

*"Muh meetha karo... but how much?"*

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# Sugar Reduction

## Problems & Strategies

Innovations in Processed Foods — Pathways to Health & Wellness

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“The views, opinions, and information expressed in this content are solely my personal views”.

# Need for Sugar Reduction

101 M

Indians living  
with diabetes

(ICMR-INDIAB)

136 M

Indians with  
prediabetes

(ICMR-INDIAB)

<10%

WHO target for  
free sugars

<5% for additional benefit



## Regulatory Momentum

FSSAI front-of-pack labelling;  
ICMR Dietary Guidelines 2024



## Consumer Pull

Rising demand for  
better-for-you products



## Scientific Consensus

WHO, ICMR, global health  
bodies aligned



## Industry Leadership

Companies proactively setting  
reformulation targets

# Sugar is Not Just Sweetness

*"One ingredient, six jobs. Remove it and every job needs a new owner."*



## Sweetness

Taste and  
palatability



## Bulk

Body, volume  
and weight



## Texture

Mouthfeel, crispness,  
crumb structure



## Browning

Colour and flavour  
(Maillard, caramelisation)



## Preservation

Binds water, controls  
shelf life



## Fermentation

Fuel for yeast  
in doughs

*This is why simple sweetener swaps don't work in solid foods*

# Solid Foods vs. Beverages: The Real Challenge

## ? BEVERAGES

- ▶ Sugar's role: mainly sweetness + mouthfeel
- ▶ Reformulation: relatively straightforward
- ▶ Significant global progress achieved
- ▶ High-intensity sweeteners dissolve readily

## ? SOLID FOODS

- ▶ Sugar's role: sweetness + bulk + texture + browning + shelf life + fermentation
- ▶ Reformulation: multi-dimensional challenge
- ▶ Progress slower, but biggest opportunity
- ▶ Simple sweetener swaps don't work

Solid foods contribute more to total sugar intake than beverages — and this is where the food industry's innovation can make the biggest difference

# The Toolbox: Three Strategies

*"There is no magic ingredient called 'Sugar Be Gone'"*

01

## Reduce & Enhance

Gradual cuts below detection threshold + sweetness enhancement techniques

02

## Replace Functions

Rebuild bulk, texture, browning, and shelf life with smart ingredient combinations

03

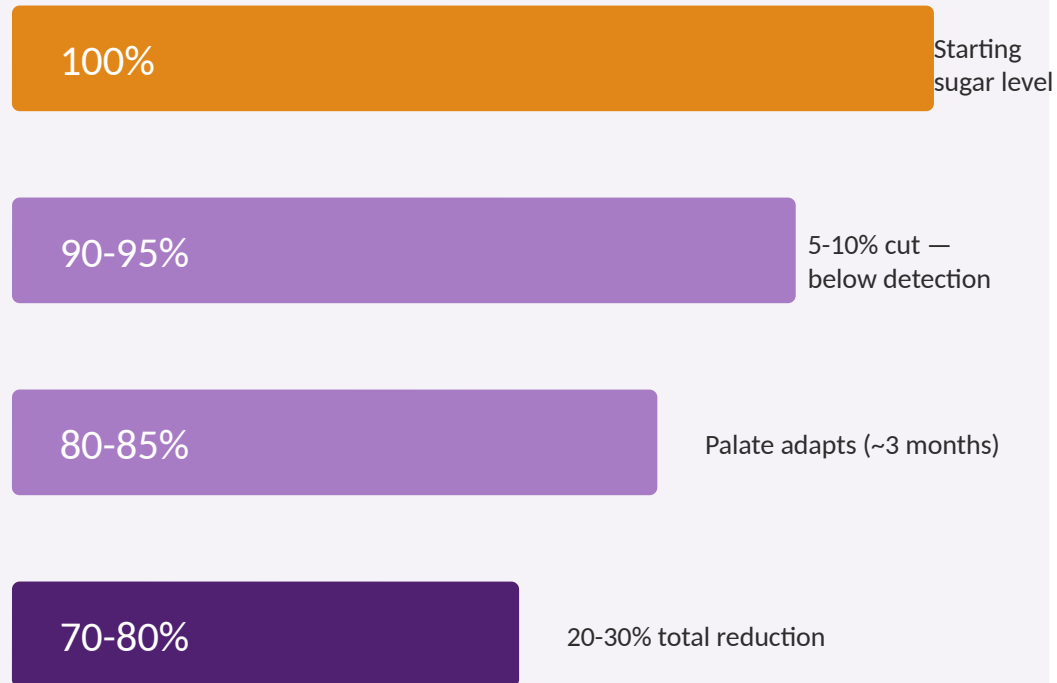
## Redesign the Matrix

Process innovation, structural engineering, and functional ingredients

*Most successful reformulations combine all three*

# Strategy 1: Reduce Gradually & Enhance Sweetness

## GRADUAL REDUCTION



## SWEETNESS ENHANCEMENT

- ? **Flavour-sweetness interactions**  
Vanilla, cardamom, cinnamon enhance perceived sweetness
- ? **Aroma-induced sweetness**  
Cross-modal perception — smell triggers sweetness
- ? **Taste receptor modulators**  
Positive allosteric modulators amplify sweetness signal
- ? **Enzyme technology**  
Converts starch to sweet oligosaccharides in situ

*Indian spice and flavour profiles are a natural advantage for sweetness enhancement*

# Strategy 2: Replace the Functions

*"Replace functions, not just grams of sugar"*

 Bulk & Body



Polyols, fibres (inulin, polydextrose), resistant starch

 Sweetness



Stevia, monk fruit, rare sugars (allulose), sweetener blends

 Texture & Mouthfeel



Hydrocolloids, proteins, structuring ingredients

 Shelf Life & Browning



Rare sugars (allulose for Maillard); water activity management

*The blending approach works best — most successful reformulations use 3-4 ingredients together*

## Strategy 3: Redesign the Matrix



### Particle & Structure Engineering

Smaller crystals, hollow structures, layered sugar placement deliver sweetness faster with less sugar



### Encapsulation & Targeted Release

Controlled release of sweetness on the tongue; aeration to enhance perception



### Functional Ingredients

Date paste, apple puree, inulin, jaggery, palm sugar as partial replacers with added nutrition

*Indian ingredients like jaggery, date syrup, and palm sugar offer lower GI and cultural acceptance*

# The India Lens

## ?? India's Unique Context



Sweets tied to festivals, faith, and hospitality



Strong regional taste profiles — one formula won't fit all



Tropical climate demands robust shelf-life solutions



Price sensitivity shapes



ingredient choices

## ⚠ MYTH-BUSTER

Jaggery, honey and syrups are still free sugars under WHO definition

## ? OPPORTUNITY

Reformulated mithai for health-conscious urban consumers — a growing market

## ? ADVANTAGE

India's rich spice & flavour heritage is a natural tool for sweetness enhancement

India needs a portfolio of solutions — not a single solution

# The Road Ahead

1

## Reduce Intelligently

Gradual cuts + sweetness enhancement

2

## Replace Functions

Not just grams of sugar

3

## Redesign for the Consumer

Process innovation + Indian flavour  
advantage

*The goal: make lower-sugar products so well-designed that  
consumers no longer miss the sugar that has been removed*

Ultimately, it's about enabling balanced diets and moderation —  
the food industry is a key partner in this journey

Thank You • Questions Welcome