



Latest Announcements

Challenge 2017

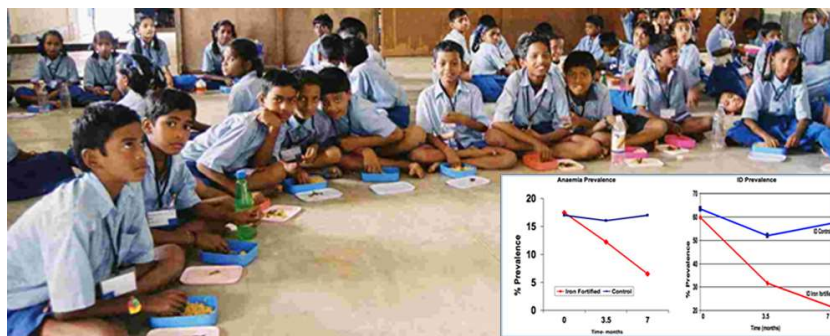
INNOVATIVE YOUNG BIOTECHNOLOGIST AWARD (IYBA) for Year 2017

New World Bank Project to Invest in Technology that Addresses India's Public Health Priorities

Other Links

[Forms & Downloads](#)
[Notices and Circulars](#)
[Project Database](#)
[Events](#)
[Archives](#)

Successful trial conducted on anaemic school children fed with Iron fortified wheat flour



Rapid fire:

- Forty percent of the world's children in their school going years are reported to be anaemic
- Flour fortification with iron (Fe) is the cost effective & sustainable way in reducing the prevalence of anaemia.
- Wheat is currently the primary staple food for nearly one-third of the world's population
- NaFeEDTA-fortified whole wheat flour fed children showed significant improvements in iron status by the end of the study

Iron status indicators of children fed with iron fortified wheat flour showed significant improvements by the end of the study conducted at St John's Medical College and Research Institute, Bangalore.

Iron deficiency (ID) and iron deficiency anaemia (IDA) are widespread globally. Forty percent of the world's children in their school going years are reported to be anaemic and cereal flour fortification with iron (Fe) is the most cost effective and sustainable way in reducing the prevalence of ID and IDA. Wheat is currently the primary staple food for nearly one-third of the world's population and forms the major cereal food consumed by the people living in Northern India.

Wheat flour fortification with elemental iron is technically challenging, primarily due to poor absorption from elemental iron and the presence of phytic acid. Sodium iron ethylenediaminetetraacetic acid (NaFeEDTA) is a unique fortificant, since it protects Fe from the phytic acid present in foods by binding more strongly to ferric Fe at the pH of the gastric juice in the stomach and then exchanging the ferric (Fe) for other metals in the duodenum as the pH rises. It is two-to-four fold more bio-available than ferrous sulphate, particularly in meals with high phytate content, thereby making it ideal for use in wheat flour.

A randomised controlled study (RCT) was carried out by St. John's Medical College, Bangalore to test if NaFeEDTA-fortified whole wheat flour could reduce ID and improve body iron stores (BIS), and iron parameters. Iron deficient (ID) school children (6-12 year old, n=401) were randomly assigned to either a daily wheat-based lunch meal fortified with 6 mg of iron as NaFeEDTA (as chappatis or dosa), or an otherwise identical unfortified control meal. Haemoglobin (Hb) and iron status were measured at baseline, 3.5, and 7 months.

Sensory assessments showed wheat flour fortified with NaFeEDTA was not different in appearance, taste, colour or texture from non-fortified wheat flour, and children consumed all the meals provided over the study period. Over 7 months, the prevalence of ID and IDA in the treatment group significantly decreased from 62% to 21% and 18% to 9%, respectively. Iron status indicators such as Hb, serum ferritin, transferrin receptor, zinc protoporphyrin and BIS showed significant improvements by the end of the study (all $P < 0.0001$). Testing of urinary zinc over the trial period showed that NaFeEDTA did not affect urinary zinc excretion. As per FSSAI standards, NaFeEDTA, due to its better bioavailability, can be fortified to a lower level than other iron salts in atta, maida or rice to a level of 14-21.25 mg/Kg.