

FREQUENTLY ASKED QUESTIONS (FAQs) ON RICE FORTIFICATION

1. What is Food Fortification?

“Fortification” means deliberately increasing the content of essential micronutrients in a food so as to improve the nutritional quality of food and to provide public health benefit with minimal risk to health; Fortification is a scientifically proven, cost-effective, scalable and sustainable global intervention that addresses the issue of micronutrient deficiencies.

2. What are the different classifications of Fortification?

World Health Organization (WHO) classifies food fortification into:

- Large Scale Food Fortification that is aimed at correcting widespread micronutrient deficiencies in the general population by fortifying staple foods,
- Targeted fortification that focuses on specific groups (children, pregnant women) to address their unique nutritional needs and Point-of-use fortification where micronutrients are added just before consumption (e.g., at home or schools),
- Market-driven fortification focuses on processed foods and is more widespread in industrialized countries,
- Bio fortification is the process that aims to increase the concentration of nutrients in edible portions of crop plants through conventional plant breeding; and
- Agronomic bio fortification involves applying specific micronutrient fertilizers to soil during crop growth.

3. Does fortifying staples undermine larger goals of diverse, healthy diets composed of whole grains, fruits, and vegetables?

One of the most effective, scalable, affordable, and sustainable ways to address micronutrient deficiencies is fortification of staple foods. It complements diet diversification to help complete a person’s daily nutritional needs. It fills the gap in nutrition in an easy manner without any change in taste, texture, or flavour of food, minimizing the requirement of behavioural change. While dietary diversification represents an ideal method to combat micronutrient deficiencies, it takes long to create impact and necessitates extensive consumer education. Additionally, it may not be economically viable for all individuals. In contrast, food fortification serves as a complementary strategy to dietary diversification and supplementation, effectively bridging the gap in nutritional requirements in a cost-effective and scalable manner.

4. Does the process of fortifying foods make them unhealthy?

Contrary to misconceptions, fortifying foods does not render them unhealthy or unnatural; rather, it enhances their nutritional value, leading to improved health outcomes. Food fortification entails the addition of essential vitamins and minerals to improve the nutritional profile of the food, addressing deficiencies and strengthening public health efforts. This practice has been embraced for decades across more than 100 countries. Fortification with

Iron, Folic acid and Vitamin B12 has been linked to a reduction in anaemia, maintenance of a healthy nervous system and support blood formation.

5. Why do we need fortification? Aren't healthy diets sufficient to meet the requirement of vitamins and minerals?

In India, a significant portion of the population, spanning all age groups, faces a challenge with the deficiency of vital micronutrients like Iron, Folic Acid and Vitamin B12. The nationwide data from the National Family Health Survey (NFHS-5) survey conducted in India, in 2019-21, showed prevalence of anaemia as 67%, 57% and 52 % among children (aged 6-59 months), women in the reproductive age group and pregnant women, respectively. This underscores the critical need for fortified foods to enhance the intake of essential nutrients such as Iron, Folate, Vitamin B12, Iodine etc. Many individuals, particularly those in resource-limited settings, struggle to access a diverse range of foods, which exacerbates the problem. Leveraging Large-Scale Food Fortification (LSFF) can effectively reach the most vulnerable populations, addressing the nutrient gap and thwarting deficiencies.

6. What kind of foods can be fortified?

Various staple foods are fortified on a global scale, encompassing wheat flour, maize flour, rice, edible oils, salt, milk and condiments. The particular fortification practices adopted may vary from country to country, based on factors such as dietary habits, prevalent nutrient deficiencies, and public health objectives. In 2018, the Food Safety and Standards Authority of India (FSSAI) notified standards for fortifying five key staples in India, namely wheat flour, rice, milk, oil and salt, with essential micronutrients such as Iron and others.

7. Is there a concern of overconsumption of micronutrients if multiple food vehicles are fortified?

As multiple foods are being fortified, the level of use of nutrients for fortification is kept in the range of 30-50% of Recommended Dietary Allowances (RDA) for adults as prescribed by ICMR-NIN (National Institute of Nutrition). This is to keep the nutrient intake within the limits of RDA and to avoid over-dosage of micronutrients.

8. Is it important to maintain caution when multiple layering of fortified foods is done with Iron supplementation?

Yes, it is important to maintain caution when multiple layers of fortified foods with Iron supplementation are consumed. When planning new public health interventions, there is a need for careful consideration in relation to existing programs.

9. Is it safe to give fortified food to non-micronutrient deficient people?

Yes, it is safe to give fortified food to non-micronutrient deficient people. The level of nutrients for fortification is kept in the range of 30-50% of RDA for adults, as prescribed by

ICMR-NIN. This is to keep the nutrient intake within the limits of RDA and to avoid over-dosage of micronutrients.

10. Is fortified food safe for all age groups and health condition?

Food fortification programs are designed so that they are safe for everyone in the population regardless of their age. The fortification levels for each food vehicle are calculated such that the additional micronutrients provided will provide the maximum number of individuals in the target population with adequate intake, without causing any excessive intake. The goal of food fortification is to ensure that 95% of the population in each life-stage group consumes the Estimated Average Requirement (EAR) of the nutrient of concern.

11. How is rice fortified?

In India, rice is fortified using extrusion technology. In this technology, milled rice is pulverized and mixed with a premix containing vitamins and minerals. Fortified rice kernels (FRK) are produced from this mixture using an extruder machine. FRK is added to unfortified rice in ratio ranging from 1:50 or 1: 100, resulting in fortified rice, nearly identical to unfortified rice in aroma, taste and texture. It is then distributed for regular consumption.

12. Is rice fortification an effective way to combat anaemia?

As per ICMR-NIN white paper report (2023) on EFFICACY AND SAFETY OF IRON FORTIFIED RICE IN INDIA: “Fortification of food is a cost-effective strategy to improve the nutrition status of populations. Studies have shown a modest decrease in anaemia, and no adverse effects have been reported thus far. However, as a public health measure fortification effort requires to be dovetailed with regular monitoring of dietary intakes, impact evaluation, adverse effects in different segments of populations, risk of over consumption, development of bio-markers of excess intake and long-term health effects. Policy on Behaviour Change Communication (BCC) on consequences of anaemia, role of fortification, importance of dietary diversity and cooking procedures must be prioritized in the programme.”

13. Are there any quality standards in place to ensure safe consumption levels of fortified rice?

FSSAI formulated and operationalized Food Safety & Standards (Fortification of Foods) Regulations, 2018 which came into force on the date of their publication in the Official Gazette by 1st January, 2019. It comprises voluntary standards for Salt, Oil, Milk, Atta, Maida, Rice and few processed foods products to improve the nutritional quality of food and to provide public health benefits.

14. Can we fortify all types of rice?

All varieties of rice can be fortified; however, this will require tailoring of fortified kernels accordingly.