

**Abstract of a major presentation at the
International Conference**

Forging Effective Strategies to Combat Iron Deficiency

**Atlanta, GA USA
7-9 May 2001**

**Organized and sponsored by:
ILSI Center for Health Promotion
Centers for Disease Control and Prevention
Emory University
Micronutrient Initiative**

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Complementary Foods

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Complementary foods are often based on cereals. The cereals can be combined with legumes, such as soy, or with milk to optimize protein nutrition. The high phytic acid content of cereals and the susceptibility of cereal lipids to oxidation makes it difficult to fortify weaning cereals with iron and to ensure an adequate iron absorption. Freely water soluble iron compounds of high relative bioavailability, such as ferrous sulfate, often cause unacceptable color and flavor changes. Poorly water-soluble ferrous fumarate is a useful alternative. It has equivalent bioavailability to ferrous sulfate and causes fewer adverse sensory changes. Another possibility is electrolytic iron which is less well absorbed than ferrous sulfate but which can be added at a higher level. The negative effect of phytic acid on iron absorption can be counteracted by the addition of ascorbic acid or by phytic acid degradation. Ascorbic acid enhances the absorption of all fortification iron compounds but must be protected from storage losses by sophisticated packaging or encapsulation. Complete phytic acid degradation can be achieved during manufacture by the addition of exogenous commercial phytases or by activating native cereal phytases. Iron and zinc absorption are greatly increased making phytic degradation an ideal approach for food aid programs. Fortifying complementary foods at the village level in developing countries is much more challenging. A new approach is the use of “sprinkles,” a small sachet containing iron and other nutrients, which can be sprinkled onto the complementing food prior to consumption. Preliminary results are encouraging.