



Misti Dahi

Preparation, quality of dahi, packaging, shelf-life and defects



- ❖ Also known as **Misti doi, Payodhi and Lal dahi.**
- ❖ Traditional sweetened fermented milk product popular in eastern part of India, notably West Bengal, Bihar and Assam.
- ❖ Prepared by lactic acid fermentation of sweetened milk.
- ❖ Regarded as special dessert on ceremonial occasions both in rural and urban Bengal.
- ❖ Commonly available in earthen pots of different sizes.
- ❖ Characteristic brown colour, firm consistency, smooth texture and caramelized flavour.
- ❖ Buffalo milk is preferred due to high fat content, which induce rich creamy product with excellent mouth feel.
- ❖ High protein content of buffalo milk leads to formation of firm coagulum which resists whey separation during storage and transportation.

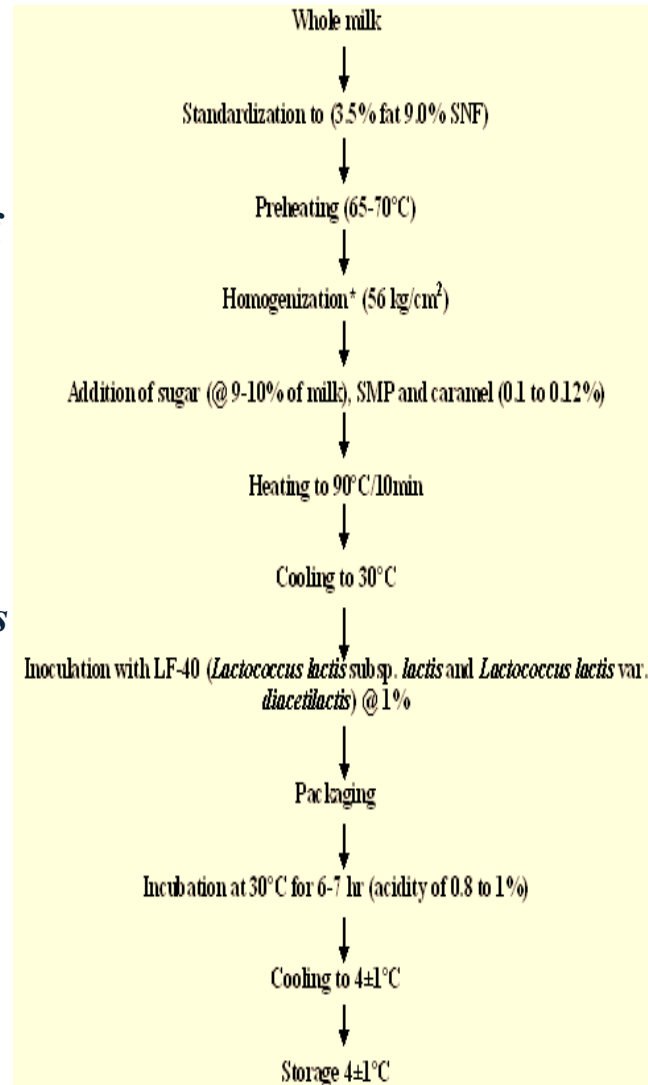
Traditional Method of Preparation

- Whole cow milk or buffalo milk or their combination is added with sugar (upto15% of the milk) and it is heated continuously in an open pan at a simmering temperature of 68-70°C for 6-7 hours or boiled to reduce the volume to 60-70% of the original.
- Intense heating imparts cooked flavour and brownish colour to the product.
- Artificial colour, caramel sugar and/or jaggery are also added based on the consumer preference.
- The mix is then cooled to about 40°C and inoculated with the previous day's product.
- Filled into earthen pots of consumer size or bulk size vessels and incubated overnight at room temperature.
- After firm setting of curd, it is shifted to a cooler place or stored under refrigeration temperature.
- Sometimes contaminated with different types of microorganisms including which gain entry into the product from utensils and surroundings.
- Flavour defects such as fruity, alcohol, highly acidic and flat and textural defects such as gassiness, weak body, wheying off and thick crust on top surface are observed in most of the market samples. Due to difference in quality of milk, degree of concentration of milk solids, type of culture used, incubation time, processing conditions and temperature of storage.



