



2 Editorial: Alliances against hunger

To help countries develop economically, governments need support from as many quarters as possible.

2 Improving the WFP food basket

To help it achieve the Millennium Development Goals, the World Food Programme is changing its strategy to improve the nutritional quality of the foods it supplies, and putting more focus on specific target groups.

4 Vitamin D status and cancer risk

A growing body of evidence suggests that people deficient in vitamin D may have an increased risk for cancer. However, the ability to identify who can benefit from vitamin D interventions is still limited.

6 Reinforcing regional collaboration

Nutrinet.org is a new website designed to support regional efforts to eradicate hunger in Latin America and the Caribbean.

7 Fortification still a good investment

In a recent white paper, the Flour Fortification Initiative defends food fortification as a worthwhile strategy in spite of increasing food prices.

8 News in brief:

Home fortification of complementary foods effective

Editorial:

Alliances against hunger

Hunger and malnutrition can severely impair people's health, capabilities and income, and are a major impediment to economic development. To solve this problem, national governments need support from as many quarters as possible. To put greater impetus into nutrition improvement efforts, numerous partnerships have been formed. Recognizing the urgent need for action, the World Food Summit officially launched the 'International Alliance Against Hunger' in October 2003. Founding members included various major organizations active in the field [1].

In 2008, a number of countries in Latin America and the Caribbean, led by the WFP, have initiated 'Nutrinet.org'. This web-based portal attempts to coordinate the dissemination of nutrition related knowledge and promote best practices throughout the region (page 6).

Another partnership that works consistently to reduce micronutrient malnutrition in the world is the Flour Fortification Initiative (FFI). FFI is a network of individuals and organizations representing the private, public and civic sectors; it combines resources and collaborates to make the micronutrient fortification of flour produced by large roller mills standard practice. Partners include farmers, grain buyers, grain marketing

organizations, millers, mill manufacturers, producers/distributors of flour improvers and fortificants, food industries that use flour, non-government organizations, UN agencies and government agencies.

Following the massive increases in food prices in 2008, even more people are suffering from hunger and malnutrition than before. To cope with the loss in purchasing power, they have to limit the quantity, quality or diversity of foods they consume. An increasing reliance on basic staples aggravates the risk of micronutrient deficiencies. Such deficiencies could have permanent consequences on physical and mental development if they occur during pregnancy or at critical stages of child growth.

To answer concerns that higher food prices might make staple food fortification unaffordable, the FFI has published a white paper on its web pages showing that flour fortification is still one of the best investments a country can make to improve its population's nutritional status and speed up economic development (page 7).

1. *Committee on World Food Security, Thirty-fourth Session, Rome, 14-17 October 2008, Agenda Item III: International Alliance Against Hunger.* http://www.fao.org/UNFAO/Bodies/cfs/cfs34/index_en.htm (CFS:2008/4).



A. Bowley

Feature:

Improving the WFP food basket

If we want to achieve the Millennium Development Goals, we must urgently and effectively address under-nutrition. For many years, the World Food Programme of the United Nations (WFP) has focused on meeting energy and protein needs, and has provided fortified foods to improve the micronutrient status of needy populations. The latest developments put an additional focus on meeting the nutritional needs of specific target groups. These include children younger than two years, pregnant and lactating women, moderately malnourished populations, people suffering from micronutrient deficiencies and people with chronic illnesses (HIV/AIDS, TB). To effectively prevent and treat the different forms of undernutrition among these groups, it is important that WFP considers the underlying causes and consequences, and develops realistic and effective programming options.

Ready-to-use therapeutic foods (RUTF) have revolutionized the treatment of severe acute malnutrition (severe wasting) and catalyzed the development of other efficacious food-based commodities. Such developments mean that people increasingly expect WFP to save even more lives, and to do a better job

at treating moderate acute malnutrition and improving the growth, development, health and future wellbeing of its beneficiaries. This is also of utmost importance to WFP for reaching its strategic objectives. These developments bring an increasing variety and complexity in the choice of appropriate solutions, commodities and programming implications.

