysis of consumer milk

To pass the sensory examination, it is necessary to bring the sample to 20 ° C. Sensory analysis is performed by analyzing the following characteristics:

**2.1. The color** of normal cow and goat milk, wholly obtained from healthy animals, is white, with a yellowish hue, and in sheep and buffalo is white; the assessment is performed:

- in natural light
- pour the milk into a colorless glass jar and examine the color
- opacity is also appreciated with the color
- whole milk, obtained under natural conditions is opaque, a condition conditioned by the presence of fat and proteins in the form

of emulsion or suspension, which form a colloidal - opaque solution.

The color of the milk is given by the fat globules, the casein micelles and the presence in larger or smaller quantities of the specific pigments. Knowing this explains the slight normal color variation depending on the variations in the quantities of the components mentioned in the raw milk of the different animal species.

The color is specific to the species from which it comes:

- white with yellow hue in cow's milk;
- white with a barely noticeable shade of yellow in goat's milk;
- white in sheep's milk and buffalo milk.

Abnormal situations (various colors and shades) may occur if the milk does not contain the components mentioned in normal quantities for the type of milk analyzed due to fat subtraction and / or the addition of water (its non-integrity) as well as in the case of uterus, microflora infection colored, or when due to inattention or poor hygiene conditions in milk, various colored substances have penetrated.

**2.2. The consistency** of normal, whole milk is fluid, homogeneous; it is appreciated by pouring the milk into a colorless glass jar (sticking to its walls); thus fluidity and homogeneity are pursued.

It is appreciated by observing the flow of milk at the time of its pouring, ie whether or not it is fluid and the flow column has a spiral or not (so-called "flow in the valve").

No filamentous, viscous or muciloaginous consistency is allowed in abnormal situations that may occur in: abnormal physiological milk (colostrum or colostrum-milk mixture), milk infected with acidophilic bacteria - sour milk, milk from sick animals, hygiene conditions inadequate, partial dismantling.

**2.3. The appearance** of whole milk is a fluid, opalescent liquid, with no visible foreign bodies; usually, the appearance of the milk is appreciated with the consistency. The assessment is done by transferring milk from

one vessel to another. It is advisable to use graduated cylinders.

At the time of transfer, it is observed whether or not the appearance of the milk is homogeneous, opalescent, without foreign bodies visible in suspension and without sediment.

The presence of flakes or particles of the shell indicates the old milk, with a high microbial load or milk from sick animals.

The presence of foreign bodies in suspension or sediment denotes poor hygiene conditions in milking, handling and storage of milk.

**2.4. The odor** of whole milk, obtained under appropriate hygienic conditions, has a specific odor only for this food product;

The assessment is done by heating the milk to 50 ... 60 ° C in a water bath, inhaling the odor released after a slight stirring with a glass or rubber wand. The assessment is made immediately after the container is opened in

which the sample to be analyzed (without heating).

Whole milk, freshly milked, must have a pleasant odor specific to raw milk, characteristic of the species from which it comes.

Various modifications of the odor (acidified, putrefaction, stable, etc.) denote: aged and acidified milk, milk stored in hermetically sealed containers, poor hygiene conditions, with a high microbial load.

### 2.5. The taste

The tasting is done by tasting at room temperature (16... 20 ° C). It is appreciated whether or not it is pleasant, slightly sweet, taste characteristic of fresh milk.

Abnormal situations occur if:

- acidifying milk
- the appearance of an unwanted microflora,
- improper collection and storage modes.

Appreciation of the sensory quality of milk is performed according to the 5 point scale (table 3).

Table 1 Specific conditions of the organoleptic examination

The product	Appearance	Color	Smell	Consistency	Taste
Drinking milk	in colorless glass cylinder	in colorless glass cylinder, in direct daylight	bring the product to 50-60 <sup>0</sup> C	you can see the flow, pouring milk from one vessel to another	bring the product to 15-20 <sup>0</sup> C.

Table 2. Sensory characteristics of milk

Name of indicators	Characteristics
<b>Exterior appearance and consistency</b>	Homogeneous liquid, without sediment; for hardened and pasteurized milk, without cream sediment
<b>Taste and smell</b>	Pure, odorless and foreign taste; uncharacteristic of fresh milk; for boiled milk, there is a pronounced odor and pasteurization taste, for milk made with the addition of powdered or concentrated dairy products - sweet taste
<b>Color</b>	White, with a yellowish tint, for stified milk - creamy in color; for dark milk - with a bluish hue; for milk with cocoa or coffee, with a hue from light to darker

