

RICE FORTIFICATION:

Globally combatting malnutrition and supporting immune health

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Nutrition plays a vital role in ensuring optimal immune health globally; a challenge that has become even more prominent in light of Covid-19. The World Health Organization's (WHO) recent dietary guidance, in the context of the pandemic, states that good nutrition is crucial for health, especially in times when the immune system might need to fight back.

However, the recommended amounts of essential micronutrients are not always easily obtained through a diversified diet alone. The pandemic is likely to disrupt food systems worldwide, particularly impacting vulnerable population groups like women and children.

The lack of accessible and affordable nutritious food in some regions means that people are not able to optimally support their immune system through nutrition, leaving them more susceptible to infection and at a greater risk of suffering serious repercussions from contracting Covid-19.

The public and private sectors have an opportunity to work together and ensure that all people, including the most vulnerable, have access to nutrient-rich food that can help them stay healthy and thrive. The question now is, how can public and private sector partnerships combat malnutrition and support immune health on a global scale?



The benefits of rice fortification

Food fortification has been shown to be one of the most successful, safe and cost-effective ways of improving the nutritional intake of large population groups worldwide, without needing to alter consumer behavior or expectations.

These initiatives can also help accelerate progress towards achieving the UN Sustainable Development Goals (SDGs) two and three (Zero Hunger and Good Health and Wellbeing, respectively).

Many of the world's most commonly consumed foods, such as rice, flour and oil, offer high energy value, but these products are not a good source of nutrients. For example, vitamins A, B6, B12, D, E, folic acid, iron, magnesium and zinc are particularly important for immune health but appear in limited volumes in many of these staple foods by the time they reach the consumer.

Rice is the most consumed food in the world but standard varieties of the grain lose many of their naturally occurring vitamins and minerals during processing. This means that even though rice provides adequate calories, it falls short of vital nutrients needed for optimal immune health.

The WHO therefore recommends fortifying rice as a public health strategy with a range of micronutrients, including iron, folic acid and vitamin A. Rice fortification is also currently mandatory in a variety of countries including Costa Rica, Nicaragua, Panama, Papua New Guinea, the Solomon Islands, the Philippines and in parts of the US. Some countries, such as India and Peru, have also introduced, or are in the process of launching, standards for rice fortification.

The most robust method of fortifying rice is through hot extrusion. It involves grinding and mixing rice flour obtained from broken grains with added nutrients such as fibers and amino acids to form a fortified dough, which is then passed through an extruder and mixed in with the non-fortified rice at a low additional rate of typically one percent. This method offers three main benefits: stability, acceptability and flexibility.

Through embedding the nutrients into the grains, the stability of the fortified rice kernels is increased and there is no need to further educate consumers on how to cook these products at home without removing the added nutrients.

The process also allows the fortified rice to maintain the same

taste, texture and visual appeal, helping to ensure consumer acceptance and improve cohesion between fortified and non-fortified rice products.

Finally, hot extrusion is a viable fortification method for many of the rice varieties on the market, including the most common products such as jasmine rice. This means that rice producers can provide more choice by offering the nutritionally dense product in a range of rice types.

The hot extrusion method can also be customised in line with the nutritional and health needs, such as energy and immunity support, of the target consumer demographic.

Hot extrusion is an affordable and effective way to improve the nutritional value of rice, whilst also ensuring that all people have access to fortified rice, which is a crucial part of the effort to improve nutrition, health and immunity globally. So, how can the public and private sectors introduce fortified rice into consumer diets around the world?

Implementing large-scale nutrition programs

Nutrition interventions utilising fortified rice have the power to show impressive benefits for both the individual and society as a whole. From large-scale public health nutrition strategies, and school feeding and workforce nutrition programs, to accessible commercial products, fortified rice can be implemented into the daily diets of millions of people across the world.

This change can help to support their immune systems, helping to keep the world's growing population healthy, with school feeding programs a great example of nutrition interventions in action. Millions of school children are chronically lacking the nutrients they need for optimal physical and cognitive health and development.

The World Food Programme (WFP) estimates that around 305 million primary school kids in low- and middle-income countries currently benefit from school feeding initiatives.

However, 73 million children across 60 countries still live in extreme poverty with no access to national school feeding programs, and school closures due to the Covid-19 pandemic are likely to have further increased the number of malnourished children globally. Together, the public and private sectors can implement nutritional interventions by providing fortified foods, such as rice, via school meals.

This allows governments to quickly improve the nutritional and health status of children to support their immune systems and ensure optimal cognitive and physical development, as well as provide parents with an incentive to send their children to school consistently.

Much like in schools, most of today's workers eat at least one catered meal at work every day. In low- and middle-income countries, this largely consists of staple foods such as rice, making it the perfect environment for implementing large-scale fortification programs.

Adding fortified rice into the everyday meals of workers can help to ensure they receive both the calories and micronutrients they need for optimal immune health, as well as mental and physical performance. This contributes to improved productivity and reduced absenteeism due to illness.

Large-scale nutrition initiatives, such as workforce nutrition and school feeding programs, offer great potential for improving nutrition and immune health on a global scale. By introducing these solutions, the public and private sectors can help to decrease healthcare costs, boost local economies and create brighter lives for all.


Delivering optimal and affordable nutrition for all

DSM has decades of experience in rice fortification, helping its public and private sector allies to develop and implement effective nutrition programs that have a real impact on populations worldwide.

As a purpose-led, end-to-end partner, DSM also supports the implementation of education and behavioral change strategies, both on a local and global level, to raise awareness about the benefits of rice fortification.

They also work with their customers and partners globally to develop inclusive and sustainable business models that encourage the development of high-quality, affordable and safe nutritional solutions, as well as their accessibility for people everywhere, including the most vulnerable populations.

For more information about how partnering with DSM can help you to innovate in the rice fortification market and improve immune health worldwide, visit www.nutritionimprovement.com



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