Below, we discuss changes being made to the food basket, and describe the chosen target groups. These measures are to be used in combination with interventions that focus on water and sanitation, promotion of appropriate (breast) feeding practices and preventive health services.

Revised basket has more micronutrients

The WFP strategy for improvement of nutritional quality aims to ensure that each of the above-mentioned target groups consumes foods that provide the nutrients needed for good health. Children suffering from moderate acute malnutrition, for example, should receive all the nutrients they require (including sufficient vitamins and minerals) to catch-up and restore normal growth, have enough energy for physical activity and stay healthy.

For the past 30 years, humanitarian organizations have provided fortified blended foods (FBF) to any group with higher nutritional needs, such as the moderately malnourished and pregnant and lactating women. FBF contain high quality protein from soy and cereals (wheat or corn), as well as carbohydrates. A vitamin-and-mineral premix is added during production to provide a good source of micronutrients. Furthermore, FBFs do not cost much more than other commodities in the food basket.

However, selecting the appropriate mix of foods to promote good growth and development is a complex matter, and foods cannot be exchanged easily. Soy, for example, cannot simply replace milk. It is important to remember that foods not only contain nutrients (protein, vitamins, minerals etc), but also anti-nutrients (phytate, polyphenols, alpha-amylase inhibitors etc). Thus, foods with a comparable protein profile, such as soy and milk, may still have very different growth and health-promoting properties, because of their differing contents of specific nutrients and anti-nutrients.

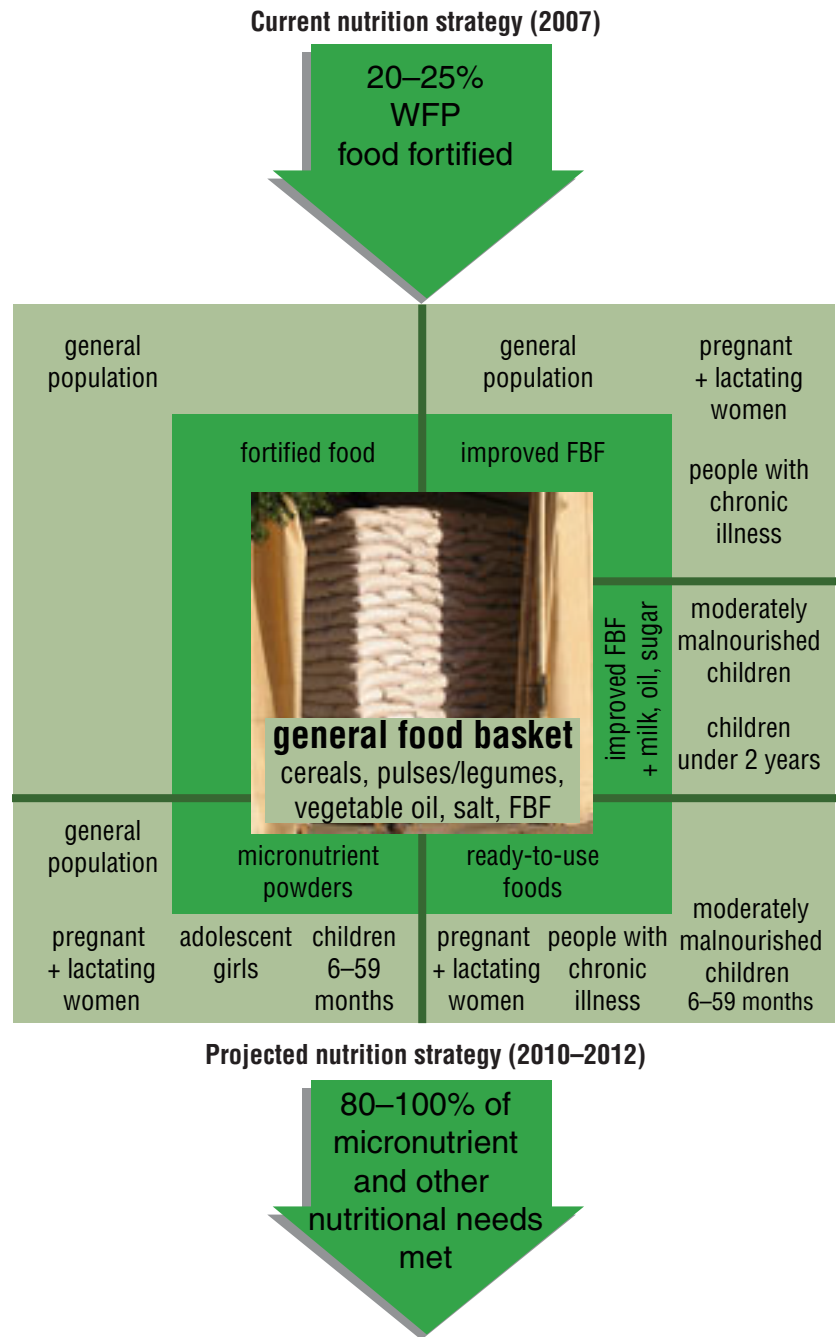
WFP has therefore decided to revise its food basket, to provide commodities that can better prevent and treat undernutrition, including micronutrient deficiencies (see figure). Changes that are being implemented include:

