Indian Traditional Sweets

Prof Jagadish Pai

Executive Director - PFNDAI

What are traditional Indian Sweets

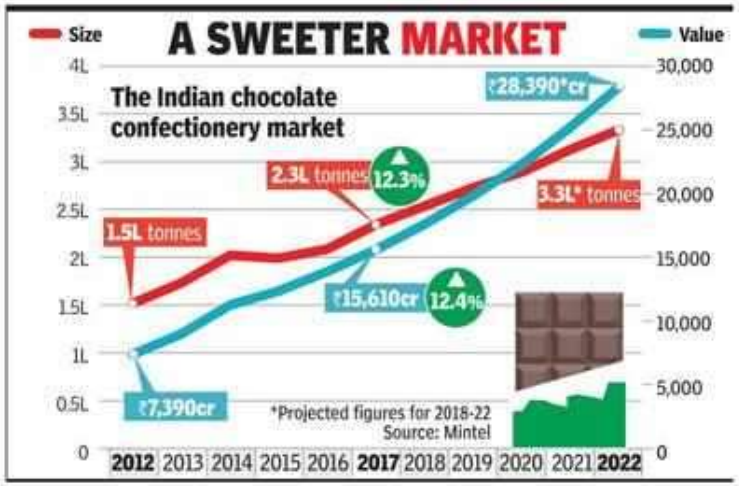
- Traditional sweets in India are many different types
- They may be based on dairy, cereals, pulses or fruits or combinations of ingredients
- The list includes a large number of items with variations
- Varieties are large and also depend on regional preferences and practices

Varieties in Indian sweets

- One may find different sweets like pedha, burfi, jalebi, ras gulla, gulab jamun, Mysore pak, kaju katli, ras malai, sandesh, gajar halwa, laddoo, soan papdi, puran poli, shrikhand, chikki, kulfi and many more
- Further within each type there are so many different varieties e.g. laddoos can be besan, dink or gond, coconut, motichur, boondi, rawa, til, murmura etc.

Sweets Market: Global & Indian

- Global confectionery market size is over USD 200 billion
- Traditional Indian sweets market is said to be around Rs 45,000 crores (USD 6 billion) of which packaged market is said to be Rs 3,500 crores
- Chocolate & sugar confectionery is about Rs 11,000 crores
- Thus traditional sweets industry dominates Indian scenario. These figures can be even larger as fairly sizeable manufacture traditional sweets occurs in unorganised sector for which figures are not very clear



Export potential for Indian sweets

- Total sweets export from India was Rs 750 crores in 2019 of which bulk was traditional sweets
- There is a large population of NRIs outside India and they love to eat Indian sweets
- In the USA not only one can get sweets exported from India but there are units making them there for local consumption

Reasons for Large Traditional Market

- Indians love the traditional sweets like pedha and burfi which they ate while growing
- Traditional sweets are also given at religious and festival occasions and family functions like marriages
- Things are changing with young children prefer chocolates and cakes and donuts
- People are also venturing for changes
- Quality and safety issues are also playing role

Making of sweets

- Dairy based
- Cereal & Pulses based
- Fruit based

Dairy based sweets

- Milk is concentrated to make khoa
- Khoa is then mixed with sugar and other ingredients to make different types of peda, burfi etc.
- Milk (mostly cow's) may also be fermented to produce acid and that would coagulate it to make curd
- Acid may be added with heat to expedite process
- Curd could be hung to remove whey to prepare chhanna
- This may be used to make Bengali mithai like ras gulla
- Panneer is prepared by acid coagulation with heat and mostly buffalo milk is used

Cereal & Pulse based sweets

- Rice, wheat, rajgeera, bengal gram, peanut in different forms including flour, flakes, grits etc. may be mixed with sugar or jaggery syrup and concentrated
- Most commonly laddoos are made but many other sweets like halwa, jalebi, chikki etc. are also made

Fruits & Vegetables

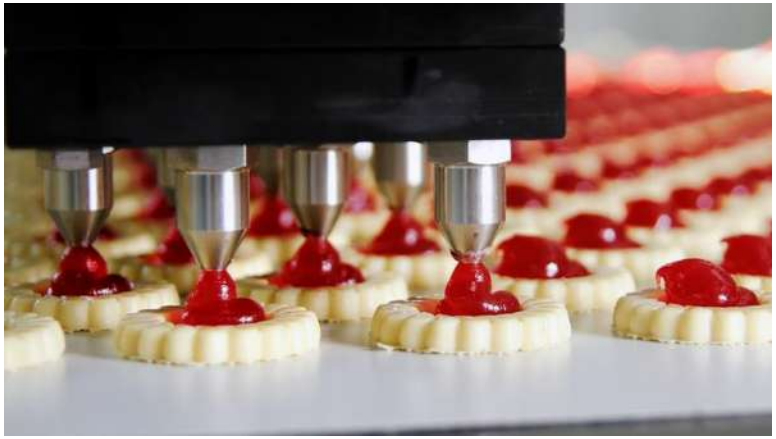
- Mango, guava, banana
- Carrot, Bottle gourd
- Pulp concentrated with sugar

