

Aug 2, 2021

To:

Mr Ashok Kumar Mishra,  
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Cc:

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**Sub: Response to FFRC letter dated 19th November 2020, in response to our letter dated 5th November 2020 on Planned Mandatory Fortification in India of Edible Oils and Rice**

Dear Shri Ashok Kumar Mishra,

This is a long overdue response from our side to your letter addressed to Ms Usha S, dated 19th November 2020 which was in turn a response to our earlier letter from 5th Nov 2020 with the subject, "*Regarding FSSAI's planned mandatory fortification of Edible Oil with Vitamin A and Vitamin D and Rice with Vitamin B12, Iron and Folic Acid*". We appreciate your detailed response. However, we continue to have serious concerns about the implications of mandatory fortification on health and livelihoods in India and share these with you below along with solid supporting evidence.

**Questions on efficacy of Fortification remain unanswered - a blanket approach cannot meet the complexity of malnutrition in our country**

It is well known that undernutrition in the form of protein and calorie inadequacy is a fundamental problem in India, which the WHO confirms is a certain contributor to vitamin and mineral deficiency. Monotonous cereal-based diets, and low consumption of vegetables, eggs, milk, flesh foods, and fish have worsened the nutritional scenario, resulting in multiple vitamin and mineral deficiencies. According to the latest NSSO data, the share of calories from protein sources for Indians is only 6–8% (Bamji *et al.* 2020). In such a scenario, adding one or two synthetic vitamins or minerals in the absence of adequate calorie and protein consumption may in fact be toxic and have adverse outcomes in undernourished populations (Tiwari *et al.* 2011). For instance, iron fortification is known to have caused gut inflammation and pathogenic gut microbiota profile in undernourished children (Zimmermann *et al.* 2010).

Your letter states that the dosages of micronutrients added to staples is adjusted to provide 30-50% of an individuals' daily nutrient requirement. Nutrition science shows that Recommended Dietary Allowance (RDA) has limitations when applied to an undernourished population. RDA for an individual nutrient is calculated only when the RDA for all other nutrients is met (NIN 2008). Thus, RDA cannot be invoked for undernourished populations because of huge protein energy deficits. In all likelihood, fortification could result in toxic outcomes for undernourished populations and is highly concerning.

Fortification with one or two chemicals to address one nutrient deficiency will be limited by another nutrient deficiency. For e.g. haemoglobin synthesis requires not just iron but good

quality proteins and many other micronutrients as well (Dary 2011). Apart from iron, Vitamins A, C, E, B2, B6, B12, folate, magnesium, selenium, zinc are needed for hemoglobin synthesis. Only a diet that contains good quality proteins, vitamins and minerals will be able to address multiple nutrient deficiencies. Isolated nutritional deficiencies are unlikely in an undernourished population. Thus, this proposal for mandatory fortification citing RDA for micro nutrients while not taking into account the shortfall in macro nutrients of the population, is specious.

There are several studies that challenge the efficacy of fortification. The 2021 study by experts from the ICMR, AIIMS and the Ministry of Health published in the *Journal of Nutrition* highlights that increasing iron intake alone has no impact and cannot replace dietary diversity, which facilitates iron absorption while providing all other hematopoietic nutrients (Kulkarni *et al.* 2021). A meta-analysis of data from several rice eating countries shows that rice fortified with iron, vitamin A, or folic acid made no difference to anemia and little difference to Vit A deficiency (Peña-Rosas *et al.* 2019). Even for double fortified salt (DFS), which is widely promoted by the government through PDS and mid-day meals programs, large scale trials of effectiveness don't exist and there is little evidence of efficacy, while organoleptic changes have been significant (Kapil & Sareen 2014; Yadav *et al.* 2019).

Another important concern is the high level of carbohydrate consumption in India which is linked to diabetes, hypertension, heart disease and makes the focus on cereals as the vehicle of mandatory fortification as ill-advised as it will create a further dependence on cereals for essential vitamins and minerals at the cost of other nutrient dense food groups (Mohan *et al.* 2018). 5.4% children under five, 38.1% women and 45.3% men are already overweight or obese in India according to the NFHS 5.

### **Is prevalence data on micro-nutrient deficiencies reliable, or is it opportunistically cited and used by the government?**

There is no consensus about the prevalence of vitamin and mineral deficiencies in India. For instance, according to one set of scientists, anemia is over diagnosed based on their 2021 study published in the *Lancet* conducted by Indian scientists (Sachdev *et al.* 2021). Yet another 2021 study by researchers from the National Institute of Nutrition, St Johns, and the Sitaram Bhartia Institute of Science and Research published in the *American Journal of Clinical Nutrition* and based on latest CNNS (Comprehensive National Nutrition Survey 2018-19) data show that vitamin A deficiencies in young children are no longer a public health problem (Reddy *et al.* 2021). They warn that continuing with supplementation programs, and we include mandatory fortification, can lead to hypervitaminosis. Such studies are contradictory to FSSAI's portrayal of national scale deficiencies. How can any large scale and mandatory fortification program be put in place when such confusion exists about the extent of nutrient deficiencies?

