

Fortification of Food Products

Special Emphasis on Confectionary

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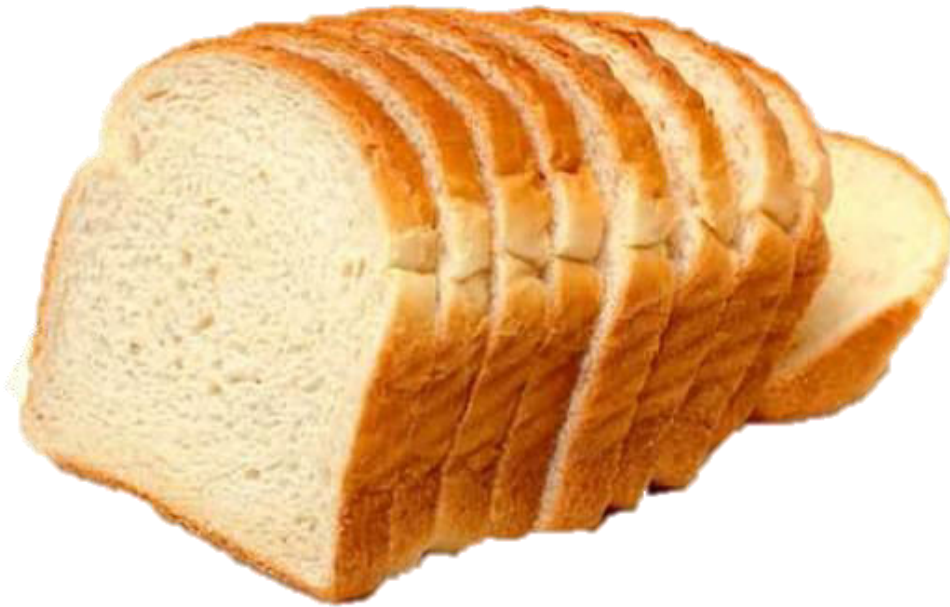



HEXAGON NUTRITION
Nutritionally Yours.....



White vs Brown Bread

Which one should you eat?





Confectionery broadly includes cocoa and chocolate products, cocoa mixes, hard and soft candies, marzipans, chewing gums, decorations for fine bakery wares.

Food Fortification

Fortified as per FSSAI Regulations



Strategic Advantages of Fortification

- Proven, simple, Effective
- Safe, Rapid, Practical
- Micronutrients added to food products have high stability during cooking and storage, appropriate overages are added to compensate the process loss



Consumer Preferences in India

- **Premium Chocolate Category - 30%**
- **Overall India chocolate market is predicted to grow at a CAGR of 8-10 per cent over the next 5 years**
- **Better-For-You benefits**
- **Willing to pay more**



Reference: Changing consumer preference , rising income levels driving premium chocolate consumption in India, Economic Times, July 7, July 2022.



Chinese Bhel Story



- What does your end user want?
- What is more practical?
- Are we compromising on health?
- Is it a long term solution?
- Universal?



Laser Eye Surgery

Is it safe?



Food Fortification Regulation, 2022

- **Fortified Processed Foods**
- **15-30% RDA via average 600 kcal intake from processed foods**
- **HFSS excluded**
- **Level of micronutrients specified**



Way forward

- Targeted fortification vs Generalized
- Identify nutrients-not a blanket premix for all
- Healthier alternatives/variants of the product
- Standards & Regulations
- Levels of fortification need to be defined
- Marketing tool?