- **Fortified blended foods.** Improve the micronutrient profile of commodities such as corn soy blend (CSB) and wheat soy blend (WSB); dehull the soy to reduce anti-nutrient content; assess whether improved FBF can be made more suitable for young malnourished children by adding milk powder, oil and sugar during production.
- **Food fortification.** Continue to ensure that, wherever possible, processed foods such as wheat and maize flours, oil and salt are fortified for use by the general population and specific target groups. Facilitate home fortification with micronutrient powder mixtures (such as MixMe™ and Sprinkles™). WFP will also explore rice fortification, which is particularly important for populations whose staple food is rice.
- **Ready-to-use foods (RUF).** Develop and evaluate the use of nutrient-rich pastes (derived from RUTF), bars and biscuits for blanket as well as targeted distribution to children. This would provide up to 250kcal/d for children younger than two years and about 500kcal/d for children under five suffering from moderate malnutrition, and should markedly improve dietary quality, and reduce the incidence and prevalence of malnutrition. Potentially, pregnant and lactating women, and people who are chronically ill (TB, HIV/AIDS) could also benefit from RUF.

A targeted approach

The new strategy places more focus on specific target groups. These are:

- **Children younger than two years.** This is the most important group to consider, because preventing undernutrition at this early age is of great benefit to them, as well as to society as a whole. Stunting,



due to poor fetal growth and poor growth during the first two years of life, also results in reduced mental development. This leads to poorer school performance and reduced adult income earning potential. Stunted children become short adults, and, as short mothers, have low-birth-weight infants. Poor nutrition (inadequate intake of appropriate foods, frequent infections and suboptimal caring practices) is a major cause of poor growth. As it is difficult to reverse any damage done during early life, programs need to focus on improving diet, health care, and environment during this window of opportunity of early life (from conception up to 24 months of age).

- **Moderately malnourished children.** Moderate malnutrition encompasses two different conditions, wasting and stunting, both of which also present as

WFP food basket revisions (FBF = fortified blended food)

low weight for age. In most populations, underweight is mostly the result of stunting, due to undernutrition and infections accumulated during the first few years of life. Wasting, also known as acute malnutrition, generally results from weight loss due to illness or reduced food intake. Moderately malnourished children have an increased risk of dying, because of their increased vulnerability to infections. They also risk developing severe acute malnutrition, which is immediately life threatening. Moderately malnourished children are one of the main target groups for the improved fortified blended foods with milk powder and for ready-to-use foods.