Indeed, the picture of national scale vitamin and mineral deficiency differs across classes, and regions requiring diverse and localized approaches. FSSAI's portrayal shows that the government is comfortable with contradictory evidence used opportunistically to defend its inaction to address the issue of malnutrition holistically and to facilitate agribusiness led reductionist solutions.

### **Economic impacts on local economy and livelihoods**

Existing evidence shows that mandatory fortification of foods will have adverse economic impacts on consumers as well as informal players like small rice millers, oil ghanis/cold press oil mills, small farmers, and local enterprises. According to the FSSAI, international corporations will have the key role in supplying micronutrients, while Indian manufacturers will develop pre-mixes for essential food commodities, but there is no mechanism in place for price control of such micronutrients. Just five corporations have derived most of the benefits of global fortification trends and these companies have historically engaged in cartelizing behaviour leading to price hikes. The EU has even fined such companies for their cartelizing behaviour (Jitendra 2019). How will the FSSAI ensure that prices of such items are regulated?

Although FFRC in its letter claims that medium and large rice millers are being encouraged to fortify rice, the process itself is expensive and mandatory fortification will lead to many more small rice millers shutting down. An indicative cost of producing rice through fortification for a medium sized mill is Rs 3.2 crore (as mentioned in Pilot Scheme Fortification of Rice and its Distribution under Public Distribution System). The rice millers associations in Punjab and Haryana had been protesting against these new norms of fortification of rice since March 2021, and have forced the FCI to relax norms (Tribune News Service 2021).

Globally and in India, studies have shown that fortification programs lead to increased market share of formal players, and reduce market share of the informal sector (Dury *et al.* 2019; Fiedler *et al.* 2012). Even if small players are able to undertake such fortification activities, the costs for them are prohibitive. Evidence shows that large-scale processing firms tend to coordinate with larger producers through contracts to secure scale and homogenous quality of raw material supply (Nwuneli *et al.* 2014). Even when included, smallholders may not always benefit from contracts (Dury *et al.* 2019). Given the centrality of agrarian livelihoods to India, has the FSSAI conducted any economic and social impact studies on long term impacts of centralized and corporate led food fortification on livelihoods and local economy?

### **Why is fortification mandatory but dietary diversity optional?**

It is heartening to learn that the Authority does not consider fortification to be exclusive of, or alternative to food diversity, but It doesn't not seem like the FSSAI is promoting dietary diversification with the same energy or commitment as fortification. If the two are complementary approaches and if "*fortification only bridges the gap between the need and actual consumption of required micronutrients*" as stated in your letter, then why is fortification mandatory and dietary diversity not? We already know that dietary diversity is the non-negotiable factor when it comes to nutrition and could be complemented by other approaches like supplementation. When fortification becomes mandatory it will be the key policy approach while the other more critical holistic approach will not have a similarly enthusiastic policy support. 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 silence. Your letter states that fortification is not new with Vanaspatti and iodized salt fortified in the 50's and 60's, but we would urge the FSSAI to stick to current and evolving independent science which is questioning reductionist approaches to complex problems.

While the FSSAI's 'Eat Right India' is creating awareness about local and seasonal food according to your letter, what is the message when it is fortification that finds a mandatory

stature and a huge emphasis even in documents of Eat Right India/Eat Right School, while local alternatives like kitchen gardens, poultry, livestock, fish ponds, and numerous other initiatives barely find any mention despite being a tested solution to malnutrition. Even government schools, anganwadis, State Rural Livelihood Missions are increasingly showing greater interest in kitchen gardens while the FSSAI's key emphasis is on fortification.

### **Why push irreversible and costly approaches with dubious impact when more cost-effective alternatives exist?**

The FSSAI has said that fortification is a 'cost effective' option for easy nutrition to the masses. However, the long-term costs of fortification will be profound and irreversible. Mandatory fortification will lead to irreversible infrastructural and market shifts, including consolidation of corporate power; for instance, in our previous communication we already pointed out that current fortification schemes will create a market of over 3000 crores for just 5 big companies (Jitendra 2019).

A worrying long-term consequence of fortification is that it creates reliance on packaged foods and removes the focus from local foods, their production systems and eating practices. Dependence of large and diverse communities on packaged foods, means a regular source of income for corporate actors which will have no qualms in hiking prices.

Will the government be able to reverse fortification and its consequences once large-scale vitamin and mineral deficiency is resolved? Will the government be able to reverse manufactured dependence on cereals which can intensify large scale diabetes and hypertension, both a result of heightened triglycerides and insulin resistance from too much carbohydrate consumption?

There are already functioning and cost-effective alternatives like supplementation programs that already exist and can be made available right at the local level. Many experts have made recommendations on how to improve on-going supplementation programs to achieve better impact and this is a better strategy than irreversible interference with our food systems.