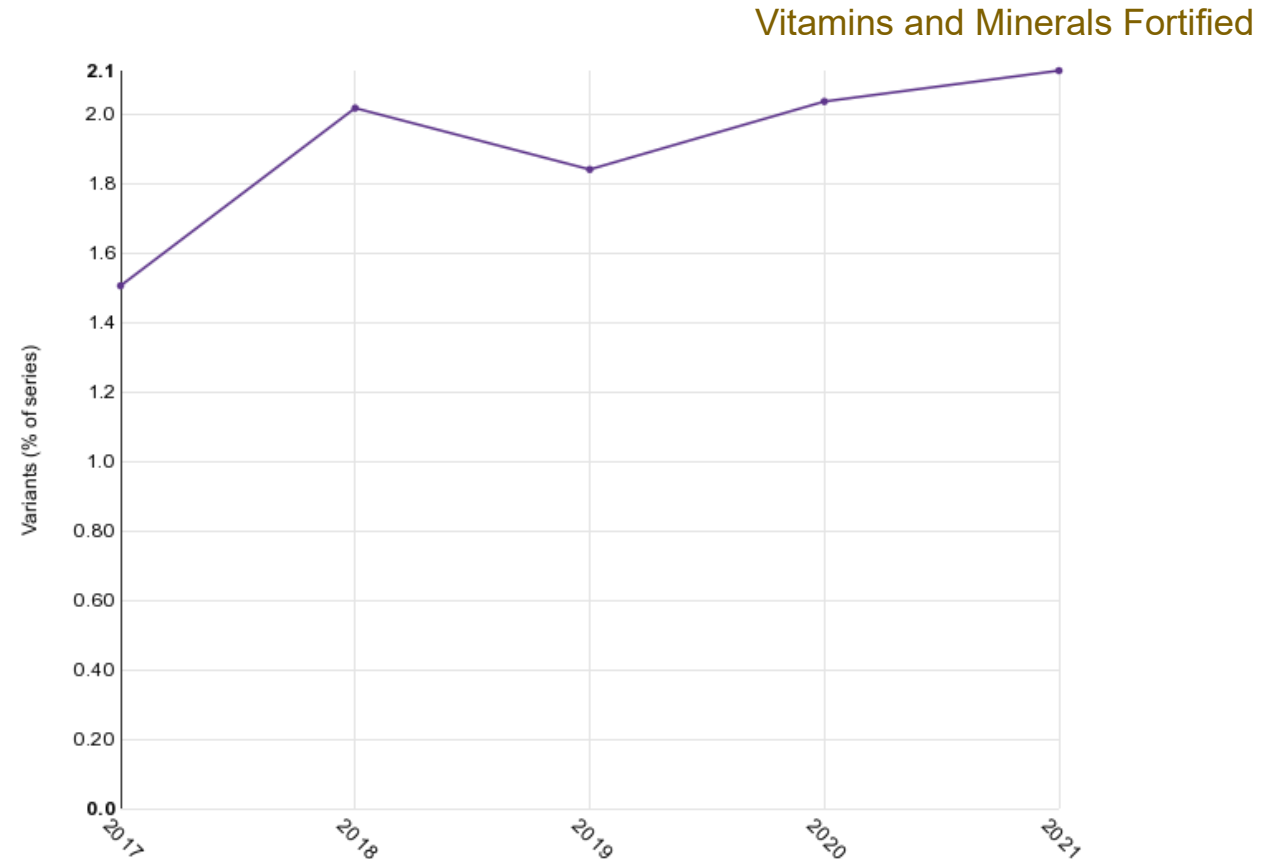


Around 6000+ Confectionaries are fortified globally, with 300+ New product developed annually which are fortified.

Idea of Healthy Confectionary?

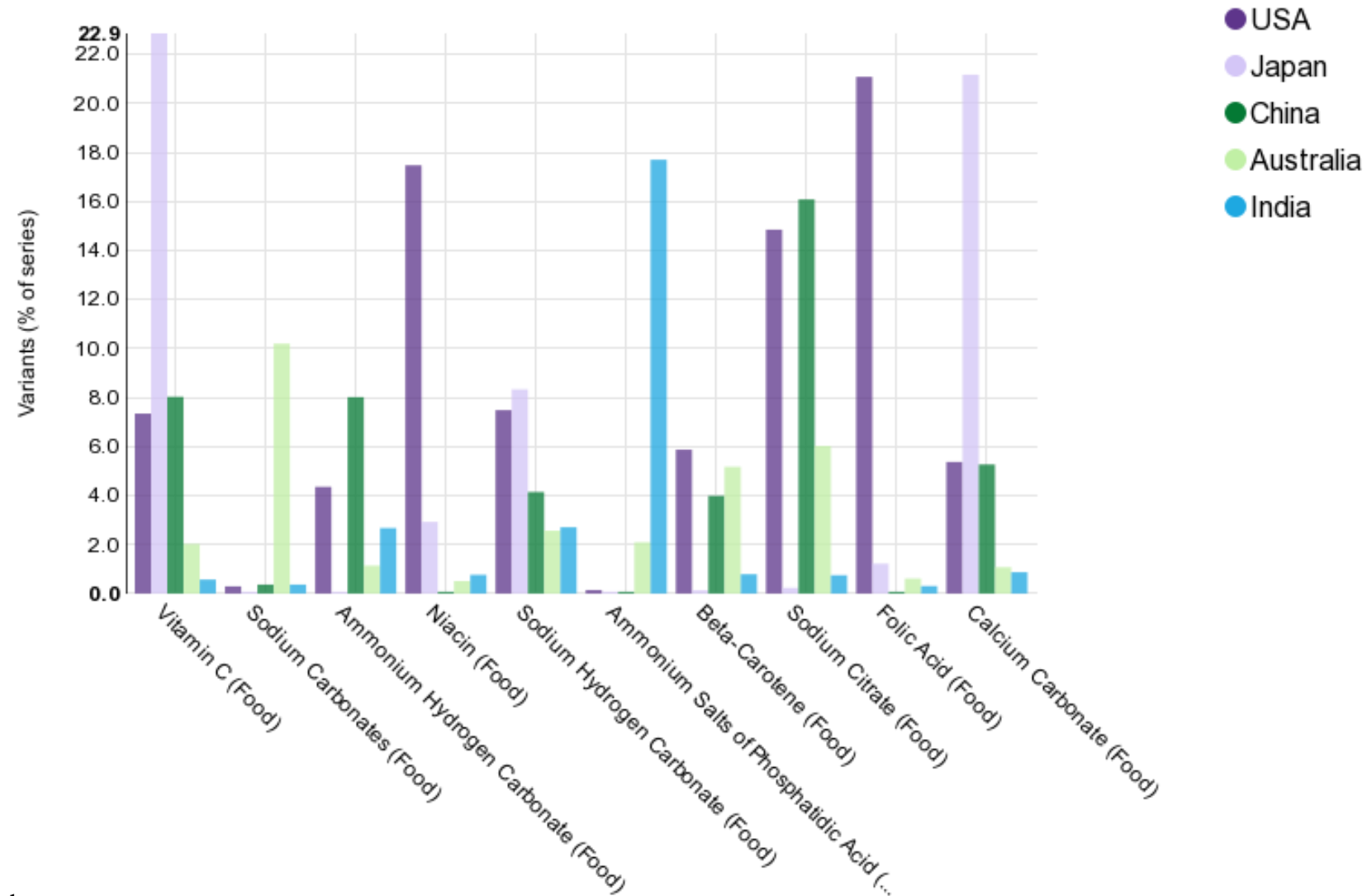
Fortified Confectionary (Market Assessment)

