



**Chhana-based sweets:  
Rasogolla, Sandesh,  
Rasomalai**



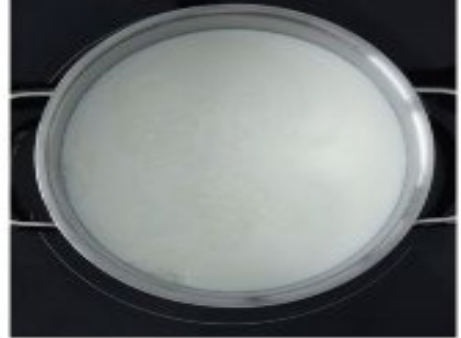


- ❖ **Rasogolla** popularly known as **king of Bengal sweets**, developed by Nabin Chandra Das in 1868.
- ❖ K.C. Das used to be a brand name for rasogolla in past, presently Bikaner, Haldiram Foods etc., produce the product.
- ❖ Resembles ping-pong ball in shape, snow-white in colour and possesses a spongy, slightly chewy body and juicy and smooth texture.
- ❖ Balls are stored and served in sugar syrup.
- ❖ Flavoured with kewara, pista and rose and sometimes centered with cardamom.



# Preparation:

- Prepared from soft, fresh cow milk chhana.
- Kneading of chhana to smooth paste by manually or using planetary mixer.
- Smooth paste is portioned and rolled between palms to form balls of about 15mm diameter each weighing about 8 – 10g in weight.
- Each ball should have smooth surface without visible cracks on surface.
- One kg chhana yields 90 – 100 rasogolla balls.
- Rasogolla balls are cooked in sugar syrup of approximately 50° brix.
- Balls are cooked for 14 – 15 min.
- During cooking small amount of water is continuously added to maintain syrup concentration. Makes up for loss of water due to evaporation.
- About 10% of sugar syrup should be replaced with fresh one each time to cook another batch.
- After cooking, rasogolla balls are transferred to dilute sugar syrup at 60°C for texture and colour improvement.
- After 30 min stabilized balls are transferred to 60° brix syrup for 1-2 h, followed by final dipping in 50° brix syrup.