### **Conflict of interest in some of the quoted studies and need for more independent studies**

Three of the authors of the meta-analysis cited as Reference 5 in your letter (Keats *et al.* 2019) are from GAIN (Global Alliance for Improved Nutrition) which is a front for food companies and whose focus is on promoting fortification. Indeed, the study was funded by GAIN, which points to a strong conflict of interest. The study cited as Reference 6 in your letter was funded by the Nestle Nutrition Institute, which is an arm of a corporation that sells fortified foods and will directly benefit by such studies (Das *et al.* 2013). In various sectors, companies with vested interests often conduct studies that promote their own products, whether it be soft drinks, infant milk formulas, or tobacco. The FSSAI appears to be wilfully ignoring such conflict of interest by industry before promoting their products in the form of mandatory policy without any independent studies. There is a need for more independent studies not only on fortification but also comparing it with other solutions mentioned here.

### **Holistic solutions**

It is clear that the solution to malnutrition and vitamin and mineral deficiency has to be centred on protein-based adequate calorific intake from animal and plant-based diets. There are many holistic solutions that are easily scalable. Such solutions empower local communities themselves to improve their nutrition and don't create dependencies on external or global market players. This preserves local food sovereignty, even as solutions are biocultural.

Localization of diets should be an important first step approach from a nutrition standpoint. Instead of promoting homogeneous cereals across the country, it would be more effective to tap into the appropriate varieties of staple foods in a particular region, which are naturally rich in vitamin and minerals. For example, among plant-based foods, there exist at least 68 indigenous varieties of rice with very high (20 - 300 ppm) iron content (Deb *et al.* 2015; Sen Gupta *et al.* 2017). Several millets and vegetables are a rich source of iron, zinc and B vitamins. A wide range of vegetables (e.g. tender leaves of taro yam, amaranth, mustard, radish, *Ipomea aquatica*) and fruits such as pumpkin, papaya, mango etc. are known to contain a copious amount of beta carotene (Pritwani & Mathur 2017; Wall 2006). There are also a range of uncultivated food plants with high amounts of beta carotene and B vitamins (Deb 2018; Gupta *et al.* 2005), and most of these are available at no cost to the rural poor (Deb 2018). Several B vitamins have also been detected in more than 300 folk rice varieties (Roy *et al.* 2020). These same rice varieties and vegetables also contain calcium, zinc and phosphorus - vitamin and mineral s not even addressed in the fortification program document.

Even more important are nutrient-dense animal-based foods like eggs, meat, dairy, fish and even insects which are eaten in several parts of India. Instead of promoting these fully, but in a holistic and sustainable fashion that does not base itself on factory-farming of animals, the Government of India as well as state governments are thrusting a selective dietary approach into the existing food schemes of the Government, apart from this thrust on corporate-friendly fortification.

Locally made fortificants or food-to-food fortificants are another effective intervention to address vitamin and mineral deficiency. These include syrups, biscuits, porridges, powders and various products made from locally available ingredients like starchy foods, insects, green leafy vegetables, other vegetables, fruits, flowers, nuts, oils, and animal products (Kruger *et al.* 2020). Studies show that such food fortificants, when added to food, can improve nutritional status of consumers, while supporting local livelihoods and small local businesses (Chadare *et al.* 2019).

Community level nutrition approaches, like kitchen gardens, fish ponds, backyard livestock are proven methods in improving household nutrition security. Local households, women's groups, farmers collectives, small businesses can easily be supported via such approaches to play a role in feeding their communities especially in times of crises like the recent pandemic. Several kitchen garden efforts have successfully reduced vitamin and mineral deficiencies, improved dietary diversity and protein consumption, and led to deep community level education around nutrition (Bamji *et al.* 2020).

Reducing processing from polishing or refining is another important recommendation that FSSAI must make. For rice, the obvious solution is unpolished/less polished rice which has more nutrients. For edible oil, promoting unrefined cold pressed or filtered oils which are known to be more nutritious must be promoted. It is a tragedy that first vitamins and minerals in oils and rice are removed via polishing or refining and added later on at a huge cost in the name of fortification. The FSSAI should not have a discriminatory approach against unpolished rice or unrefined oils by mandating fortification.

It is evident from the current dismal indicators around nutrition in the country, that isolated deficiencies are not the problem, but the poor access of most people to nutrient dense foods in

adequate quantities. Addressing individual deficiencies with mandatory fortification is not a solution but only a way of routing public funds to the corporate sector. The government has to increase investment into local food systems that includes animal source foods (meat, milk/dairy, eggs, poultry, fish), pulses, vegetables, legumes etc. as a way of improving sustainable food production as well as local livelihoods.

We would like to continue this dialogue with the FSSAI and urge that reductionist, pro corporate, irreversible, and unnecessary steps like mandatory fortification are not taken at the expense of our food sovereignty and dietary diversity.

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76. Raman, Tula India
77. Suresh L, GoOrganicLife
78. Gopi Deva, OFM-Organic Farmers Market
79. Seethalakshmi, Safe Food Sundays;
80. Alladi Mahadevan, Organic Terrace Gardening ( fyi- this group has 35k members in FB)
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