

Food Fortification Today's Need

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SUMMARY

Main aim of this article is to give an overview of food fortification. Deficiency of micronutrients or micronutrient malnutrition, also known as 'Hidden Hunger', is a serious health risk. Access to safe and nutritious food is a must and sometimes due to lack of consumption of a balanced diet, lack variety in the diet or unavailability of food one does not get adequate micronutrients. Often, there is considerable loss of nutrients during the processing of food as well. One of the strategies to address this problem is fortification of food. This method complements other ways to improve nutrition such as diversification of diet and supplementation of food.

INTRODUCTION

India has a very high burden of micronutrient deficiencies caused by Vitamin A, Iodine, Iron and Folic Acid leading to Night Blindness, Goitre, Anaemia and various birth defects. According to the National Family Health Survey (NFHS-4), 58.4 percent of children (6-59 months) are anaemic, 53.1 percent women in the reproductive age group are anaemic, 35.7 percent of children under 5 are underweight. Fortification is a globally proven intervention to address the much prevalent micronutrient deficiencies in the population.

Fortification of Nutrients in Staple Foods:

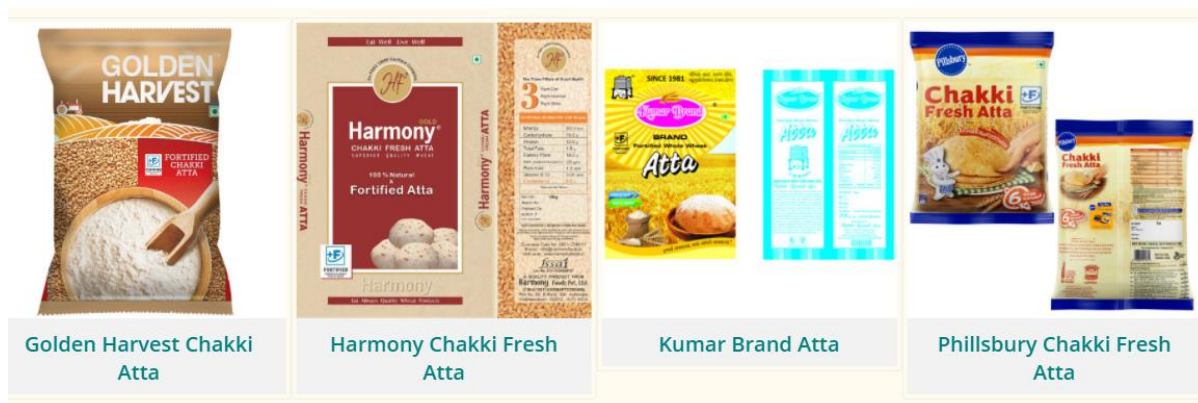


Wheat Flour: As per National Nutrition Monitoring Bureau (NNMB) survey (2012), Wheat is the staple food for most Indians in the wheat growing areas (North, West and Central India) and is consumed in the form of homemade *chapattis or rotis* (unleavened flat bread) using custom milled atta (whole wheat flour). Wheat flour is selected as a suitable vehicle for fortification to improve the nutritional status of the mass population.



MICRO-NUTRIENTS

Iron	Folic Acid	Vitamin B12
Zinc	Vitamin A	
Thiamine (Vitamin B1)		
Riboflavin (Vitamin B2)		
Niacin (Vitamin B3)		
Pyridoxine (Vitamin B6)		



Golden Harvest Chakki Atta

Harmony Chakki Fresh Atta

Kumar Brand Atta

Phillsbury Chakki Fresh Atta

Rice : Rice fortification may be considered as having the highest potential to fill the gap in current staple food fortification programs as it is the staple food of 65 percent of the Indian population and reaches the most vulnerable and poorer section - with the highest uptake in the government safety net programmes .The food and civil supplies department of each state empanels a number of rice millers in each district for regular supply of rice to the FCI, from which it is distributed to the social safety net schemes.