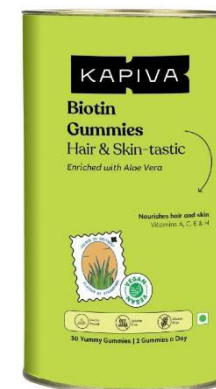
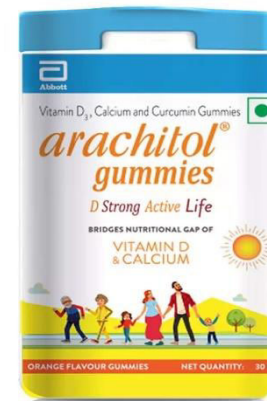
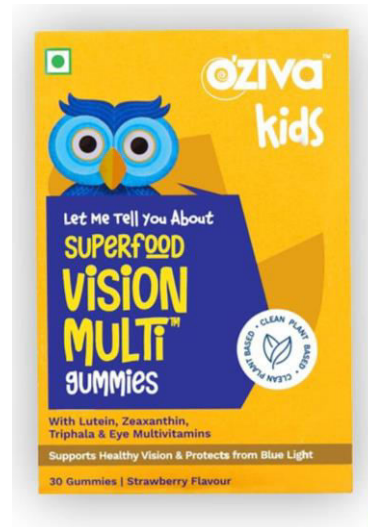
- Globally total confectionary products are 3 lakhs
- Out of which 2% claim to be fortified with Vitamins and Minerals
- In India total confectionary products are 10K
- Out of which 74 products are fortified with Vitamins and Minerals




Date Published vs Claims

Common Fortificants





Enrichment of dark chocolate with vitamin D₃ (free or liposome) and assessment quality parameters

Zohreh Didar¹ 

- **Liposome included with Vitamin D₃ was used to fortify dark chocolate {5mcg/serving(10g)}**
- Vitamin D₃ retention during storage time (0, 15, 30, 45, 60 and 70 days) were evaluated and results revealed there was better retention of vitamin D₃ in fortified samples with liposomes than free vitamin D₃.
- Observation showed addition both forms of vitamin D₃ (free or liposome) had no significant impact on color indexes, rheological properties, DSC parameters as well as sensory characteristics.

