Food Fortification Using Some Natural Ingredients

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Short Communication

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ABOUT THE STUDY

The process of adding micronutrients to food is known as food fortification or enrichment. It can be carried out by food manufacturers or by governments as a public health policy aimed at reducing the number of people in a population who have dietary deficiencies. The predominant diet within a region may lack specific nutrients due to local soil or inherent deficiencies within staple foods; in these cases, adding micronutrients to staples and condiments can prevent large-scale deficiency diseases. Fortification is defined as "the practise of deliberately increasing the content of an essential micronutrient, as defined by the World Health Organization (WHO) and the Food and Agricultural Organization of the United Nations (FAO)." vitamins and minerals in a food, to improve the nutritional quality of the food supply, and to provide a public health benefit with minimal risk to health," whereas enrichment is defined as "the addition of micronutrients to a food that are lost during processing." The WHO and FAO have identified food fortification as the second of four strategies to reduce the global incidence of nutrient deficiencies. Cereals and cereal-based products, milk and dairy products, fats and oils, accessory food items, tea and other beverages, and infant formulas are the most commonly fortified foods, according to the FAO. Undernutrition and nutrient deficiency are estimated to kill between 3 and 5 million people worldwide each year.

Types

Fortification occurs in common foods in two ways: adding back and adding on. Enriched Iron, folic acid, niacin, riboflavin, and thiamine have been added back into flour [1]. Other fortified foods, on the other hand, have micronutrients added to them that do not occur naturally in those substances. Orange juice, for example, is frequently sold with calcium added. Food fortification can also be classified based on the stage of addition: Fortification for commercial and industrial use, bio fortification, and home fortification [2].

Examples of fortification in foods

Many foods and beverages around the world have been fortified, either voluntarily by product developers or by law. Although some may see these additions as strategic marketing strategies to sell their product, there is a lot more work that goes into a product than simply fortifying it. To fortify a product, it must first be proven that adding this vitamin or mineral is healthy, safe, and effective. The addition must also comply with all food and labelling regulations and provide nutritional support. A food developer must also consider the costs associated with this new product, as well as whether there will be a market to support the change. The Food Fortification Initiative lists all countries that have fortification programmers, as well as what nutrients are added to which foods in each country and whether the programmers are voluntary or mandatory. One or more countries have vitamin fortification programmers for folate, niacin, riboflavin, thiamine, vitamin A, vitamin B6, vitamin B12, vitamin D, and vitamin E. Programs for mineral fortification include calcium, fluoride, iodine, iron, selenium, and zinc. As of December 21, 2018, 81 countries required vitamin fortification of food. Folate is the most commonly fortified vitamin, as used in 62 countries, and wheat flour is the most commonly fortified food.

Folate

Folate aids in the reduction of homocysteine levels in the blood, the formation of red blood cells, the proper growth and division of cells, and the prevention of Neural Tube Defects (NTDs). The addition of folic acid to flour has prevented a significant number of NTDs in infants in many industrialized countries. Spina bifida and anencephaly are two common types of NTDs that affect approximately 2500-3000 infants born in the United States each year.

Niacin

Niacin has been added to bread in the United States since 1938, as part of a programmer that has significantly reduced the incidence of pellagra. Pellagra was found in poor families who relied heavily on corn as a food source. Although corn contains niacin, it is not in a bioavailable form unless it is nixtamalized, so it was not contributing to overall niacin intake. Pellagra, a disease associated with niacin deficiency, was characterized by the three D's- "dermatitis, dementia, and diarrhea." Others could be vascular or gastrointestinal disorders. Alcoholism, anorexia nervosa, HIV infection, gastrectomy, mal absorptive disorders, certain cancers, and their associated treatments are all common causes of niacin deficiency [3].

Vitamin D

Because vitamin D is fat-soluble, it cannot be added to a wide range of foods. It is commonly found in margarine, vegetable oils, and dairy products [4]. After the discovery of curing conditions such as scurvy and beriberi in the late 1800s, researchers wanted to see if the disease, later known as rickets, could also be cured by food. Their findings revealed that sunlight and cod liver oil were the cure. It wasn't until the 1930s that vitamin D was linked to the treatment of rickets.

CONCLUSION

This discovery resulted in the fortification of everyday foods like milk, margarine, and breakfast cereals. Rickets, osteoporosis, and certain types of cancer are all linked to vitamin D deficiency. It's also linked to a higher risk of fractures, heart disease, type 2 diabetes, autoimmune and infectious diseases, asthma and other wheezing disorders, myocardial infarction, hypertension, congestive heart failure, and peripheral vascular disease.

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