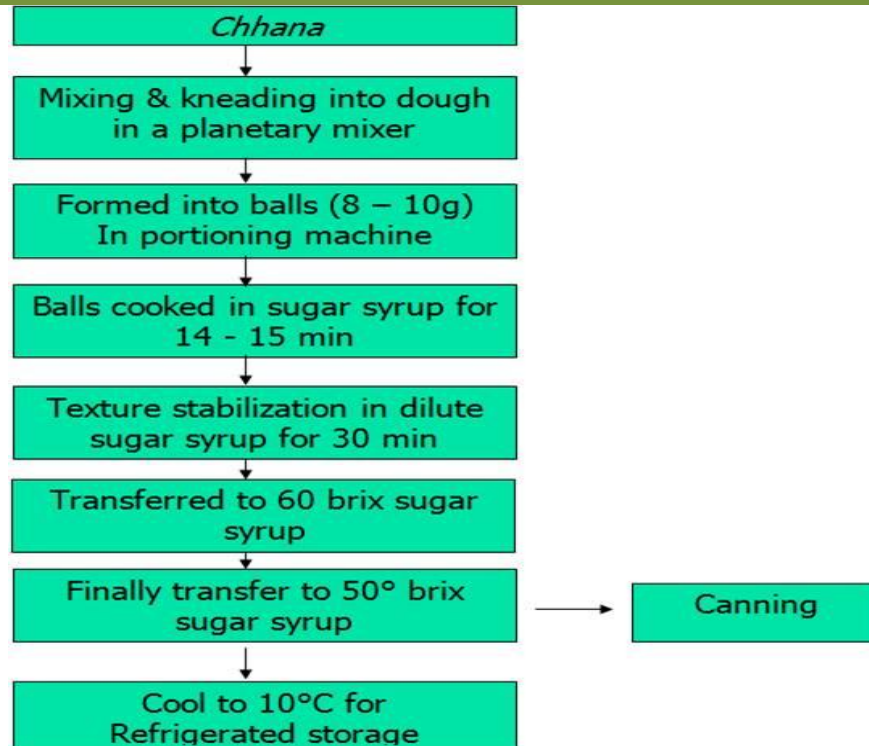






# Chemical Composition and Flow Diagram:

Sl. No.	Parameter	<i>Rasogolla</i> made from cow milk	<i>Rasogolla</i> made from buffalo milk
1	Moisture (%)	54.0 – 56.0	41.5 – 42.1
2	Total solids (%)	44.0 – 46.0	57.9 – 58.5
3	Protein (%)	5.0 – 5.2	5.3 – 5.8
4	Fat (%)	4.8 – 5.0	7.8 – 8.0
5	Carbohydrate (%)	33.6 – 35.1	43.6 – 44.1
6	Ash (%)	0.75	0.7
7	pH	6.50 - 6.70	6.67 - 6.79



# Preparation of Cooking Medium

Sugar syrup preparation includes dissolution of sugar in water and boiling till it is concentrated to desired brix level. While boiling, scum appearing on top of surface is scooped off before cooking rasogolla balls. Pinch of milk can be added during boiling to remove scum

Parameter	Specifications
Moisture	45 – 55%
Milk fat, minimum	5%
Sucrose, maximum	45%
Protein, minimum	5%
Acidity of syrup(ml of N/10 NaOH required to neutralize 100ml of the syrup), maximum	6
Concentration of syrup, maximum	55°Brix
Bacterial count, per gram, maximum	500
Coliform count, per gram	Nil



# Mechanized Production of Rasogolla

- Mechanical disc grinder has been designed for better kneading of chhana.
- Screw conveyor with kneading section and cutter provided at the exit simultaneously perform the kneading and portioning of chhana into lumps of about 10 g each.
- This lump is allowed to fall on a spinning disc, which has stationary mounting above it.
- Rotation of lumps of chhana with stationary mounting forms it into the spherical balls.
- Recently rotating plate over a conveyor belt is also in use for ball formation.
- Balls can be made to fall directly into sugar syrup for cooking.
- Mechanized cooker can also be used for cooking; advantages are uniform weight and shape of rasogolla balls, large production, and uniform quality.





## Yield and Shelf-life

- 90-100 rasogolla balls of diameter 30 mm can be made from one kg of chhana.
- The yield is 254 g (drained weight) of rasogolla per 100 g of cow milk chhana and 342 g of rasogolla per 100 g of buffalo milk chhana.
- Stored for 2 – 3 days at room temperature without any packaging and added preservatives.
- Shelf life of rasogolla in tin cans is reported to be 6 months.

Balls are usually packed hot at 90 C in lacquered tin cans of 1 kg capacity. Empty containers are first sterilized in hot air inside closed chamber. Rasogolla balls with hot sugar syrup and permissible preservatives (Sorbic acid and its sodium, potassium and calcium salts calculated as sorbic acid – maximum 1000 ppm and Benzoic acid maximum 300 ppm) are filled into containers and pass through steam chest]. After seaming, containers are transferred to chilled water to create partial vacuum by quick condensation of the vapours inside the container.



**PACKAGING**



**□ Sandesh** is popular chhana based sweet delicacy in West Bengal.

- Preferably prepared from cow milk chhana because it yields soft body and smooth texture with fine and uniform grains.
- Buffalo milk exhibited hard body and coarse texture.
- Chhana obtained with citric acid is preferred for sandesh.
- Sugarcane jaggery, date jaggery and palm jaggery (Nolen Gur) in addition to cane sugar and flavoured with essences of jackfruit, orange, rose etc.
- Firm body, smooth texture, rich source of milk proteins, fat, sucrose and fat soluble vitamins apart from rich aroma.



