

Fortified staple foods

A simple, safe and cost-effective way to help close the micronutrient gap



The fortification of staple foods, such as flour, edible oil and rice, is a well-established, trusted and proven method of addressing micronutrient deficiencies on a large scale and in a cost-effective way. It involves adding, or replacing, essential vitamins and minerals that may have been lost during processing or are deficient in the population.

Fortification does not negatively impact the taste, appearance or texture of food, meaning consumer acceptance is increased and the need for a change in dietary habits is eliminated.

Why fortify staple foods?

By offering a long-term approach to addressing widespread micronutrient deficiencies, staple food fortification can ensure the proper mental and physical development of children and the good health of adults. This has the potential to significantly reduce healthcare costs by millions each year.

With the general health of the population improving, fortification also offers a wide range of economic benefits, including increased numbers of individuals in employment, and reduced instances of chronic illness in children, leading to improved performance in school. This can have a life-long positive impact on a person's livelihood and wellbeing, as well as achieving a huge social return on investment.

Making change happen

Ensuring the success of fortification initiatives in improving the nutritional status of the global population requires cooperation from both governments and the food industry worldwide. It is important that mandated fortification is properly monitored and enforced. Meanwhile, voluntary fortification gives food manufacturers the opportunity to add value to products and gain a competitive edge in the market.

Success stories:

Costa Rica
(wheat and maize flour, milk, sugar and rice fortification)

58% reduction in Neural Tube Defects (NTD)¹

and

79% reduction in anemia in children²

Chile³
(wheat flour fortification)

50% reduction in NTD

Iran⁴
(wheat flour fortification)

31% reduction in NTD

Fortifying staple foods

There is a wide range of staple foods that can be fortified, influenced by what is readily available and most commonly consumed in the target countries.

Flours

Wheat and maize flour can be easily fortified with a wide range of micronutrients, as can more locally available flours, such as cassava. As a leading expert in flour fortification, dsm-firmenich's knowledge and experience ensures the correct concentration, distribution and stability of micronutrients to meet specific regulatory requirements and quality standards.



Rice

Micronutrients in rice are often lost during the milling process. Fortification helps to replace them and address specific deficiencies in target populations.

There are numerous rice fortification technologies available, including extrusion and coating or dusting with micronutrient blends. The extrusion process ensures the stability of micronutrients during washing and cooking, and has a minimal impact on the finished product. As a pioneer in rice fortification, dsm-firmenich provides both fortified rice kernels and ready-to-use micronutrient blends. It can also assist in the development of the most appropriate micronutrient composition.

Vegetable oils and margarine

Vegetable oils and margarine are ideal cost-effective vehicles for fortification as fat soluble vitamins – A, D and E – mix uniformly with them. dsm-firmenich offers a variety of solutions, including custom-made premixes, for the fortification of oils and margarine.

Sugar

There are a range of alternatives available from dsm-firmenich for the fortification of sugar, all of which can be tailored to meet the specific needs of a target population. For example, across Latin America and Africa, a number of countries fortify sugar with vitamin A.

Instant noodles

Although regularly eaten across Asia and Africa, instant noodles typically lack nutritional value. dsm-firmenich's ready-to-use micronutrient blends can improve their nutritional profile, while our expertise can help you choose the right vehicle for fortification e.g. fortified noodles or seasoning.

Milk and milk products

Milk is considered to be a staple food in a number of countries due to its widespread consumption, as are some of its derivatives. Industrial processes often destroy the vitamins naturally present, but these can be easily replaced as milk is suitable for fortification with almost all vitamins and minerals. dsm-firmenich offers a broad portfolio of micronutrient blends in dry powder and oil form for fat soluble vitamins, in addition to its tailor-made premixes.



At dsm-firmenich, we know that creating brighter lives for people worldwide takes solid experience, technical expertise, and passion at every stage of the development process. That's why we constantly innovate affordable, aspirational, and accessible nutritional solutions, empowering our customers' products to change lives anywhere in the world.

1. Barboza Argüello MP, Umaña Solís LM. *Impacto de la fortificación de alimentos con ácido fólico en los defectos del tubo neural en Costa Rica*. Rev Panam Salud Publica. 2011;30(1):1–6.
2. Martorell R et al. *Effectiveness evaluation of the food fortification program of Costa Rica: impact on anemia prevalence and hemoglobin concentrations in women and children*. Am J Clin Nutr. 2015 Jan;101(1):210–7.
3. Cortés F et al. *Wheat flour fortification with folic acid: changes in neural tube defects rates in Chile*. Am J Med Genet A. 2012 Aug;158A(8):1885–90.
4. Abdollahi Z et al. *Efficacy of flour fortification with folic acid in women of childbearing age in Iran*. Ann Nutr Metab. 2011;58(3):188–96.

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