How are Indian sweets different

- Many contain nutritional ingredients
- Dairy based contain high protein
- Pulse based contain high dietary fibre
- Fruit & nut based contain high fibre, phytochemicals, etc.
- Although high in sugar, there is some hurdle to blood sugar increase due to protein & fibre

Scaling Up Problems

- Uniform Quality of Raw Material Needed
- Artisans & Machines are different e.g. chapatis or rotis made by rolling pin may differ from machine rolled
- Machines are not easily adaptable to changes in formulation
- Analytical methods should be rapid and accurate for uniform quality of products
- Machinery fabricator must work with product manufacturer to design proper machines

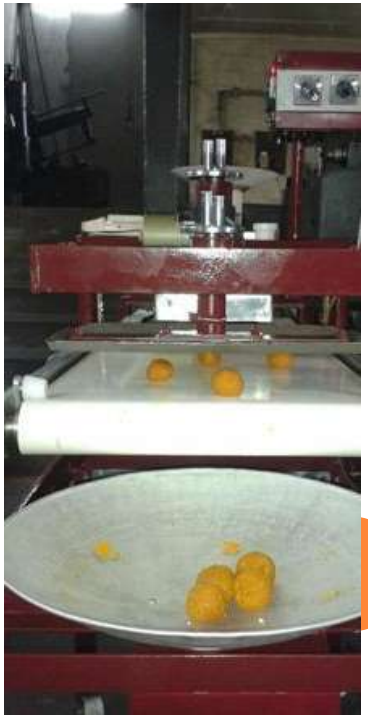


Scaling up problem – shelf life

- Although some like chikki and laddoos based on cereals & pulses and having low moisture will have long shelf life of weeks or months
- Many with higher moisture and especially dairy based like peda and burfi have low shelf life of a couple of days to a week or 10 days
- Spoilage microbes grow rapidly and spoil sweets unless they are refrigerated or heat processed or with added preservatives
- For commercial products longer shelf life is necessary
- Gulab jamun & ras gulla are available in cans

Machines replacing workers

- It is not easy to replicate by machines exactly what hands do in making sweets
- Understanding the manual process makes it easier to design machines to do what hands do
- Machines can do same action repetitively without changes for hours or days or months
- Machines can do it much faster
- Speed at the expense of quality not acceptable



How Scaling Up is Achieved

- When you want to boil a glass of water over stove it is very easy and can be done in couple of min but when 5000 litres of water is to be boiled you can't use the same technique
- One can use jacketed vessel using steam
- One can inject steam into body of water
- One can use plate or tubular heat exchangers
- If milk is used instead of water then one must be careful as too much heat can cause problems

Concentration

- Small halwai takes a wide shallow vessel with fire below to concentrate milk or syrup
- When large amounts are to be concentrated you may require steam jacketed vessel for uniform heating
- You may need steam injected into liquid for faster heat transfer
- Evaporation is faster is vacuum is applied
- Colour and flavour of traditional sweets is obtained because of reactions among ingredients and components such as protein and carbohydrates and if very rapid process is used these may not develop adequately

Drying

- Further drying can be again accomplished by dry hot air
- This may be done in a chamber bringing in hot dry air and carrying away the cooler moist air
- Air circulation is important to avoid difference in drying rate different points
- Vacuum may expedite drying but then air may create problems so heating may be done by contact
- Microwave could be used for more efficient heating
- Drying is faster when greater surface area is provided