# VARIETIES

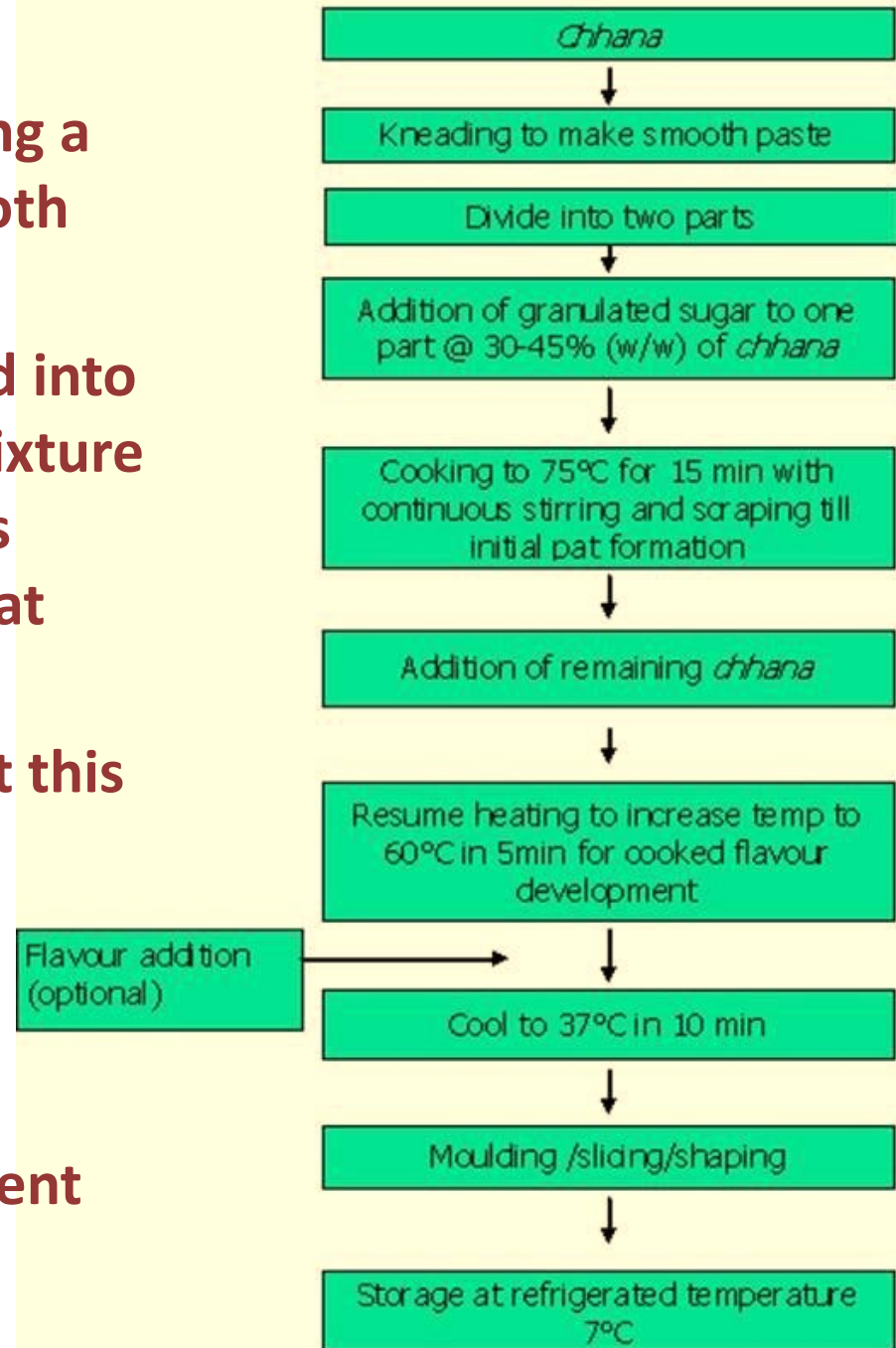
- Raw grade (kachagolla): Chhana like flavour, moist appearance, soft body and coarse grainy texture.
- Soft grade (Naram-pak): Most common variety, possessing soft body and smooth texture with fine grains uniformly distributed and relatively lower amount of sugar and high moisture in it.
- Hard grade (kara-pak): Firm body, dry appearance and low moisture content.





