

# Micronutrient Fortification in Food: A Comprehensive Overview

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## Introduction

Micronutrient fortification, the deliberate addition of vitamins and essential trace elements to food, is a pivotal strategy employed by food manufacturers and governments to address dietary deficiencies and enhance public health. This practice becomes imperative when a region's staple foods or soil lacks specific nutrients, leading to large-scale deficiency diseases.

## Stages of Fortification

Fortification encompasses two stages: fortification and enrichment. Fortification involves deliberately increasing essential micronutrient content to improve nutritional quality, while enrichment refers to the addition of lost micronutrients during processing. Recognized by the WHO and FAO as the second strategy to combat global nutrient deficiencies, common fortified foods include cereals, dairy products, oils, and beverages.

## Types of Fortification

**Reinstating and Adding Micronutrients:** Grains lose nutritional value during processing; hence, certain nutrients are added back. Enriched flour, for example, sees the reintroduction of iron, folic acid, niacin, riboflavin, and thiamine. In contrast, other fortified foods contain added micronutrients not naturally present, such as calcium-fortified orange juice.

**Biofortification and Home Fortification:** Breeding crops for enhanced nutritional value (biofortification) and supplementing household staples (home fortification) with vitamin D drops are additional fortification methods.

## Micronutrient Deficiency Statistics

Over 2 billion people globally suffer from various micronutrient deficiencies, leading to malformations and diseases. Efforts to combat deficiencies, especially in iodine, vitamin A, and iron, were propelled by the revelation that approximately one in three individuals faced risks of these deficiencies.

## Advantages of Food Fortification

Micronutrient fortification offers several advantages:

- No Dietary Shift Required: Unlike dietary interventions, it

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doesn't demand a change in eating habits.

- Continuous Nutrient Delivery: Ensures a consistent nutrient supply without individual compliance.
- Preservation of Nutrients: Effectively maintains nutrient levels with regular consumption.

## Challenges and Concerns

Despite its benefits, food fortification faces challenges. Bioavailability issues arise when added nutrients aren't as effective as those naturally occurring. Safety concerns have led to restrictions in certain regions, with Denmark prohibiting the fortification of specific foods.

## Conclusion

Food fortification is a crucial step in reducing global nutrient deficiencies and associated health conditions. As an intervention

that aligns with regular dietary patterns, it offers a pragmatic approach to addressing widespread micronutrient deficiencies. Acknowledging challenges and ensuring safety standards are essential for maximizing the potential of this impactful public health strategy.