- *People chronically ill with TB, HIV/AIDS or both.* These individuals need good nutrition and food security for themselves and their family members, in addition to medical treatment. Ensuring food security can mitigate poverty, and might possibly help to avoid the high-risk sexual behavior causing the spread of infection in populations with a high prevalence of HIV.
- *Children and adults with micronutrient malnutrition.* Micronutrient deficiencies are very widespread, and should be addressed in people of all ages. It can be assumed that micronutrient deficiencies exist in all populations whose diets lack fortified or animal source foods. Groups with high needs, such

as young children and pregnant/lactating women, run the greatest risk. In these same populations, stunting is widely prevalent as well. Thus, different nutrition issues should not be tackled in isolation, because they generally occur together in the same populations and often in the same individuals.

- *Pregnant and lactating women.* Pregnant and lactating women have higher nutritional needs to ensure proper growth and development of the fetus, and to provide milk for their infant. Many women start pregnancy with a suboptimal nutritional status, and therefore need nutritional support both for themselves as well as the baby.

To improve the nutritional quality of its food basket, WFP collaborates with several partners. They include scientists, other UN agencies, NGOs and the private sector. As well as providing more information, improvements include buying different products, modifying programs and evaluating the impact of the changes. The partnership between WFP and DSM is a great facilitator in this regard, as it provides WFP access to both technical expertise as well as to funds and products (vitamin/mineral premix, micronutrient powders and active compounds such as enzymes) for piloting new approaches, which is essential before large-scale implementation.

Saskia de Pee, Tina van den Briel and Martin W Bloem, WFP, Rome

Feature:

Vitamin D status and cancer risk

Vitamin D deficiency causes rickets in children, and will precipitate and exacerbate osteopenia, osteoporosis and fractures in adults. Ecological studies show that many diseases, such as cancers of the colon, breast and prostate, autoimmune diseases (type-1 diabetes, multiple sclerosis, Crohn's Disease and rheumatoid arthritis), hypertension and infectious diseases (e.g. acute respiratory infections and tuberculosis), are more common at higher northern or southern latitudes.

Hypothesis not yet confirmed

A growing body of epidemiological, preclinical and clinical evidence suggests that low vitamin D intake, exposure and/or status increase the risk for various types of cancer. Many tissues, including the prostate, colon, breast and pancreas possess the enzyme that synthesizes 1,25(OH)₂D from 25(OH)D. Most of these tissues also contain the vitamin D receptor. These observations provide the presumed mechanism whereby vitamin D/sunlight influences the development of cancer at these sites. However, a conference held at the US National Institutes of Health in 2007 concluded that the totality of the literature is inconclusive [1].

The scientific evidence suggesting that vitamin D is protective against colon cancer is the strongest. In a recent meta-analysis of studies that examined serum 25(OH)D levels prospectively in relation to colorectal

cancer, individuals with 25(OH)D concentrations >82 nmol/L had a 50% lower incidence of colorectal cancer than those with 25(OH)D <30 nmol/L. While the evidence suggesting a relationship between vitamin D status and colon cancer is fairly strong, the relationship with other cancers is less consistent. Despite abundant experimental evidence in support of an inverse association between vitamin D status and breast cancer risk, the available epidemiologic evidence provides, at best, limited support for such an association. Similarly, the association between vitamin D status and prostate cancer risk is not clear. These data suggest that not all tissues respond identically.

A reason for inconsistencies in the findings might be that vitamin D is more important for cancer progression than for total incidence. If the risk associated with low vitamin D status is conferred early in life, it would be irrelevant to measure circulating levels of 25(OH)D or dietary intake in adults, and the dose-response relationship between 25(OH)D and cancer risk might only be observed at very low levels of 25(OH)D. Additional studies are needed to determine the dose-response relationship between vitamin D status and cancer risk, the optimal level of 25(OH)D, the length of time required to observe an effect, and the period of life when exposure is most relevant.

