JUDGING OF DAIRY PRODUCTS

Module 5. Fermented milk and milk products

Lesson 15
DESIRABLE AND UNDESIRABLE CHARACTERISTICS OF FERMENTED MILKS, SENSORY EVALUATION OF DAHI, YOGHURT, CHAKKA, SHRIKHAND, LASSI AND OTHER FERMENTED DRINKS

15.1 Introduction

Dahi and yoghurt are categorized as acid fermented milk products. Dahi is indigenous fermented milk, which is prepared by the lactic acid fermentation of milk. Yoghurt is the exotic counterpart of dahi, which is prepared by using cultures containing Lactobacillus bulgaricus and Streptococcus thermophilus. Though dahi and yoghurt are well known fermented dairy products, literature on their sensory evaluation is not available. The BIS has specified standards for dahi, but not covered the sensory quality requirements. Hence an attempt has been made to evolve a score card for sensory evaluation of dahi and yoghurt.

Broadly speaking dahi meant for direct consumption falls in to 3 categories viz. (i) sweet dahi, (ii) sour dahi and (iii) sweetened dahi. The dahi may be prepared from either whole milk or skim milk. The production of dahi involves boiling of milk followed by cooling to room temperature. The milk is then inoculated with starter and then allowed to set overnight without disturbance. The curd will generally set in a period of 6 to 8 hours.

15.2 Desirable characteristics in *Dahi*

15.2.1 Colour and appearance

The colour of dahi should be pleasing,attractive and uniform without showing any signs of visible foreign matter. The colour of dahi ranges from creamish yellow for cow to creamish white for buffalo milk. It should be free from browning. Dahi should have smooth and glossy surface without appearance of any free whey on top.

15.2.2 Flavour

Flavour of dahi is the most important quality attribute. A pleasant sweetish aroma and a mild clean acid taste are looked for in the product. It should be free from any off flavour. A good pleasant diacetyl flavour is desired in dahi. Skim milk dahi lacks the natural rich flavour of fat. Dahi should not show any signs of bitterness, saltiness or other off flavours.

15.2.3 Body and texture

Good dahi is a weak gel like junket, when whole milk is used. It has a creamy layer on top, the rest being made up of a homogeneous body of curd. The surface should be smooth and glossy while the cut surface is trim and free from cracks and gas bubbles.

15.2.4 Acidity

Generally an acidity of 0.75 to 0.85 % lactic acid is appropriate for good dahi. Excessive acidity gives the product a sour,biting taste. However in sour dahi, the acidity can go up to 1 %.

15.3 Scorecard for *Dahi*

On the basis of desirable attributes for good dahi, the following score card is suggested.

Table 15.1 Scorecard for Dahi

Attribute	Perfect Score	Sample Score				
		1	2	3	4	5
Flavour	45					
Body and texture	30					
Acidity	10					
Colour and appearance	10					
Container & closure	05					
Total	100					

Table 15.2 Scores for degree of defects

Attribute	Defect	Degree of defect		
		Slight	Definite	Pronounced
Flavour	High acid, greeny, bitter, metallic	7	9	11
	yeasty, cheesy	10	13	16
Body & texture	Grainy, thin body	2	5	8
	Ropy & wheying off	4	8	12
Acidity	Too low, too high	1	3	5
Container & closer	Soiled, improperly covered	1	2	3
Appearance & Colour	Unnatural colour	1	3	5
	Presence of foreign matter	2	4	6

15.4 Sequence of Observations

For judging the quality of dahi the following observations have to be made in the order specified below:

1. Container

Note the type and condition of container and presence of any package defects. Observe for the

fullness, cleanliness and general appearance.

Note any soiling of container or lid.

2. Aroma

Remove the closure of the package and observe the typical aroma by smelling the product immediately.

Notice the intensity and duration of aroma.

3. Colour & Appearance

Examine for uniformity of colour and the presence of any visible foreign matter. The surface of dahi should be shining.

4. Body & Texture

Cut the curd by means of a spoon Knife and lift a portion of it.

Observe the evenness of cutting.

Observe the cut surface for any air pockets or free whey pockets.

5. Flavour

Place a small spoonful of curd on the tongue and observe the flavour and aroma for both intensity and duration.

Note the type of taste perceived.

Expectorate the sample and note the aftertaste.

15.5 Defects in *Dahi*

15.5.1 Colour and appearance

Normally good quality dahi will not show any objectionable colour defect or, appearance defect. However, a brown colour due to over boiling of milk will usually result and is considered a defect. If the milk is not strained, foreign matter appears on the top layer of dahi giving unclean appearance. Surface discoloration due to growth of moulds is not common, however, after prolonged storage this defect is likely to been countered. Free whey floating on the surface is a serious defect.

