

Challenges and opportunities of salt double fortified with iron and iodine

From: *The Double Fortified Salt Consultation Steering Group. Key Considerations for Policymakers - iodized salt as a vehicle for iron fortification: Current evidence, challenges and opportunities ahead. Journal of Nutrition 2020 (in submission)*

Leveraging the success of salt iodization, there has been interest to explore the feasibility of adding iron to iodized salt to produce double fortified salt. The intent of double fortified salt is to provide additional iron in settings where iron deficiency is widespread and contributes to an increased risk of anemia.

Coordinated by IGN and supported by UNICEF and the Bill & Melinda Gates Foundation, a series of meetings and discussions were held in 2019–2020 during which a Steering Group of salt and fortification experts deliberated on the evolving technology of adding iron to iodized salt. The key messages and research needs of the Steering Group are as follows:

Key messages

1. **Potential impact:** Studies in controlled settings (efficacy) demonstrate that double fortified salt (iron added to iodized salt; DFS) reduces the prevalence of anemia and iron deficiency anemia.
2. **Technical challenges:** Adding iron to iodized salt may lead to adverse changes in the product, specifically discoloration and losses in iodine content.
3. **Production requirements:** DFS Producers must use high-quality refined iodized salt meeting the minimum standards for DFS production (which is higher than standards for salt intended for iodization alone), and an iron formulation for which there are rigid quality assurance measures to ensure consistent quality and blending techniques.
4. **Costs to producers and consumers:** As a result of higher input costs both for input salt and the iron compound, DFS is substantially more expensive to produce than iodized salt and thus a higher production cost. The exact impact of this production level cost difference on the consumer price is specific to the conditions of different salt markets.

5. **Alignment with salt reduction:** WHO has long recognized that salt iodization is an important public health intervention to achieve optimal iodine nutrition and is compatible with salt reduction goals. Fortification of salt (with any nutrient) should not be used to justify or encourage an increase in salt intake to the public.
6. **Delivery platforms:** To date, DFS has been introduced into the retail market and in social safety net programs. However, sensory changes in DFS and higher price have been raised as concerns and thus limited DFS expansion in the retail market. There has been greater DFS penetration into social safety net programs, primarily in India, but with mixed experiences, as sensory changes are still an issue.
7. **Overall:** If the above challenges can be overcome, adding iron to iodized salt is a promising option for improving iron intake in populations where anemia is a major public health problem.

Research needs

- Develop global quality standards for DFS and the iron formulation(s) used in DFS.
- Undertake additional research to identify efficacious iron formulations for use in DFS that do not produce significant sensory changes or cause iodine losses.
- Explore technological options for DFS to be manufactured with lower quality input salt (e.g. lower purity and higher moisture), while maintaining acceptable sensory qualities and iodine retention.
- Review, and if necessary, further test, iodine stability in DFS formulations under real-world production conditions.
- Conduct cost-effectiveness analyses of different DFS formulations and of DFS in comparison with other fortification interventions for the prevention of iron deficiency and iron deficiency anemia.
- Evaluate consumer sensitivity to the price of DFS (and willingness to pay), to develop guidance on production cost levels likely to result a product acceptable in the open market



Production of double fortified salt in India