# Preparation:

- Chhana is kneaded or ground using a mechanical grinder to make smooth paste of chhana.
- About 30 to 45% of sugar is added into one portion of chhana and the mixture heated upto 75 C with continuous stirring and scrapping results in pat formation in the product.
- Second part of chhana is added at this stage.
- Addition of flavour and colour is optional and added according to preference.
- This pat will be moulded to different shapes.







# Chemical Composition

Constituent	<i>Sandesh</i> (soft grade) prepared from cow milk <i>chhana</i>	<i>Sandesh</i> prepared from buffalo milk <i>chhana</i>
Moisture(%)	25.5	27.14
Fat(%)	19.89	18.42
Protein(%)	18.48	18.71
Ash(%)	1.66	1.90
Sugar(%)	34.47	33.83

**Composition of soft grade sandesh and hard grade sandesh procured from Kolkata market**

Constituent	Soft grade <i>sandesh</i>	Hard grade <i>sandesh</i>
Moisture(%)	21.23-19.15	12.27-15.23
Fat(%)	16.19-17.77	16.26-18.11
Protein(%)	16.21-18.62	16.22-19.83
Ash(%)	1.22-1.81	1.62-1.66
Sugar(%)	37.25-38.99	42.31-47.68

# Texture

Soft grade has characteristic soft cohesive body and smooth texture with small size grains, whereas hard grade has a firm crumbly, coarse, gritty and chewy texture with big grains. Sandesh from buffalo milk is slightly less cohesive, springy, gummy and chewy than cow milk *sandesh*.





# Factors controlling the quality of sandesh

## Fat content in milk:

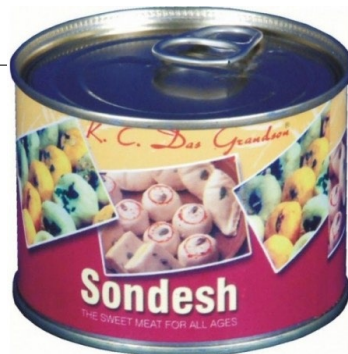
- Soft grade sandesh, prepared from cow milk with 4% fat is most suitable due to rich appearance, soft body, smooth texture and pleasant flavor.
- Sandesh made from cow milk with 2% fat exhibited dry appearance and coarse texture, therefore optimum fat level has to be maintained in milk to make best quality sandesh.

## Moisture content in sandesh:

- Moisture content and sugar level varies with the grade of sandesh, hard grade sandesh has low moisture content and higher sugar level and vice versa with soft grade sandesh.
- 30% sugar is optimum for the good quality sandesh.
- Moisture content and duration of heating facilitates dissolution rate of sugar.
- Addition of ground sugar helps in reducing the heating time thus saves the heating energy.

## Packaging and Shelf-life

- Paperboard cartons, polystyrene containers, high-density polyethylene bags, nylon-6 pouches and tin cans are used for packaging.
- In a study, revealed that maximum chemical, microbiological and organoleptic deterioration takes place in sandesh samples packaged in the folding paperboard cartons. At  $30\pm 1^{\circ}\text{C}$  with 70% RH the product can be stored up to 5 days only whereas at  $7\pm 1^{\circ}\text{C}$  with 90% RH Sandesh remained acceptable for up to 30 days in folding paperboard cartons and 45 days in tin cans.



- **Rasomalai** prepared in a similar way as rasogolla upto ball formation stage, followed by flattening the balls and cooking.
- These flattened balls are soaked in thick concentrated sweetened milk or rabri.
- Marketed as flattened chhana patties floating in thickened sweet milk.
- Delicate, chewy and spongy sweet.
- Tastes better when served chilled.