Extrusion & Rolling

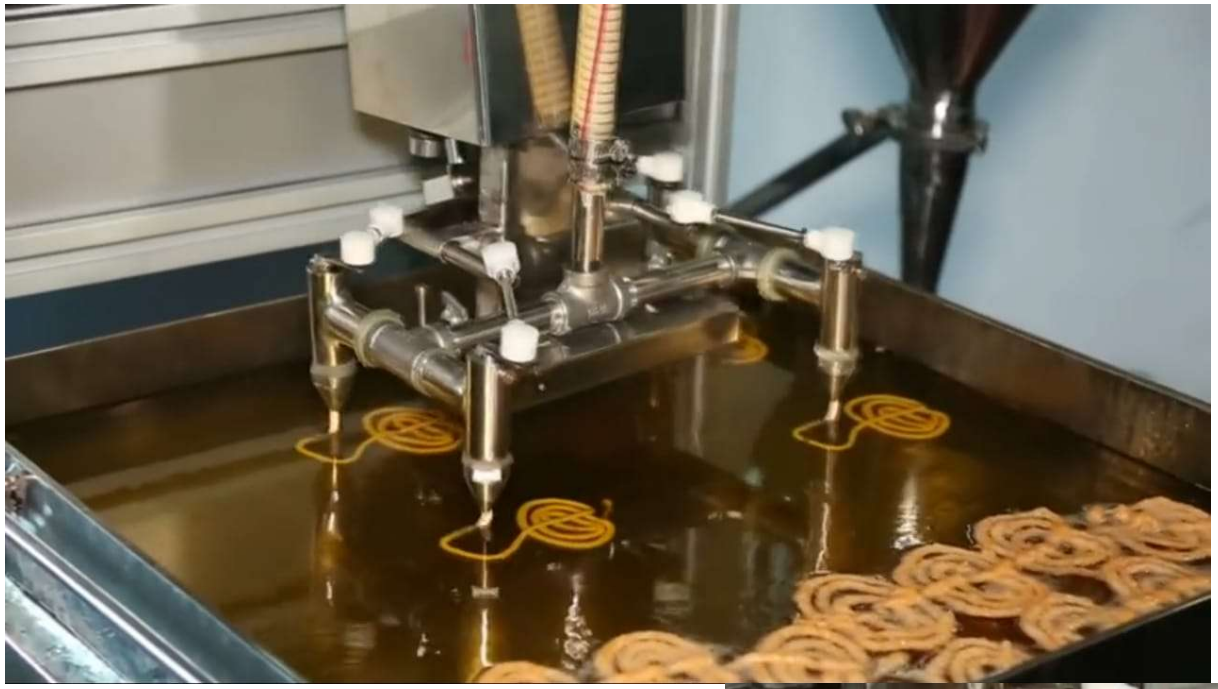
- Traditionally laddoos, peda, gulab jamun etc are hand rolled
- Machines can extrude the sweet dough through die and cut it in small pieces which are then rolled by flat surfaces into balls
- Different sizes and textures can be handled
- Each piece is of same size and weight
- In case of peda, roller die can directly roll the dough into small delicate peda design of different shape & size
- In jalebi making dough is directly extruded into hot frying oil in intricate design

Modak Making Machine

Multipurpose machine for peda, laddoo, gulab jamun & ras golla

Peda Machine

Jalebi Machine



Burfi Mixer

Coating

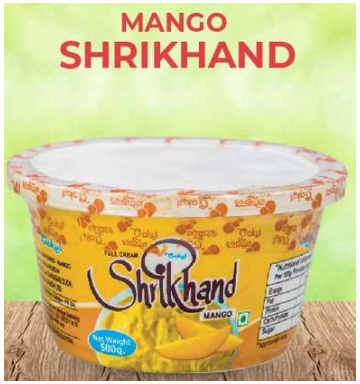
- Sweets especially nuts could be coated with sugar, chocolate and other base coating with different flavours to make many varieties
- Coating pans are developed indigenously
- Similar to machines used for Gems-like candies

Changes in future

- People want something new & different
- Attracted by Chocolates, Donuts, Cakes, Cookies, Scones, Candies, jujube, coated nuts, etc
- Want to reduce sugar & fats
- Healthier sweets

Newer Flavours & Variations

- People like chocolate
- Some have developed chocolate shrikhand, burfi & peda
- Mango shrikhand is popular
- People are getting used to fusion
- Addition of fruits, nuts, spices, herbs, mixing ingredients creates variation in flavours
- Addition of other ingredients will change texture, appearance and taste which needs to be considered
- Nuts are quite popular but coated nuts are new with many different flavours
- Coating machinery is available
- Cookies, candies, jujubes are getting popular so Indian varieties could be developed having similar characteristics but materials and flavours could be Indian



Guava Barfi

Sugar-free or Low sugar

- Because of health reasons people are looking for reduction of sugar but not taste
- Various substances with different sweetness intensity are available
- People have used sucralose, sugar alcohols, fructose oligo saccharide (FOS), stevia etc.
- Sugar in normal sweet is anywhere from 15% to 40% so when that is replaced by sweetener it changes texture and other characteristics
- Need for filler material and changes in formulation necessary to ensure same experience
- Sugar also has a role to play in sweets beside sweet taste; its reaction with proteins and other ingredients produces flavour which will be altered when it is replaced by another ingredient