Most scientists believe that a controlled intervention

study is the “gold standard”. In a randomized, double-blind, placebo-controlled trial, Lappe et al. observed that women who ingested 1400–1500 mg calcium and 1100 IU vitamin D daily for 4 years, had a 60% lower risk for developing cancer [2]. When the investigators confined their analysis to cancers that were diagnosed after 12 months, the risk was reduced by 77%. While impressive, this was a secondary analysis from a study investigating indicators of bone health, and none of the women received vitamin D alone. The sample size was also insufficient to determine if there were differences across cancer sites. Clearly, additional intervention studies are needed to verify this response and to determine whether it varies depending on the specific tissue, age, gender and duration of exposure.

Vitamin D status affects cancer prognosis

Recent studies have shown that vitamin D status, season of diagnosis and cancer survival are related [3, 4, 5]. Ng et al. found an association between higher prediagnostic plasma 25(OH)D concentrations and a significant improvement in overall survival in patients with colorectal cancer. Zhou et al. observed that patients with early stage lung cancer who had high intakes of vitamin D and had surgery in sunny months were more than twice as likely to be alive five years after surgery than patients with low intakes of vitamin D who had surgery in the winter. In follow-up studies with this cohort they measured serum 25(OH)D concentrations and found that vitamin D status was also associated with improved survival of patients with early stage non-small-cell lung cancer. Similarly, Lim et al. found evidence of substantial seasonality in cancer survival. They saw that patients diagnosed in summer and autumn (especially women with breast cancer and patients of both sexes with lung cancer) survived longer than those diagnosed in winter. These studies suggest that higher vitamin D status may improve cancer prognosis and survival.

Vitamin D may promote cancer risk

Evidence also suggests that higher vitamin D status may increase cancer risk in some individuals. For example, Chen et al. compared quintiles of 25(OH)D and observed a direct relationship between higher vitamin D status and the development of esophageal carcinoma in Chinese men [6]. Interestingly, all of the participants, including those in the highest quintile, were vitamin D deficient (<20 ng/mL 25(OH)D). In a study in Finnish smokers, Stolzenberg-Solomon et al. associated higher baseline vitamin D status with a 3-fold increased risk of pancreatic cancer [7]. According to Tuohimaa et al. both low (<19 nmol/L) and high (>80 nmol/L) 25(OH)D concentrations are associated with an increased incidence of prostate cancer (50% and 70% respectively) compared with individuals with 25(OH)D levels between 40 and 59 nmol/L [8]. Ahn et al. also associated higher circulating 25(OH)D concentrations with an increased risk for aggressive prostate cancer [9]. Before recommending high doses

of vitamin D or increased sunlight exposure to the general public, there is obviously a need for a better understanding of vulnerable individuals, to establish who may be placed at risk by a higher vitamin D exposure.

Modifiers of vitamin D metabolism

Vitamin D metabolism is influenced by several dietary and environmental components [1]. It is already well known that low serum calcium concentrations stimulate renal synthesis of 1,25(OH)₂D from 25(OH)D. Recent evidence suggests that dietary genistein inhibits CYP24, the enzyme that inactivates 1,25(OH)₂D. This, in turn, increases the production and serum half-life of 1,25(OH)₂D and the expression of the vitamin D receptor. Dietary folate can also inhibit CYP24 activity by increasing the methylation status of the promoter region and down-regulating expression of the gene. These results demonstrate that it will be very difficult to establish an optimal concentration of 25(OH)D for health, since it depends on multiple dietary components.