*For Ras (Sweetened Milk)*

Cardamom  
Pods



Milk



Nuts



Saffron  
Strands



Sugar



*For Malai (Paneer Balls)*

Milk



Water

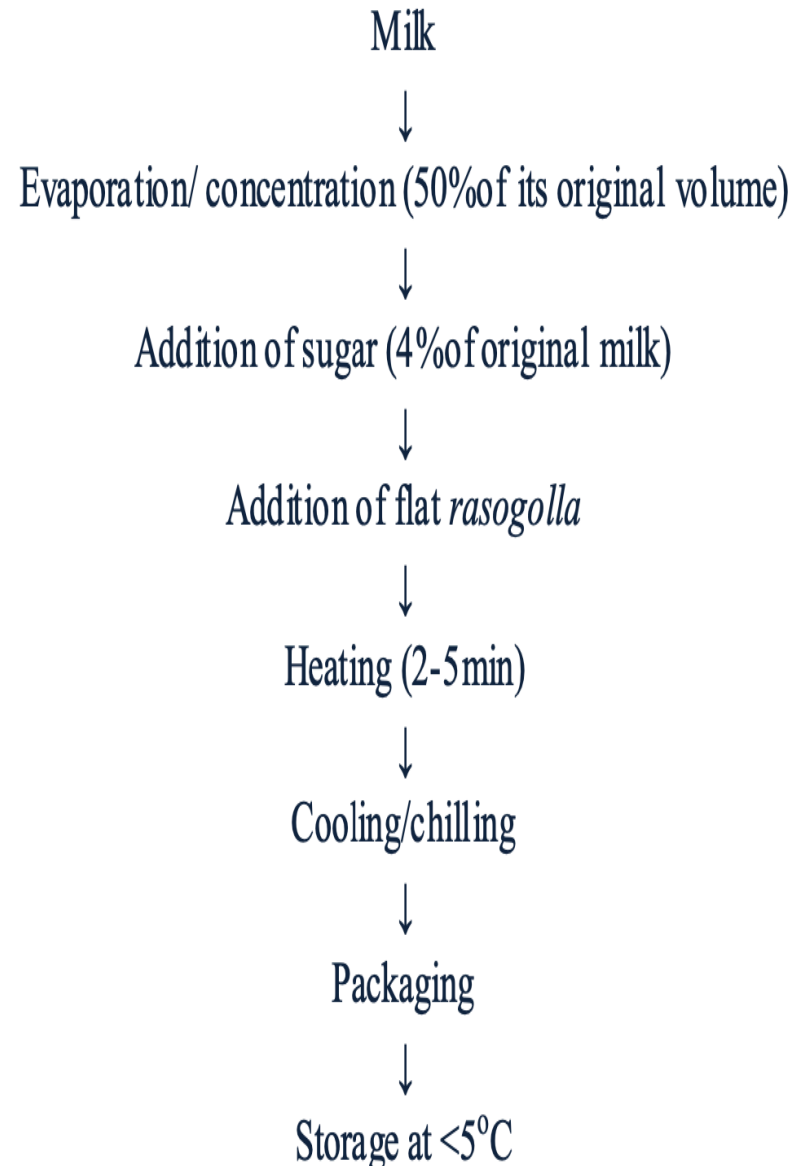


Vinegar



# Preparation:

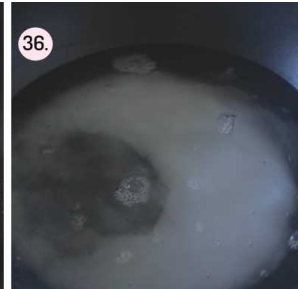
- Chhana is kneaded into smooth dough along with 1-4 % wheat flour.
- Dough is portioned and rolled into balls having a smooth texture without cracks.
- These balls are flattened to differentiate from rasogolla balls, flattened balls are processed like rasogolla and subsequently stored in sweetened (5 – 6% sugar) milk thickened to one third of its volume.
- Rabri without creamy layer can also be used instead of thickened milk to soak the cooked flattened balls.
- Limited shelf life of 3-5 days at refrigerated temperature.