Industrial method

- **Ingredients should be fresh, good in microbial and sensory quality.**
- **Calculated amount of milk and cream is taken into a multipurpose vat.**
- **Skim milk powder is added through a venturi assembly to increase the level of total solids and sugar is added at the rate of 9 – 10%.**
- **Commercially available caramel is added normally at rate of 0.10 to 0.12%.**
- **After mix is prepared, it is heated to 90°C for 10 min in a vat or plate pasteurizer.**
- **Then product is cooled to 40 – 42°C and starter culture containing *Lactococcus lactis* subsp. *lactis* and *Lactococcus lactis* var. *diacetylactis* is added 1% to the mix and mixed well.**
- **Selection of appropriate type of starter culture: affects the flavour, consistency and acidity development in the presence of sugar and caramel.**
- **After inoculation, product is packed into sanitized polystyrene cups and sealed airtight.**
- **Sealed cups are incubated at 40 – 42°C for about 6 to 8 h till the acidity develops to about 0.8 % lactic acid.**
- **Once the product develops the desired acidity, it is shifted from incubation room to cold store and maintained at < 5°C.**



Chemical Composition

Constituent	%
Milk Fat	4-5
Milk SNF	11-13
Sucrose	17-18
Total solids	32-36

Sugar controls acid production of misti dahi because of its effects on osmotic pressure and improves its acceptability. Helps in caramelization and development of brown color which is desirable, product should be stored at 5°C or below.

High temperature of storage

- Lead to defects like whey separation and bitterness

Low temperature of storage

- Induces ice-crystals formation which damages texture

Shelf Life and Packaging

- Due of high acidity (0.8%) and high sugar level misti dahi has a shelf life of about 12 days at 4°C and 2 days at 30°C.
- Shelf life mainly depends on post manufacture contamination (yeast and molds).
- Should not be unduly expose the finished product to atmospheric contamination.
- Misti dahi is packed in food grade polystyrene and polypropylene cups in 100 g, 200 g pack sizes.
- Various packaging machines of upto 400 cups/min speed are available to package cultured dairy products in different sizes.
- Packaged product should be stored at <math><5^{\circ}\text{C}</math> for extended shelf life.



Factors affecting the quality Misti dahi

Level of fat: With increase in fat percentage there is a decrease in acid development and increase in flavour volatile due to stimulation of culture to produce more flavour volatiles specially acetoin. Misti dahi prepared with low fat content produces firm curd with higher curd tension.

Homogenization pressure: Flavour volatiles increase with increase in homogenization pressure due to availability of substrate material, consequent to homogenization which may stimulate flavour production activity of starter culture. In unhomogenised misti dahi, there is fat separation and product lacks in smooth creamy taste.

Level of milk solids not fat (MSNF): Average initial acidity of milk increases with increase in MSNF content and rate of acid development lowers with increase in MSNF content. Increased osmotic pressure (Due to increase in soluble constituents e.g. lactose and salts from higher level of MSNF) in milk slows down acid development by culture bacteria. There is reduction in amount of flavour volatiles due to high MSNF which is dependent on pH. Firmness of misti dahi increases with increase in MSNF content. Increased concentration of casein improves water binding capacity curd.

Level of cane sugar: At higher sugar levels there is a reduction in water activity which inhibits growth of starter bacteria. Thus diminishing acid and flavour production. Production of diacetyl and acetyl methyl carbinol decreases with increase in sugar level. Curd tension of misti dahi is lowered with increase in sugar level. Higher sugar concentration leading to lower acid development and correspondingly with higher pH will prevents formation of firm gel.



Fruity



Alcoholic



Flat

Flavour defects



Texture defects



Gassiness



Whey off



**Soggy
body**