Low fat sweets

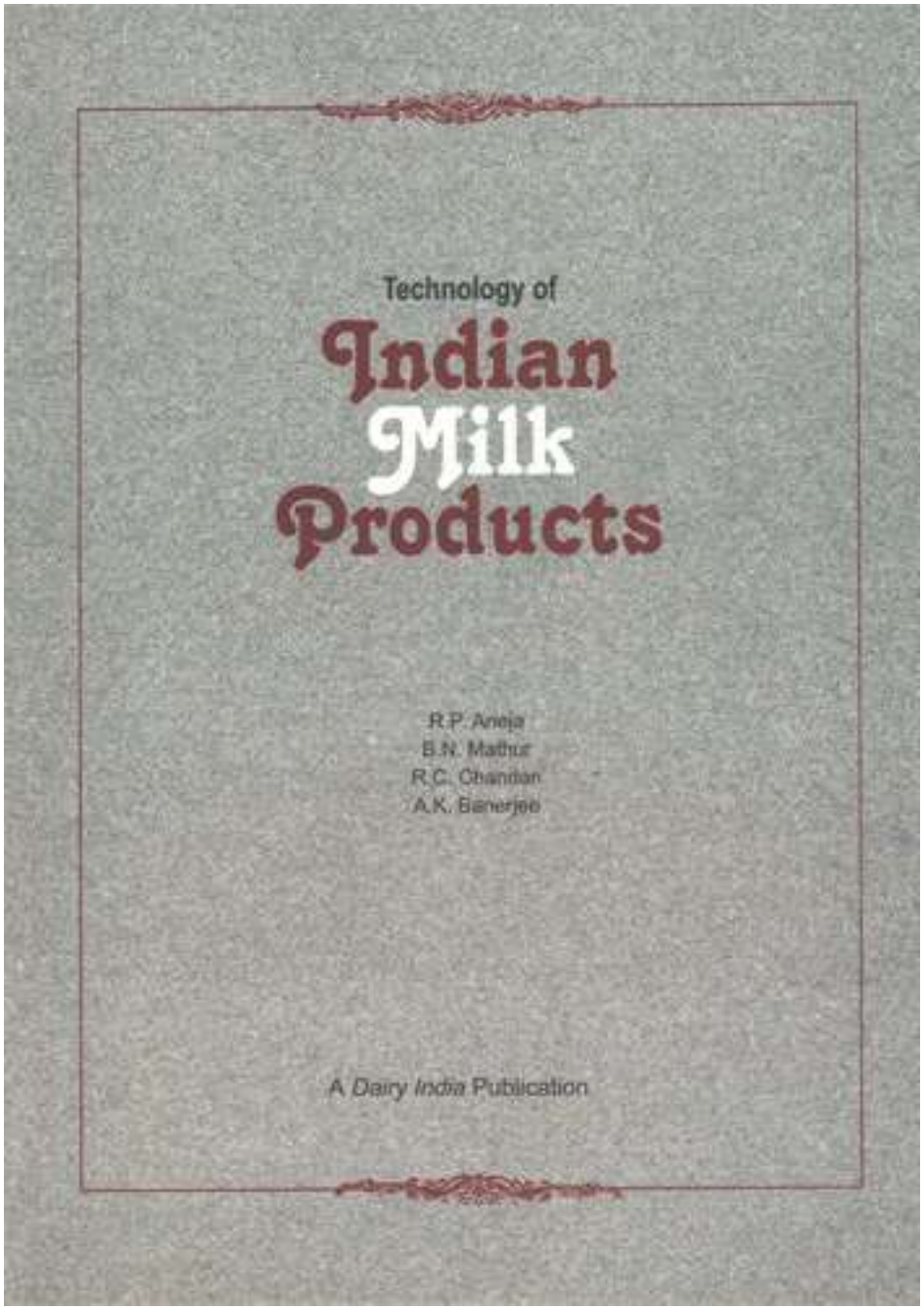
- Most traditional sweets not only have sugar but sizeable amount of fat
- Many consumers are looking for lower fat sweets because of obesity, CVD, high bp etc.
- Again replacing a lot of fat will affect flavour and texture which needs to be compensated
- Filler substances need to be added
- Fat replacers are compounds – are either carb/protein based or fat based substances
- These resemble fat functionally but provide much less energy

Healthier Ingredients

- Traditional sweets except the pulse based ones have low dietary fibre
- Addition of fibre either from ingredients or substances
- Use of pulse, dry fruits including nuts can add dietary fibre
- FOS can add sweetness and dietary fibre
- Isolated fibre from other sources
- Some fibres can alter texture but many without

Healthier Ingredients - 2

- There are many healthy substances that could be added to sweets to make them healthier
- However, some substances have colours and flavours that need to be suppressed
- Omega 3, Anthocyanins, Carotenoids, and a whole range of phytochemicals are now available to make something as delicious as our traditional sweets also healthy


Technology of
Indian
Milk
Products
R.P. Aneja
B.N. Mathur
R.C. Chandan
A.K. Banerjee
A Dairy India Publication


THANK YOU