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## Nutritional Security Through Food Fortification

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This article is based on **Biofortified food can lead India from food security to nutrition security**, which was published in The Indian Express on 30/08/2021. It evaluates the idea of food fortification to deal with nutritional insecurity and suggest the way forward.

The Prime Minister emphasised the need to ensure “poshan” (nutrition) to the country’s women and children. He announced that, by 2024, rice provided to the poor under any government scheme — **PDS, mid-day-meal, anganwadi** — will be fortified.

Leveraging science to attack the complex challenge of malnutrition, particularly for low-income and vulnerable sections of the society, who cannot afford balanced diversified diets, can be a good intervention. This step can have its own challenges.

### Advantages of Food Fortification

- **Increase in Nutritional Value:** The biofortified crops have 1.5 to 3 times higher levels of protein, vitamins, minerals and amino acids compared to the traditional varieties.
- **Safer Method of Fortification:** It is worth noting that these varieties are not genetically modified — they have been developed through conventional crop breeding techniques by the scientists.  
Moreover, the addition of micronutrients to food does not pose a health risk to people. The quantity added is so small and so well regulated as per prescribed standards that likelihood of an overdose of nutrients is unlikely.
- **Nutritional Security at Large:** Since the nutrients are added to staple foods that are widely consumed, this is an excellent method to **improve the health of a large section of the population, all at once.**
- **Does Not Require Behaviour Change:** It does not require any changes in food habits and patterns of people. It is a socio-culturally acceptable way to deliver nutrients to people.
- **It does not alter the characteristics of the food**—the taste, the feel, the look.
- **Quick Results:** It can be implemented quickly as well as show results in improvement of health in a relatively short period of time.

- **Cost Effective:** This method is cost-effective especially if advantage is taken of the existing technology and delivery platforms.
  - 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 overall costs of fortification are extremely low. Even when all program costs are passed on to consumers, the price increase is approximately 1-2%, less than normal price variation. Thus it has a high benefit-to-cost ratio.

## Indian Scenario

- Currently, 15.3% of the country's population is undernourished, and India has the highest proportion of "stunted" (30%) and "wasted" children (17.3%) below five years of age, as per the FAO's recent report, '**The State of Food Security and Nutrition in the World, 2021**'.

These figures indicate that India is at a critical juncture with respect to nutritional security and will not be able to achieve the UN's **Sustainable Development Goal (SDG)** of eliminating all forms of malnutrition by 2030 in the business-as-usual scenario.

- **Factors for Nutritional Insecurity: Access to nutritious food** is only one of the determinants of nutrition. Other factors like poor access to safe drinking water and sanitation (especially toilets), low levels of immunisation and education, especially of women, contribute equally to this dismal situation.
- As per the **Indian Council of Agricultural Research (ICAR)** website, **21 varieties of biofortified staples** including wheat, rice, maize, millets, mustard, groundnut had been developed by 2019-20.
- A research team at the **National Agri-Food Biotechnology Institute** in Mohali has also developed **biofortified coloured wheat (black, blue, purple)** that is rich in zinc and anthocyanins.

Farmers from Punjab and Haryana have been roped in to multiply the production of this wheat variety. This points towards the beginning of a new journey, from food security to nutritional security.

## Adverse Impacts of Food Fortification

- **Not a Substitute of Good Nutrition:** While fortified foods contain increased amounts of selected micronutrients, they are not a substitute for a good quality diet that supplies adequate amounts of energy, protein, essential fats and other food constituents required for optimal health.
- **Fails to Cater to the Poorest Segment of the Population:** Poorest segments of the general population have restricted access to fortified foods in the open markets due to low purchasing power and an underdeveloped distribution channel.

- **Inconclusive Evidence:**
  - Evidence supporting fortification is inconclusive and certainly not adequate before major national policies are rolled out.
  - Many of the studies which FSSAI relies on to promote fortification are sponsored by food companies who would benefit from it, leading to conflicts of interest.
- **Can Have Detrimental Effects:** Adding one or two synthetic chemical vitamins and minerals will not solve the larger problem, and in undernourished populations can lead to many detrimental effects like toxicity.
  - A study showed **iron fortification causing gut inflammation** and pathogenic gut microbiota profile in undernourished children.
- **Decrease Value of Natural Food:** Once iron-fortified rice is sold as the remedy to anaemia, the value and the choice of naturally iron-rich foods like millets, varieties of green leafy vegetables, flesh foods, liver, to name a few, will have been suppressed by a policy of silence.

## Way Forward

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- **Increasing Women’s Nutritional Literacy:** There is a direct correlation between mothers’ education and the wellbeing of children. Children with mothers who have no education have the least diversified diets and suffer from stunting and wasting and are anaemic.
  - Hence, programmes for improving the educational status of girls and reducing the school dropout rates, particularly at the secondary and higher educational levels, need to be promoted.
  - The **Global Nutrition Report (2014)** estimates that **every dollar invested** in a proven nutrition programme offers **benefits worth 16 dollars**.
- **Increasing Expenditure on Agri-R&D:** Innovations in biofortified food can alleviate malnutrition only when they are scaled up with supporting policies.
  - This would require increasing expenditure on agri-R&D and incentivising farmers by linking their produce to lucrative markets through sustainable value chains and distribution channels.
- **Private Investment:** The government can also rope in the private sector to create a market segment for premium-quality biofortified foods to cater to high-end consumers.
  - For instance, trusts run by the **TATA group are supporting different states** to initiate fortification of milk with Vitamin A and D.
  - Other private dairies should also be encouraged to scale up milk fortification across the country.
- **National Level Programme:** A national awareness drive on the lines of the “**Salt Iodisation Programme**” launched by the government in 1962 to replace ordinary salt with iodised salt, can play an important role at the individual and community levels to achieve the desired goals of poshan for all.

- **Branding, awareness campaigns, social and behavioural change** initiatives, such as community-level counselling, dialogue, media engagement and advocacy, especially amongst marginalised communities, can promote consumption of locally-available, nutrient-dense affordable foods among the poor and children.
- **Need For Multi-pronged Approach:** It must be recognised that in the long run, India needs a multi-pronged approach (access to basic infrastructure (electricity, drinking water and sanitation)) to eliminate the root cause of this complex problem. That approach should include the following initiatives.

### ***Drishti Mains Question***

Food fortification is an excellent method to improve the nutritional health of a large section of the population, all at once. Critically discuss.

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