Effect of iron-fortified candies on the iron status of children aged 4–6 y in East Jakarta, Indonesia^{1–3}

Mayang Sari, Martin W Bloem, Saskia de Pee, Werner J Schultink, and Soemilah Sastroamidjojo

- A double-blind, placebo-controlled intervention study was conducted. The children were randomly assigned to 1 of 2 treatment groups
 - A fortified group (n = 57) and
 - Placebo group (n = 60).
- Anemia prevalence decreased **from 50.9% at the start of the intervention to 8.8% after 12 wk of intervention** in the fortified group (P < 0.001) and **from 43.3% to 26.7% in the placebo group** (P < 0.05). After 12 wk of intervention, **the serum ferritin concentration was 71% higher than at baseline in the fortified group** and 28% higher in the placebo group (P < 0.001).

TABLE 1
Micronutrient content of 30 g (weekly dose) iron-fortified candy¹

Nutrient	Value	Percentage of RDA ²
	mg	%
Iron	30	48
Vitamin A ³	1101 [330]	7.6
Thiamine	0.4	7
Riboflavin	0.9	18
Vitamin B-6	0.56	Trace
Vitamin B-12	2	1.0
Vitamin C	9	2.9
Folic acid	0.7	Trace
Vitamin E	4.8	Trace
Niacin	3.9	7
Iodine	0.03	Trace



Effect of consumption of micronutrient fortified candies on the iron and vitamin A status of children aged 3–6 years in rural Haryana

Article in Indian Pediatrics · November 2007

Source: PubMed

- To assess the efficacy of micronutrient fortified sugar candies in improving the iron and vitamin A status in children aged 3 to 6 years.
- The prevalence of anemia decreased from around 50% at baseline to 9.6% in the full dose daily group ($p < 0.01$)

Micronutrient fortified candies were effective in improving the haemoglobin level and decreasing anemia prevalence.

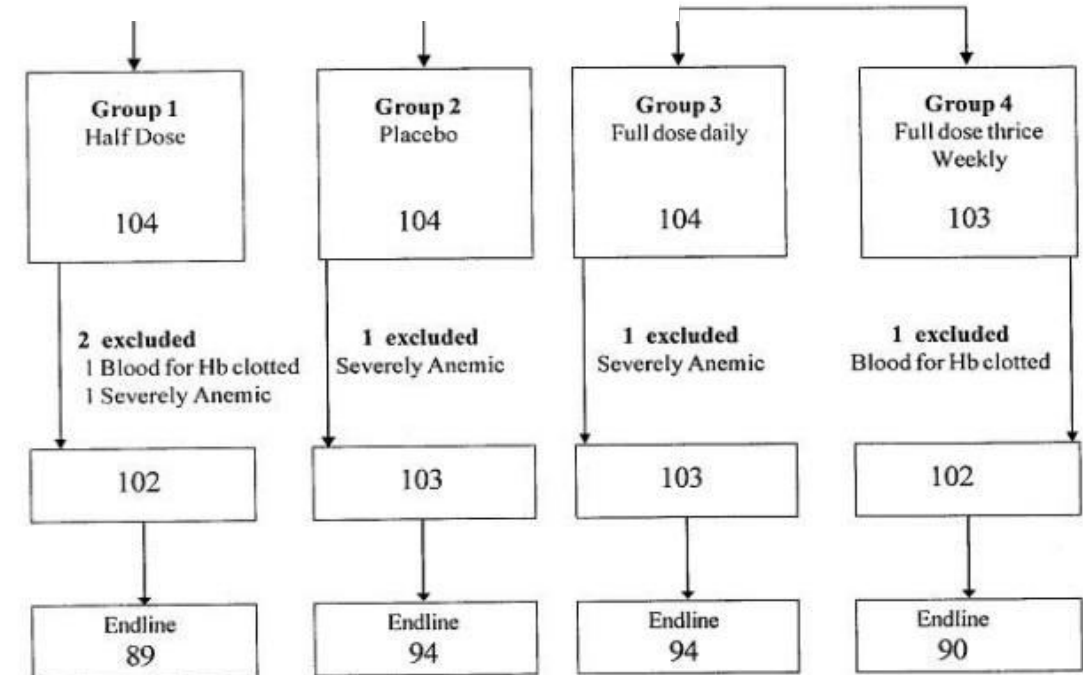


Fig. 1. Flow chart of enrollment of children and follow up.

Confectionary with Therapeutic Benefits

- Therapeutic Gummies have entered various segments which includes
 - a. Lifestyle Supplements
 - b. Specialised Care Beauty
 - c. Wellness
 - d. Immunity
 - e. Sleep
 - f. Digestive health
 - g. Beauty and care
 - h. Nail and Skin health and many more



Likely cons

- Pseudo healthy
- Scope of overconsumption?
- Risk of NCD
- Oral Health
- Let pleasure foods- be just that
- Enhance the existing health benefits
- Defined Portion Size





Thank You

Will you grab a fortified chocolate?