15.5.2 Flavour

15.5.3 High acid

This defect iscaused either due to excessive amount of inoculums, or high temperature or prolonged storage, and is characterized by sharp taste and very acidic smell. However, in sour dahi high acid level (1 %) is not considered as a defect.

15.5.4 Bitter

Generally associated with contamination of milk or culture with sweet curdling organisms.Sometimes bitter taste is also associated with milk from animals fed on certain feeds. Bitter taste is generally perceived at the end of tasting period

15.5.5 Cheesy

This defect is noticed in dahi stored for a long period and due to proteolysis of milk.However, this defect is not common in dahi as it is generally not stored for long time.

15.5.6 Metallic

This defect is due to contamination of milk with iron or copper and occurs when curd is set in metallic containers. The sour taste of dahi masks the metallic defect.

15.5.7 Lumpy or grainy

This defect is observed more often when reconstituted milk is used, and is due to improper dissolution of milk powder. This is not a common defect.

15.5.8 Watery with curdy flakes

This defect arises from low total solids content followed by mechanical stress to curd.

15.5.9 Wheying off

This is a serious defect noticed in dahi. Free whey floats either on the top or curd floats on top with free whey at the bottom. Free whey appearance at the top is associated with high acidity, higher temperature and prolonged storage. Appearance of whey at bottom with curd floating on the top gives an indication of contamination of either milk or starter.

15.5.10 Too weak body

In this case dahi will not retain its body and flows like condensed milk from the container. This defect may be due to either low total solid content (adulteration with water) or insufficient acid production

15.5.11 Gassy

Presence of gas pockets in the body of curd or gassy appearance is a serious defect associated with the growth of contaminant yeasts or E. coli aerogenes organisms.

15.5.12 Ropiness

This defect is not generally associated with dahi, but can be seen if milk is not pasteurized properly or gets contaminated with sliminess producing organisms.

15.6 Yoghurt

15.6.1 Desirable characteristics of yoghurt

15.6.1.1 Appearance and colour

Yoghurt appears as a jelly like coagulum and with porcelain like surface without wheying off the coagulum cuts to give a clean surface. Yoghurt should not contain any foreign matter except flavorings (added to the flavoured yoghurt). However, stirred Yoghurt should be homogenous and give sufficiently stirred appearance. In natural Yoghurt natural milk colour should be present. Yoghurt should have fresh appearance.

15.6.1.2 Body and texture

The body of yoghurt should be custard like with smooth texture. Adequate firmness without syneresis is essential for a top quality product. Stirred yoghurt should be creamy, viscous and non-pasty.

15.6.1.3 Flavour

Natural yoghurt should have a pleasantly milk to light sourish taste with natural yoghurt flavour. In case of flavoured yoghurt, the flavour should be typical for the flavouring used.

15.6.1.4 Acidity

Normally 0.8 to 1.0% lactic acid is desired in yoghurt.

15.6.2 Sequence of observations

Follow the same sequence of observations as for dahi.

15.7 Defects in Yoghurt

15.7.1 Appearance and colour

The possible defects include presence of extraneous matter, lack of uniformity, unnatural colour (colour not typical of the flavouring in case of flavoured yoghurt), surface discolouration, wheying off, fat separation, gassiness and improper distribution of additions like fruits and flavorings.

15.7.2 Flavour

The flavour defects in yoghurt are:

- Metallic, oily, tallowy and rancid flavour arising from oxidation or rancidity of milk fat.
- Cheesy, bitter and putrid flavour associated with proteolysis.
- High acid and too sour resulting from over fermentation.
- Stale and flat flavour due to lack of specific aroma.
- Too low and too high flavour in artificially flavoured yoghurt.

- Feed flavour arising from the milk.
- Yeasts, fruity and malty flavours associated with the growth of contaminants.
- Burnt flavour resulting from over heating of milk.

15.7.3 Body and texture

These include

- Thin and milky body due to lack of firmness of gel arising from low solids content and in sufficient incubation.
- Split body which is a consequence of shaking the gel by faulty handling.
- Granular or lumpy: a defect noted with improper dissolution of milk powder and also a defect in microstructure due to very slow acidification by the starter.
- Whey separation arising from the syneresis of the gel, which may be a result of high acid formation or low solids concentration.
- Sticky, gluey, gummy and too firm body as a result of excessive addition of stabilizers.
- Ropiness associated with ropy fermentation.
- Weak body resulting as a consequence of low level of fermentation coupled with low total solid concentration.
- Presence of gas holes due to contamination with yeasts and E. coli aerogenes group of organisms

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