

JUDGING OF DAIRY PRODUCTS





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Module 10. Heat and acid coagulated milk products

Lesson 29

CHHANA AND CHHANA BASED SWEETS: DESIRABLE AND UNDESIRABLE CHARACTERISTICS OF CHHANA AND CHHANA BASED SWEETS. SENSORY EVALUATION OF CHHANA AND CHHANA BASED SWEETS

29.1 Introduction

Chhana is an important Indian milk product obtained by precipitation of whole milk with sour whey, lactic acid or citric acid. According to PFA rules (1983) chhana shall not contain more than 70% moisture and milk fat content shall not be less than 50% of the dry matter. Chhana is used as a base material for preparation of Rasogolla and Sandesh which are very popular sweetmeats. The brief method of the preparation of chhana is; heating milk to boiling, cooling to 80 C, slowly adding of coagulant till required coagulation of milk takes place and finally draining of whey through a muslin cloth.

29.2 Desirable Characteristics of Chhana

29.2.1 Colour and appearance

Good quality chhana should have uniform light yellow colour. In certain parts of the country calcium lactate is used as a coagulant, which will produce chhana of bright white colour. Chhana made from buffalo milk will also have whitish colour. The surface of chhana should be even and slightly moist. It should be neither too moist (nor wet) nor dry. There shall not be any visible soil or burnt particles.

29.2.2 Flavour

Chhana should not have any abnormal flavour. Good quality chhana has no specific aroma. However, mildly acidic smell and pleasant sweetish taste are considered to be desirable flavour attributes of chhana.

29.2.3 Texture

This is the most important sensory attribute of chhana. The quality of sweets will largely

depend on the texture of chhana. For making good quality Rasogolla, chhana should have moderately soft and uniform texture. It shall show slight springiness when pressed with thumb. A small piece of chhana crushed to pasty consistency and rolled between palms of both hands, it should yield round ball of even surface and no cracks. Good quality chhana should not release or separate fat on kneading or working.

Buffalo milk is not preferred for making chhana because it yields a product of hard body and chewy texture. Chhana of such consistency will be difficult to convert into Rasogolla balls. Therefore, cow milk is always preferred for chhana making.

29.2.4 Sequence of observations

The first step in sensory of chhana is the examination of packaging material, which should be neat and clean and able to protect the product from environmental contamination. Then remove the packaging material and observe the colour and appearance of the product. Even the smallest defect should be noticed carefully. Simultaneously, inhale the odour of the product. For further assessment of flavour, take sufficient quantity of chhana into the mouth.

While rolling into mouth and chewing in between teeth, note the tactual and taste sensations. Finally expectorate the sample and note if any after taste persists Texture of chhana should be evaluated by: (a) pressing and rolling, small piece of chhana in between the forefingers and thumb to note the hardness stickiness, etc. and (b) spreading small mass of chhana on the palm of the hand with the thumb to observe uniformity, size and toughness of grains.

Table 29.1 Sensory score card for Chhana

storage under high humid conditions are other reasons for the contamination and growth.

4. Visible foreign matter/soiled: In many cases foreign matter, normally soil, is present in chhana. This can be detected by visually as well as by tasting the product in the mouth. Improper straining of milk and manufacture and packaging of chhana under open unsanitary conditions are main causes for this defect. Sometimes black or brown particles are also visible in chhana, which is due to localized burning of milk solids.

29.2.5.2 Flavour defects

1. Smoky: Though not very serious, this flavour defects is most common in chhana. This defect arises due to the manufacturing of chhana on a smoky wooden fire.

2. Burnt/cooked: This defect in chhana commonly develops as a result of uncontrolled heating of milk particularly at last stages.

3. Sour/acidic: This defect can be easily detected by the sense of smell and taste. It may be due to over acidification of milk, use of high strength coagulant solution. It may also be due to use of sour milk for making chhana or storage of chhana at ambient temperature for longer period.

4. Metallic: This defect can be detected easily by tasting the product and observing the mouth feel. The taste of products having metallic flavour resembles that perceived by tasting rusted iron. Metallic flavour defect is quite common in many Indian milk products.

5. Oxidized: Many times there is confusion between metallic and oxidized flavour. But pure oxidized flavour develops due to the oxidation of some fatty constituents of channa. The oxidized is characterized by a quick taste reaction when the sample is taken in the mouth and gives sensation of paperboard, tallowiness, oily etc. The oxidized flavour is also persistent after the sample is expectorated.