Vitamin D status also relates to body fat and physical activity. Various large observational studies, including NHANES III, have associated obesity with lower circulating levels of 25(OH)D. Although the mechanism is unknown, several hypotheses have been proposed. These include sequestration of vitamin D in fat cells, negative feedback from higher circulating 1,25(OH)₂D levels during obesity, and lower sun exposure due to avoidance of outdoor activity by the obese. Higher physical activity has also been linked to higher circulating levels of 25(OH)D. It is not known, however, whether this reflects a direct relationship between physical activity and vitamin D metabolism or is a result of confounding by body fat or sun exposure. Furthermore, both the relationship between vitamin D status and obesity, and vitamin D status and physical activity were stronger in Caucasians than in African Americans. These types of relationships highlight the importance of identifying confounders and modifiers of the biological response to vitamin D, including dietary factors, lifestyle factors such as exercise, and race/ethnicity.

Urgent need for more research

Many of the research gaps about vitamin D relate to the need to develop predictive, validated and sensitive biomarkers for health outcomes and the dearth of controlled intervention studies. The ideal biomarkers should reliably evaluate “intake” or exposure to vitamin D, assess one or more specific biological “effects” that are linked to cancer, and effectively predict individual “susceptibility” as a function of nutrient-nutrient interactions and genetics. This biomarker information is fundamental to evaluating who will benefit most from increased vitamin D intake/exposure. There is also a need to evaluate potential adverse effects of long-term high-dose vitamin D exposure. This includes a better understanding of the dose of vitamin D associated with

Terminology:

25(OH)D: 25-hydroxyvitamin D, the main circulating form of vitamin D.

1,25(OH)₂D: 1- α ,25-dihydroxyvitamin D, the biologically active hormone that regulates absorption of calcium from the diet, and the calcification of hard tissues.

CYP24: a cytochrome enzyme responsible for vitamin D degradation. Cytochromes are colored cellular proteins.

Genistein: an important bioactive component (isoflavone) in soybean.

NHANES III: National Health and Nutrition Examination Survey, 1988–1994. Assessed the health and nutritional status of adults and children across the United States.

For more information about the role of vitamin D in health, please see the article “Update on vitamin D” in Nutriview 2007/3.

toxicity, and the factors involved (age, race, gender, body size and/or health status). Thus, although the current body of evidence is intriguing, there are still many unanswered questions that limit the ability to identify who will benefit from vitamin D interventions and who will be placed at risk.

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Feature:

Reinforcing regional collaboration

Nutrinet.org (<http://nutrinet.org>) is developed as a tool to facilitate south-south cooperation and strengthen capacities of governments and several stakeholders involved in the prevention of hunger and undernutrition in Latin America and the Caribbean (LAC).

The initiative was led by the World Food Programme of the United Nations (WFP). It reinforces regional efforts to collect, validate, disseminate and share all the relevant information, knowledge and best practices available towards the eradication of hunger and undernutrition in a single source on the internet.

Nutrinet.org incorporates an interactive and decentralized online tool (knowledge management portal) and the established networks of governments and other actors. It seeks to share the lessons learned, and to promote successful experiences and best practices for sustained and efficient nutritional interventions.

The portal has been endorsed by more than sixteen regional conferences at the highest political level, and is expected to contribute significantly to the design and improvement of public policies, strategies and long-range nutrition interventions to eliminate hunger and undernutrition in the region. Following the Regional Ministerial Conference “Towards the Eradication of Child Undernutrition in Latin America and the Caribbean”, that was held in Chile in May 2008, Nutrinet.org received the unanimous support of all countries as a tool to increase efforts, and to promote and facilitate the cooperation among countries in LAC.