- **Rajbhog** is a variety of rasogolla that is ballooned and larger in size than rasogolla.
- Diameter of these balls is around 50 – 60 mm.
- Blended with saffron that imparts an attractive golden yellow shade to it.
- Chhana is kneaded into uniform dough, mixed with a small amount of saffron and portioned and shaped into balls which are almost twice the size as rasogolla.
- While shaping, sugar ball or a cardamom seed or a nut is placed at center of balls.
- Balls are cooked in 50% solution of boiling sugar syrup till desirable body and texture is achieved.
- After that, balls are removed and wrapped in silver foil.
- Variation of rajbhog is kamalbhog that is blended with orange colour and flavour.





- **Chhana-murki** is a sugar-coated sweet in the shape of small cubes. Chhana is kneaded and formed into 10mm thick flat slab.

Chhana/ paneer  
↓  
Cutting into cubes (0.75-1.0 cm<sup>3</sup>)

↓  
Cooking in sugar syrup (5min)

↓  
Cooling and stirring

↓  
Addition of flavor

↓  
Packaging

↓  
Storage (4-6°C)

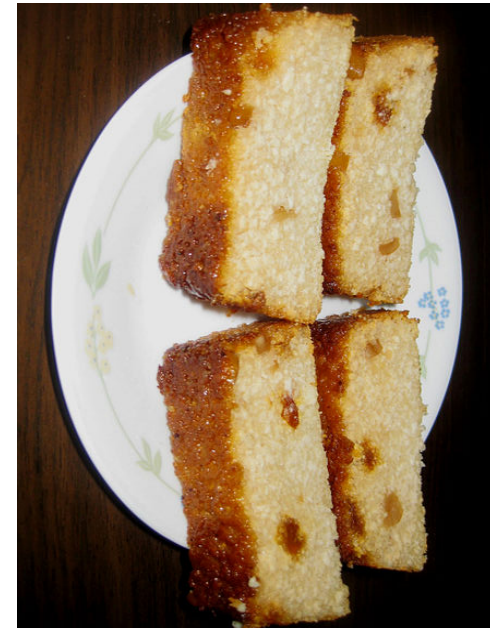
- Same slab can also be prepared from paneer as well.
- Cut into small cubes of about 10 mm cubes.
- Cubes are cooked in boiling sugar syrup in karahi for five min with gentle stirring.
- Slightly higher concentration sugar syrup is used to promote coating over the surface.
- Then karahi is removed from fire and stirring is continued till sugar is crystallized and coated uniformly over the cubes.
- Cubes are then cooled and sprinkled with flavour and colour and decorated with dry nuts flakes.



# Chhana podo

**Baked sweet, resembling milk cake and quite popular in Odisha.**

- Surface has caramelized colour and flavour.
- Prepared by mixing chhana, sugar and semolina or maida.
- A paste is prepared and filled in shallow container or tray. Surface of product is coated with ground sugar and covered with sal leaves.
- Burning coal is placed on sal leaves & tray placed near furnace to provide warmth for cooking.
- It makes surface directly caramelized and imparts sweetish fragrance to product.
- For better quality, chhana prepared 4% fat cow milk, 20% sugar and 5% maida (based on chhana) be mixed to prepare dough and it should be baked at 150° C for 80 min.
- Shelf life of chhana podo is only 3 days at 30°C while it is 35 days when vacuum packaged and stored at 6+1°C.

