

A photograph of three young girls in school uniforms. The girl in the center is pointing upwards with her right index finger. They are all smiling and looking towards the camera. The background is slightly blurred, showing what appears to be a classroom setting.

DOUBLE FORTIFIED SALT
Feeding the Body and the Brain



Micronutrient
Initiative

A BREAKTHROUGH IN PUBLIC HEALTH

Double Fortified Salt is an innovative new fortified food product - delivering small but crucial amounts of iodine and iron to human beings through their diet.

Salt has been the vehicle for the world's most successful food fortification initiative to date - Universal Salt Iodization.

Award-winning research undertaken by the Micronutrient Initiative and the University of Toronto, with financial support from the Canadian International Development Agency and the World Bank, has resulted in the ability to enrich salt with both iodine and iron.

The fortification of salt with iodine has been hailed as one of the world's great public health advancements. Now breakthrough technology that allows salt to be double-fortified with iron as well as iodine has created an exciting new opportunity to reach the world with supplemental iron easily and inexpensively, without having to change people's habits.

Billions of people are affected by the hidden hunger of micronutrient deficiencies.

Double Fortified Salt presents one of the most cost-effective opportunities to deliver two of the most critical micronutrients for mental capacity, maternal and infant survival and human productivity.



SAVING AND IMPROVING LIVES

Iodine

The impact of iodine on intelligence is so significant that in communities where iodine intake is sufficient, average IQ is shown to be about 13 points higher than in iodine-deficient communities.

In spite of the progress in salt iodization, every year approximately 38 million children are born to iodine-deficient mothers. Eighteen million of them are born mentally impaired as a result – making iodine deficiency the world's leading cause of preventable intellectual disability.

Iron

Iron is critical for cognitive and motor development in childhood and for physical activity in all humans. In pregnancy, it reduces the risk of premature birth, low birth weight and maternal deaths due to haemorrhage. Iron supplementation for women and children, food fortification and other efforts are increasing iron levels.

Yet iron deficiency anaemia is the most common and wide-spread nutritional disorder in the world. It compromises the productivity of entire nations. Infants with iron-deficiency anaemia score lower on tests for mental and motor ability. And every year, iron deficiency claims the lives of some 115,000 women in childbirth and an estimated 600,000 babies within the first week of life.

Iodine deficiency is the world's leading cause of preventable intellectual disability

Iron deficiency anaemia is the most common and wide-spread nutritional disorder in the world

Iodine and Iron

Previously incompatible in food fortification, they can now be combined through new technology in Double Fortified Salt.

PIONEERS IN GLOBAL NUTRITION

The Micronutrient Initiative

The Micronutrient Initiative is an international not-for-profit organization dedicated to ensuring that the world's most vulnerable people get the vitamins and minerals they need to survive and thrive.

Our mission is to develop, implement and monitor innovative, cost effective and sustainable solutions to hidden hunger through supplementation and food fortification programs. We also strive to act as a catalyst for change.

The Micronutrient Initiative is saving and improving lives in more than 75 countries.

Venkatesh Mannar

M. G. Venkatesh Mannar has more than 35 years of experience in pioneering effective international nutrition and development initiatives focused on the world's most vulnerable citizens.

He has served as a managing director in India's salt industry and as an advisor on micronutrient deficiencies to such organizations as UNICEF, WHO, USAID and the World Bank. He has played a leading role in the global expansion of salt iodization.

Since 1994, he has been President of the Micronutrient Initiative.

His salt industry background, combined with his education in chemical engineering, experience in food technology and passion for improving the lives of the most vulnerable, sparked the idea to combine iodine and iron in salt to address two global health problems with a single solution.

In 2010, he was honoured as a Laureate in the Health category of the prestigious California-based Tech Awards for his work in developing Double Fortified Salt.



DETERMINATION AND INNOVATION

The Development of Double Fortified Salt

The concept of expanding the number of nutrients delivered through salt, beyond just iodine, was first conceived in 1969, but a broad array of chemical and technical problems stood in the way of implementation.

Through persistence and ingenuity, scientific research and technical expertise led to success.

- 1969** The Food Technology Journal publishes an article about the possibility of delivering multiple micronutrients through salt
- 1988** Venkatesh Mannar undertakes initial trials of double fortified salt through his work with UNICEF
- 1989** Venkatesh Mannar presents feasibility of double fortification of salt at the International Nutrition Congress
- 1993** The idea of working on double fortified salt is proposed by Venkatesh Mannar to the University of Toronto
- 2001** A process for coating iron particles with a vegetable fat is discovered to prevent the negative interaction of iodine and iron, and facilitates convergence with existing salt iodization practices, leading to iron premix
- 2003** Pilot tests for premix production are successfully completed by Glatt Technologies, USA and the technology is transferred to India
- 2004** Double Fortified Salt is produced by the Tamil Nadu Salt Corporation, India and introduced in mid-day school meals in the state
- 2008** A community-based study in Bangalore, India proves the efficacy of Double Fortified Salt in raising haemoglobin levels and addressing iron deficiency among primary school children



A VIABLE SOLUTION

Proven Technology

Tests and studies carried out by the Micronutrient Initiative and independent agencies confirm that Double Fortified Salt is:

- Stable during storage and transportation
- Bioavailable
- Safe for and acceptable to consumers
- Effective in reducing iron deficiency anaemia

Adaptable Technology

- Premix manufacturing technology is internationally transferrable
- As populations reduce their salt intake based on WHO recommendations, a simple adjustment in the blending ratio of iron and iodine with salt will ensure delivery of the same nutritional benefit

Affordable Product

- The cost of adding iron to iodized salt is about 6 cents per kg of salt
- Costs will decrease as greater volumes of premix are produced

INVEST NOW IN SOLUTIONS FOR HIDDEN HUNGER

For two decades, the Micronutrient Initiative has brought together governments, industry, consumer organizations, scientists, development organizations and donors to scale up micronutrient programs to save and improve lives.

Double fortified salt is just one example of MI's leadership in developing, researching, testing and scaling-up new approaches with the potential to change the course of progress.

We have developed better ways to iodize salt, introduced the use of simple tools such as cell phones for supply chain management and conducted leading-edge research on saving children's lives with vitamin A supplementation.

We are always striving to push the limits of innovation for improved nutrition. And we are always seeking those visionary partners who can help propel action.

Help us break ground in:

Women's health - to meet the challenge of reaching this broad, diverse and so often underserved segment of the population with sustainable initiatives to address their special health needs.

Child Development - to determine the right mix of micronutrients at the right age to fuel children's mental development and potential to change their world.

Child Survival - to introduce new zinc protocols to families to treat diarrhoea - one of the biggest killers of children under the age of five - and solve the puzzle of reaching the planet's elusive 'hardest-to-reach' children with immune-boosting vitamin A.

***Become a Micronutrient Initiative partner in
breaking down the barriers to improved nutrition***



*Iron deficiency anaemia drains the life and vitality out of development.
We have both the means and potential to achieve widespread improvement.
We need to apply both energetically.*

The World Health Organization



**Micronutrient
Initiative**

Contact:

The Micronutrient Initiative
180 Elgin Street, Suite 1000
Ottawa, Ontario, Canada K2P 2K3

Phone: 613-782-6800 Fax: 613-782-6838

Email : mi@micronutrient.org

Web site: www.micronutrient.org