MICRO-NUTRIENTS

- Iron
- Folic Acid
- Vitamin B12

Asbah - Silver

Daawat Sehat Mogra

Double Fortified Salt: It is an innovative new fortified food product - delivering small but crucial amounts of iodine and iron to human beings through their diet. In general, DFS formulations are intended to provide 100% of daily dietary iodine requirement, and ~30 to 60% of daily dietary iron requirement. Dual fortification of salt with iodine and iron could be a sustainable approach to combat iodine and iron deficiencies. India's National Institute of Nutrition (NIN) has pioneered the development of double fortified salt (DFS). NIN has also taken the initiative to transfer the technology to iodized salt manufacturers in the country and provides continuous quality control support. The Micronutrient Initiative has developed DFS with encapsulated iron. In 2009, the Ministry of Health and Family Welfare has endorsed the addition of iron in double fortified salt at 0.8-1.1 ppm (mg/g of salt).




MICRO-NUTRIENTS

- Iron
- Iodine

TATA Salt Plus


TNSC Amma Salt

Edible Oil : Multiple micronutrient deficiencies are rampant in India, and continue to be significant public health problems, which adversely impact the health and productivity of all the population groups. More than 57% of children suffer from vitamin A deficiency, which may be symptomatic or present at the sub-clinical level. In addition, a high proportion of pregnant women and their new-borns suffer from Vitamin D deficiency. Vitamin D is also considered to play an important role in decreasing the risk of many chronic illnesses, including common cancers, autoimmune diseases, infectious diseases, diabetes and cardiovascular disease. Thus public health problems warrant public health intervention. As per Household Consumer Expenditure (HCE) Survey in India, NSSO report 2011, consumption of oil is reasonably high, about 20-30g / person / day and is consumed by all population groups. Since vitamin A and D are fat-soluble vitamins, fortification of edible oils and fats with vitamin A and D is a good strategy to address micronutrient malnutrition and fortified oil is known to provide 25%-30% of the recommended dietary allowances for vitamins A&D.




MICRO-NUTRIENTS

Vitamin A
Vitamin D




Kamani Oil
Mother Dairy- Dhara

Milk : Milk is a rich source of high quality protein, calcium and of fat-soluble vitamins A and D. Vitamins A and D are lost when milk fat is removed during processing. Many countries have a mandatory provision to add back the vitamins removed as it is easily doable. It is called replenishment as the nutrients lost during processing are added back. Since milk is consumed by all population groups, fortification of milk with certain micronutrients is a good strategy to address micronutrient malnutrition. India is the largest producer of milk in the world with 146.3 million tonnes of production and per capita availability of 322 grams per day . The dairy industry in India has progressed from a situation of scarcity to that of plenty.



MICRO-NUTRIENTS

Vitamin A
Vitamin D



Mother Dairy Kolkata
Mother Dairy

Benefits of Fortification:

- Nutrients are added to staple foods since they are widely consumed. Thus, this is an excellent method to improve the health of a large section of the population, all at once.

- It is a safe method of improving nutrition among people. The addition of micronutrients to food does not pose a health risk to people. The quantity added is small and well under the Recommended Daily Allowances (RDA) and are well regulated as per prescribed standards for safe consumption.
- It is a cost-effective intervention and does not require any changes in eating patterns or food habits of people. It is a socio-culturally acceptable way to deliver nutrients to people.
- It does not alter the characteristics of the food like the taste, aroma or the texture of the food.

CONCLUSION

Food Fortification has a high benefit-to-cost ratio. The Copenhagen Consensus estimates that every 1 Rupee spent on fortification results in 9 Rupees in benefits to the economy. It requires an initial investment to purchase both the equipment and the vitamin and mineral premix, but the overall costs of fortification are extremely low. Even when all program costs are passed on to consumers, the price increase is approximately by 1-2%, which is less than the normal price variation.

REFERENCE

Food safety & standard (fortification of Food) Regulation-2018

Guidelines for Use of Nutrition Claims CAC/GL 23-1997, (revised 2004). Joint FAO/WHO Food Standards Programme, Codex Alimentarius Commission, 1997
(http://www.codexalimentarius.net/download/standards/351/CXG_023e.pdf, accessed 7 October 2005)

WHO Food Fortification Guidelines