

POSHAN Maah 2020: Three Different Ways Of Food Fortification Explained

The process of including key vitamins and minerals such as iron, iodine, zinc, vitamins A and D to staple food items like rice, wheat, oil, milk, and salt is called food fortification

National Nutrition Month, Nutrition, Swasth India

[Aastha Ahuja](#) | Edited By: [Sonia Bhaskar](#)

September 15, 2020



Image credit: istockphoto.com/Barcin

Nutrition Month: Lack of important vitamins and minerals causes micronutrient-related malnutrition

HIGHLIGHTS

- A human body needs both macro and micro nutrients
- Fortified food aids in consumption of micro nutrients
- The food can be fortified either while production or cooking

New Delhi: In 1962 the Government of India initiated the National Goitre Control Program (NGCP) and mandated the use of iodized salt to eliminate goitre in the country. According to FSSAI (Food Safety And Standards Authority Of India), human body requires 150 micrograms of iodine, an essential micronutrient, every day. But, our diet does not contain sufficient amount of iodine hence, the government mandated consumption of iodised salt or fortified salt, which refers to addition of iodine in regular salt without changing its taste or texture. Since then the government has been trying to implement food fortification on a large scale. [Food fortification](#) has also been identified as one of the key strategies to achieve the target of Kuposhan Mukht Bharat (Malnutrition Free India) by 2022.

What Is Food Fortification?

The process of including key vitamins and minerals such as iron, iodine, zinc, vitamins A and D to staple food items like rice, wheat flour, oil, milk, and salt is called food fortification. The reason behind choosing staple items is to reach a larger population.

Why Is Food Fortification Required?

Food fortification is one of the ways to ensure the consumption of essential micronutrients. The vital micronutrients are added to improve the nutritional content which may or may not have been originally present in the food before processing or may have been lost during processing.

When we talk of nutrition security, we mandate the regular and appropriate inputs of macro nutrients (carbohydrates, proteins, fats) and micro nutrients (vitamins and minerals). While macro nutrients are needed in larger quantities, the proportion of micro nutrients is very minuscule. But, the role of micro nutrients in ensuring [nutrition security](#), and appropriate living and thriving is probably as much as macro nutrients if not more, explains Dr. Rajiv Tandon, Health Director, RTI, International India.

What Are The Different Ways Of Food Fortification?

There are three ways to improve the nutritional quality of staples by adding key micronutrients and these are:

Bio-fortification

Bio-fortification of staples simply means inculcating micro nutrients when the food is being grown. The process ensures availability of micro nutrients in the crop being sown. It includes the breeding and genetic modification of plants so as to improve their nutrient content and/or absorption. According to Dr. Tandon, though this is a good way to fortify food it is not easy. He says,

For bio-fortification you need to play with the genes of the plant and there are some people who are against the genetic modification of plants. However, scientists are working on bio-fortification of food and some countries have already started consuming such staples. Like, some countries have orange sweet potato which is actually a fortified and micronutrient rich version of regular sweet potato.

Orange sweet potato or the fortified sweet potato is a good source of Vitamin A which is essential for good vision, healthy immune system, and for the proper functioning of various organs including heart, and lungs.

Basanta Kumar Kar, a recipient of Global Nutrition Leadership Award, believes that the consumption of naturally bio-fortified food and food through conventional plant breeding is

safe and which can be promoted through kitchen garden and linking these with MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act).

Industrial Fortification

Industrial fortification involves adding micronutrients to staples such as flour, rice, cooking oils, sauces, and others while manufacturing. For example, spraying potassium iodate or potassium iodide solution on edible salt.

Similarly, rice fortification is done by adding Fortified Rice Kernels (FRK) to non-fortified or regular rice in a ratio of 1:100. Fortified Rice Kernels are manufactured by combining rice flour with required nutrients. The mixture is then made into rice-like grains that resemble the sheen, transparency, consistency and flavour of rice. Following this, FRK are added to the ordinary rice supply.

Industrial fortification of rice has been practised for many years and even made part of government schemes like mid-day meal. To assess the benefits of fortified rice, PATH, an NGO that is working in the health sector, did a study in Karnataka for the year 2016-2018, where fortified rice was integrated in the school meal program. The introduction of fortified rice led to a reduction in underweight, stunting cases.

For the same period, parents reported that the frequency of child falling sick at least once in three months had significantly reduced, informed Ruchika Chugh Sachdeva, Deputy Director, Maternal, Newborn, Child Health & Nutrition – India, PATH.

Home Fortification

Home fortification is considered as the easiest form of including micro nutrients through iron sprinkles or powdered nutrients or tablets. The fortified food or micronutrients can be added either while cooking or eating food.

What Are The Benefits Of Food Fortification And Is It Scientifically Proven?

Food Fortification is a scientifically proven, cost-effective, scalable and sustainable global intervention that addresses the issue of micronutrient deficiencies, states FSSAI.

Explaining the benefits of fortified food, Mini Varghese, Country Director, Nutrition International, said,

Fortification can make frequently consumed foods or daily staples more nutritious without any change in the dietary habits of the consumers. The demand and consumption of staples like wheat flour, rice, milk, oil, salt and others usually remain uninterrupted in every scenario and they are consumed across the population – from low to high income groups.

This makes food staples a great vehicle to add micronutrients to improve the nutritional status of the general population.

According to the studies done in the past, food fortification does help in addressing different forms of [malnutrition](#) and other diseases caused due to micro nutrient deficiency. In 2018-2019, PATH did a case-control study in Gujarat to understand the effectiveness of fortified rice. As part of the study, fortified rice was introduced into the mid-day meal program of 666 local schools of Ahmedabad.

The study showed significant improvement in haemoglobin levels among children and anaemia cases reduced by 10 per cent. Compared to the control group (non-fortified rice group), cognitive scores increased by 11.25 points among the children who consumed fortified rice, informed Ms Sachdeva.