

# **Flour Fortification with Iron, Folic Acid, and Vitamin B<sub>12</sub> in the Americas**

## **Regional Meeting**

**October 9-10, 2003 – Santiago, Chile**

**Institute of Nutrition and Food Technology, University of Chile (INTA)**

**Pan American Health Organization (PAHO/WHO) • Centers for Disease Control and Prevention (CDC) • March of Dimes (MOD) • United Nations Children's Fund (UNICEF)**

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## **BACKGROUND**

Fortification of foods for mass consumption is an important strategy for improving the nutritional situation of populations. In the Americas, wheat and/or corn flour are commonly consumed staples and excellent vehicles for fortification with iron, folic acid, B vitamins and other nutrients. About 22 countries are already fortifying wheat and/or corn flour with at least iron and other micronutrients. Still, there is much room for optimizing these fortified foods and reinforcing the programs, and the growing scientific evidence and lessons learned from country experiences are providing the know-how to achieve this.

Despite the ongoing flour fortification with iron, little contribution has been made in the reduction of iron deficiency anemia in the population, and variations in terms of enforcement of regulations, types and levels of the fortificant, manufacturing techniques and standards, quality control/quality assurance as well as other components of the program have been identified. One essential component of the process that needs to be addressed involves the type and amount of iron compounds used in food fortification. Factors to be considered in the selection of iron compounds, in terms of bioavailability, organoleptic characteristics, technological compatibility and costs, need to be specified. Criteria to define the levels for iron fortification and discussion on the feasibility of change to current fortification programs also need to be addressed. To this end, a technical consultation sponsored by PAHO, ILSI, USAID and INACG was held in 2001, in order to develop practical guidelines for the countries of the Americas on the type and level of iron compounds for food fortification based on state-of-the-art information.

Furthermore, the evidence linking folate insufficiency with the occurrence of neural tube defects (NTD) and the protective effect of increased folic acid intake in the prevention of NTDs have lend support to the recommendation of the U.S. Institute of Medicine in the National Academy of Sciences that all women of child-bearing age should consume 0.4 mg (400 mcg) of folic acid daily. However, achieving this recommended level through consumption of naturally occurring folates in foods is very difficult because of their low bioavailability. Providing folic acid supplementation to the entire at-risk population is also a major logistical challenge, even in developed countries. For these reasons, folic acid fortification is important for reaching a large number of the target population to increase their folate levels. At present, of the 22 countries in the Americas that are currently fortifying wheat flour with iron, 17 are also adding folic acid at levels that vary between 1.5 and 3.4 mg/kg flour. Food fortification with folic acid has been considered as a favorable intervention because of the technological compatibility in adding folic acid to the premix for food fortification; folic acid has not shown to cause sensory changes in the final products, and the cost of adding folic acid to foods does not significantly increase the cost of the final products. Nevertheless, folic acid fortification should be promoted in countries that are currently not fortifying with folic acid, and the

current level(s) of fortification should be reviewed, taking into consideration the nutritional requirement, the consumption level of the food vehicle, cost and safety.

In addition to folate, vitamin B<sub>12</sub> has received much attention for its association with pernicious anemia and blood level of homocysteine, which is a risk factor for heart disease and stroke when elevated. Vitamin B<sub>12</sub> deficiency can occur in individuals with dietary patterns that exclude animal or fortified foods and in adults 50 years of age and older who are unable to absorb vitamin B<sub>12</sub> in food. Given that the diet in Latin America and the Caribbean is generally based on corn, rice, wheat, beans, and potatoes, with relatively low intakes of foods of animal origin, vitamin B<sub>12</sub> deficiency is a major concern. Furthermore, there are concerns of the delay in the diagnosis of hematological and neurological impairments of vitamin B<sub>12</sub> deficiency and possible acceleration of neurological manifestations of vitamin B<sub>12</sub> deficiency in the presence of high levels of folate. Thus, vitamin B<sub>12</sub> should also be considered when fortifying with folic acid. In light of these considerations, PAHO, MOD, and CDC organized a technical consultation in early 2003, on “Recommended Levels of Folic Acid and Vitamin B<sub>12</sub> Fortification.”

The Regional meeting is the next step in the process of translating current scientific and programmatic knowledge into practice, by transferring the knowledge on optimizing flour fortification into the hands of policy-makers and program implementers in the Americas. The Pan American Health Organization (PAHO/WHO) is pleased to jointly sponsor this meeting with the Centers for Disease Control and Prevention (CDC), the March of Dimes Birth Defects Foundation (MOD) and the United Nations Children’s Fund (UNICEF), and hosted by the Institute of Nutrition and Food Technology, University of Chile (INTA). The Regional meeting will be held on **October 9-10, 2003, in Santiago, Chile.**

## **OBJECTIVES**

The objectives of the two-day Regional meeting are:

1. Review the nutritional status in terms of iron, folate and vitamin B<sub>12</sub> deficiencies in the Americas and the situation of flour fortification with iron, folic acid and vitamin B<sub>12</sub>;
2. Review and discuss the experiences and lessons learned from national wheat flour fortification programs;
3. Review the conclusions and recommendations of the technical consultations on “Iron Compounds for Food Fortification” (PAHO/ILSI/USAID/INACG) and “Recommended Levels of Folic Acid and Vitamin B<sub>12</sub> Fortification” (PAHO/MOD/CDC); and
4. Discuss and identify programmatic solutions to optimize flour fortification in the Americas.