6. Rancid: The flavour resembles butyric acid. Rancidity results from the hydrolysis of the fat due to lipase enzyme secreted by bacteria or those in the milk itself. Since the milk intended for chhana making is heated up to boiling, the enzyme is completely inactivated. So this flavour defect in chhana occurs rather infrequently. However, if the milk is already rancid, it will produce a rancid chhana.

7. Stale: This is normally observed in the products stored for a longer under refrigerated conditions. The product with this defect does not have the typical pleasant flavour present in the fresh sample. Chhana may also produce this defect.

29.2.5.3 Texture defect

1. Hard/ Dry body: Chhana with firm body feels solid and offers resistance to pressure. Chhana with hard body gives serious problem in kneading and making Rasogolla balls. The dry chhana has not cohesiveness and when meshed to form balls, it breaks into small

pieces. This defect is caused by low retention of moisture in chhana either due to use of low fat milk or faulty manufacturing procedure. Coagulation of milk at high temperatures, application of excessive pressure to drain off whey or for prolonged period may cause this defect. Due to evaporation of moisture from the surface, the case hardening in chhana also takes place.

2. Loose/sticky/wet: Product with these defects, sometimes, is also called as gooey or adhesive. Such a product adheres inside or packaging material. These defects in chhana are invariably due to high moisture content. Such defects occur because of faulty manufacturing technique i.e., coagulation of milk at low temperature, improper draining or for short periods and high acidity in the product. Product with these defects has poor shelf life and difficulty is encountered in rolling uniform Rasogolla balls.

3. Grainy/ mealy: This defect can be detected by rolling small piece of chhana in the mouth or spreading slowly on the palm of hand with thumb. Such product lacks cohesiveness and on kneading scatters into small individual grains. Normally grainy texture is accompanied with dry body. This defect is attributed to the use of high acid milk, or higher concentration of coagulant at higher temperature.

4. Chewy/ rubbery: Showiness can be detected by length of time required to masticate the chhana sample at a constant rate of force application, to reduce it to a consistency suitable for swallowing. Such product lacks softness and great problem is encountered in kneading or working for making sweets. Use of low fat milk and delayed draining of whey from chhana are the possible reasons for such defects.

29.2.6 Training of panelists

For efficient evaluation of chhana, it is desirable that the judges have sufficient training in identification of defects and their intensities. Detecting colour and appearance, and texture defects is not so difficult as those of flavour. For this purpose samples representing following flavour defects should be prepared and served to the judges along with control samples.

Table 29.2 Flavour defects in channa

			stale, oxidized, rancid, smoky, putrid and fermented
6	Taste	Sweet, fresh, rich, creamy, imparts delicate and pleasant sensation, pleasant gur taste if nolen gur added.	Sour, raw channa, dry, stale, oxidized, rancid, burnt, smoky, putrid, bitter, salty, pungent and lacks pleasant sensation

Table 29.4 (b) Hard Grade

Sr.No.	Quality Attributes	Desirable Attributes	Undesirable Attributes
1	Colour	Yellowish white, light white, brown colour if Nolen gur is added	Same as in Soft grade
2	Appearance	Clean, uniform shape & size, dry surface, free from foreign matter, mechanical holes and free fat	Oily and moist surface, presence of foreign matter and mechanical holes
3	Body	Hard, crumbly, cohesive	Soft, gummy, sticky and oily
4	Texture (Mouth feel)	Gritty, chewy, absorbs saliva slowly	Smooth and fine
5	Aroma	Typical cooked, heated, Nolen gur smell if added	Lacks aroma
6	Taste	Pronounced sweet, fresh, cooked taste, typical gur taste if nolen gur added	Same as in soft grade

29.5 Kaccha Gola

Table 29.5 Quality attributes of kaccha Gola

Sr.No.	Quality Attributes	Desirable Attributes	Undesirable Attributes
1	Colour	White, brown when nolen gur is added	Same as in Soft grade
2	Appearance	Clean, moist, presence of bigger grains of irregular shape and size	Dry and oily surface, presence of visible dirt
3	Body	Soft, weak, brittle, lacks cohesiveness and compactness	Hard, gummy and sticky
4	Texture	Coarse, irregular grain shape and size, melts easily on tongue	Smooth, fine and tough grains
5	Aroma	Creamy, mildly cooked, fresh, nolen gur smell if added	Same as in Soft grade
6	Taste	Sweet, fresh, creamy, when nolen gur added gives typical taste of gur	Same as in soft grade

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