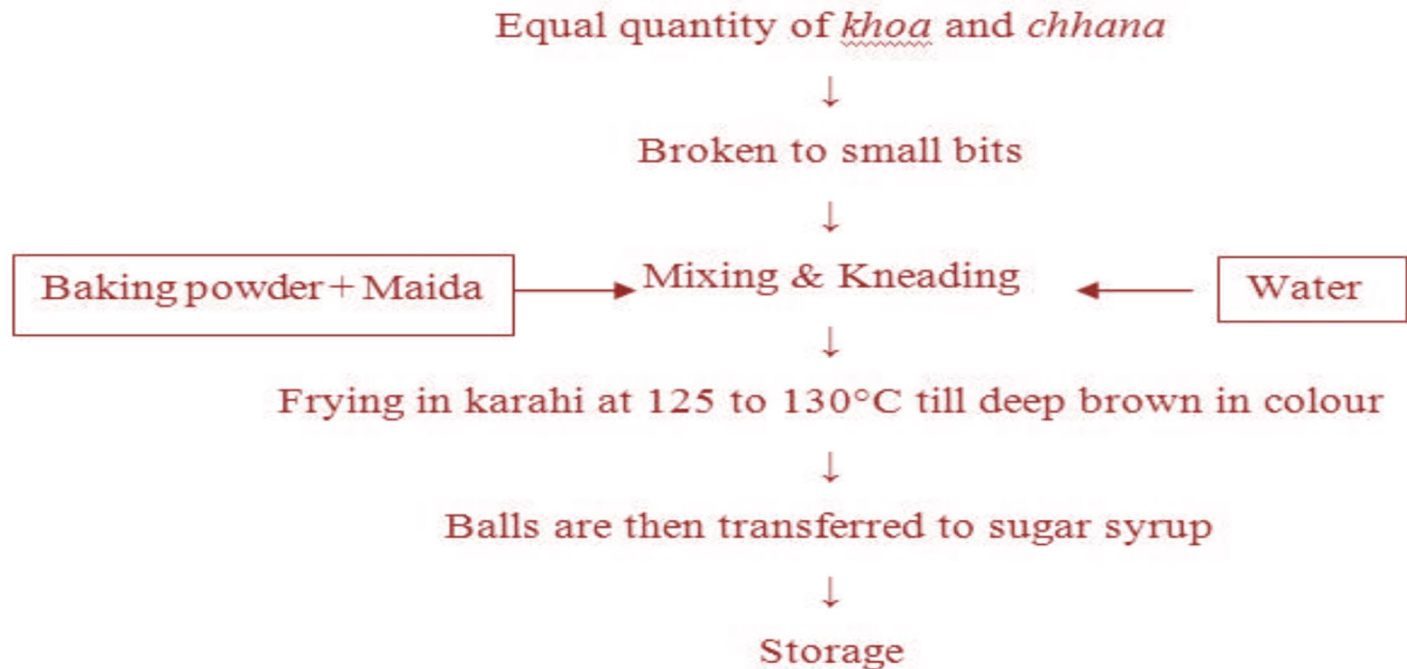


- **Pantooa:** Chhana and khoa based product similar to gulabjamun.
- Equal quantity of khoa and chhana are broken into small bits.
- Maida and baking powder are also used in this product for obtaining smooth texture and soft body.
- After mixing maida and baking powder, broken bits of chhana and khoa are added into it.
- Small quantity of water is added to knead the above mixture and to form dough.
- Making balls and frying them in ghee or in oil, followed by dipping in sugar syrup.
- Shelf life of 7 days at room temperature and 14 days at refrigerated temperature where as canned product can keep upto 6 months.





Parameter	Range
Total solids%	57.7-68.3
Fat%	8-11
Protein%	6.7-7.9
Ash%	0.32-.53
Sucrose%	37.8-43.6



# Cham-Cham

- ✓ Prepared from chhana with a firm body and close knit texture. It is coated with sugar or khoa.
- ✓ Balls are made and cooked in 50% sugar syrup, till desired body and texture get formed.
- ✓ Balls are removed and cut into halves.
- ✓ A layer of khoa is sandwiched between the two halves and its surface is coated with sugar or khoa powder before wrapping it in silver foil.