Table 3. The score for drinking milk

Sensory characteristics	Number of points to be awarded	Specific properties and deviations	
		Normalized milk	Creamed milk
Skin, color and consistency	5	Homogeneous liquid, free of impurities and sediment, white with hue slightly yellowish, uniform, with a layer of fat that disappears by shaking without forming flakes	Homogeneous liquid, free of impurities and sediment, white with slightly bluish hue, uniform
	4	With small deviations, like: a light layer of fat or few flakes of protein left after shaking	With small deviations such as: few snowflakes protein
	3	With fat and flakes protein, with sediment	With protein flakes, with light sediment
	2	With many flakes of fat and protein with slight color deviation	With protein flakes; with slight deviation in color
	1	With agglomerations of fat and protein, color deviations, sediment, slight coagulated	Deviations from color, sediment, slightly coagulated
	0	With large deviations from color, large sediment, impurities, coagulation	
Smell	1	Strong forage, strong for malt, strong for yeast, strong for smoking, easy to mold, easy to rot, slightly rancid	
	5	Characteristic of drinking milk	
	4	It smells easy to boil	
	3	Easy to feed, easy to malt, yeast easy, easy to oil, slightly sour, easy to manure	
	2	Feed, malt, yeast, smoked, oil, sour, manure	
	0	Fish, rancid, rotten, sour, foreign smell	
Taste	5	Full, slightly sweet, characteristic of drinking milk	
	4	Aqueous, slightly boiling taste, without defects, noticeable	
	3	Lightly forage, lightly malt, lightly smoky, lightly oiled, slightly metallic, slightly old, slightly bitter, slightly plastic foil taste, slightly sour	
	2	Feed, malt, yeast, smoked, oil, metallic, old, soy, bitter, dark, sour	
	1	Strong forage, strong malt, yeast, strong smoked, strong oil, strong metallic, strong whey, strong bitter, mildew, slightly rancid	
	0	Sour, rancid, rotten, fishy, strong yeast, foreign taste	

Table 4. Appreciation of sensory indicators

according to 5-point systems

Milk quality	Number of points to be awarded	Milk quality
<b>Excellent</b>	5	Upper, I,II
<b>Good quality</b>	4	
<b>Satisfying</b>	3	II, in winter, in the other seasons of the year, lower
<b>Unsatisfactory</b>	2	Not received for industrial processing

### 3. MILK DEFECTS

#### 3.1. The taste of bitterness

The causes of this defect are the following:

- Feeding animals with bitter plants
- The impurification of milk with proteinolysis or lipolysing bacteria
- Milk is obtained before calving
- In order to prevent this defect, the following are recommended:
- Exclusion from forage of bitter plants
- Respect for hygiene

Milk separate milk from the last days before calving

#### 3.2. The salty taste

The causes of this defect are the following:

- Milk is obtained from old cows
- Milk is obtained from antepartum cows
- Colostrum milk mixture
- Milk from cows with cervical infections

If this defect is observed, the milk is milked separately and used in the household.

#### 3.3 Bitter taste

The main cause of sour milk is its high temperature. Therefore, the preventive measure is that of milk cooling after milking.

#### 3.4. The metallic taste

The cause of this defect may be:

- Posting intensely odorous feed during the milking period
- Keeping milk in the stable

#### 3.5. Smell of fish, oil

The main cause of this defect is the transport of milk under inappropriate conditions in the presence of intensely odorous substances.

#### 3.6. Unpleasant smell of mold and rot

The cause of this defect is keeping the milk freshly milked in closed vessels or impurifying the milk with bacteria that break down the proteins.

#### 3.7. Milky consistency of milk

The cause of the defect is the rich impurification of milk with saprophytic microorganisms.

#### 3.8. Aqueous consistency

The cause of the defect is:

- Feeding animals with very succulent feed
- Falsification of milk with water

#### 3.9. Cheese milk consistency

The cause of the defect is:

- Milk from cows with mastitis
- Milk impurification with coagulating enzymes
- Milking of milk

#### 3.10. Blue color

The cause of this defect is:

- Partial milk creaming
- Falsification of milk with water
- Milk from cows with mastitis

#### 3.11. Pink color of milk

The cause of this defect is:

- Blood mixture in milk
- Food poisoning

### 3.12. The yellow color of milk

- Colostral milk mixture in normal milk

- Milk from cows with foot-and-mouth disease

### 3.13. Greenish color

- False milk whey

## 4.CONCLUSIONS

- Milk contains more than one hundred nutrients needed for human life (20 amino acids, over 10 fatty acids, 4 types of lactose, 25 vitamins, over 45 mineral elements, proteins).
- The first contact of the consumer with the product is realized by sensory path and consequently the sensory properties hold, a paramount role in the selection and the decision of purchase.
- The sensory quality of the milk is assessed according to the 5-point scale.

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