Nutrinet.org is divided into five thematic areas identified as priorities. Three of them (maternal-child nutrition; school feeding, vitamins and minerals) are already available. Two others (HIV and nutrition, food and nutrition vulnerability) are under development. These five areas reflect the most common categories of programs, projects and actions of social protection

nutrinet.org home page

The screenshot shows the Nutrinet.org website interface. At the top, there is a navigation bar with tabs for 'Inicio', 'Inicio de sesión', 'Áreas Temáticas', 'Servicios', 'Guías Multimediales', and 'Nutrinet.org'. The main content area is divided into several sections. On the left, there is a large image of a woman and a child. To the right of this image, there are several smaller images and text boxes, including one with a play button icon. Below these, there is a news section with a headline in Spanish: "El Caribe: FMA entrega ayuda alimentaria a afectados por huracanes". The right sidebar contains several promotional boxes for various programs, including "CURSO" (Curso de Formación y Capacitación en el Manejo de Alimentos Seguros), "FORO" (Foro de Discusión y Debate), "CURSO" (Curso de Formación y Capacitación en el Manejo de Alimentos Seguros), "FORO" (Foro de Discusión y Debate), "CURSO" (Curso de Formación y Capacitación en el Manejo de Alimentos Seguros), and "FORO" (Foro de Discusión y Debate).

that exist in the region. Subsequently, other thematic areas will be added.

Linking regional and national information

The main portal offers options for consultation and enables users to search for information on government policies, plans, programs, projects and strategies in current deployment. In addition, it provides access to existing information on nutritional status, results and impact of interventions, and best practices and methodologies. Nutrinet.org services include:

- *A database*: easily accessible and navigable information on programs and projects, institutions, experts, businesses and products.
- *A digital library*: publications, books, essays, journal articles, statements, presentations and other related documents.

- *Best practices*: reports of best practices demonstrating how nutrition can be improved effectively and sustainably.
- *Distance education*: “online” educational units that facilitate formal training and provide new alternatives for academic training.

To date, a regional and eleven national portals are available (Bolivia, Colombia, Cuba, Ecuador, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Peru and Dominican Republic). These are the LAC countries where WFP has an institutional presence. Currently, most of the information is in Spanish. An English version and the inclusion of other countries are planned.

To contribute to building knowledge, to stay informed and to share your views towards the eradication of hunger and undernutrition, contact: informacion@nutrinet.org

Review:

Fortification still a good investment

The Flour Fortification Initiative (FFI) is a global network of individuals and organizations representing the private, public and civic sectors that advocates for the addition of micronutrients to flour-based products as a standard practice in large roller mills. In a recent white paper (which can be downloaded from the web site at: http://www.sph.emory.edu/wheatflour/PUBS/ffi_white_paper.pdf) the FFI estimates that fortification is still worthwhile even in the face of escalating food prices. The paper draws attention to the fact that a quality premix containing iron, zinc, folic acid and other B vitamins can be added to a metric ton of flour for under \$3, less than one percent of the cost of the wheat.

It tells us that foods made with fortified flour help consumers to “fill the gap” that exists when their diet is not nutritionally balanced. An improved nutritional status not only helps to reduce a nation’s health care costs, it also pays long-term dividends in the form of greater economic productivity. According to a 2003 study by UNICEF and the Micronutrient Initiative, anemia in women is responsible for \$10 billion in economic losses annually. As another example, it quotes the case of mandatory fortification of flour with folic acid in Chile, which has almost halved the prevalence of neural tube defects (NTD) in the country. The program would only need to prevent the birth of

two children with NTD to recuperate the annual cost of fortification for the whole country.

In the face of a food price crisis, the paper says, poor people economize by eliminating the more expensive (and more nutritious) foods from their diet, and by spending less on things like health care and education. The FFI realizes, nevertheless, that even the minimal cost of fortification can pose a formidable barrier, unless all the stakeholders (governments, producers, donors and consumers) support the measure.

The value of forming a national coalition is exemplified in the experience of Indonesia, where mandatory wheat flour fortification saves \$127 million in averted health care costs annually at a cost of only \$5 million (plus \$1 million to raise awareness among consumers). Following a temporary setback in legislation in early 2008, the Fortification Coalition of Indonesia raised its concerns to the country’s president, who reinstated the national standard. Indonesia’s deputy minister of agriculture has since confirmed that fortification is not a barrier to trade, and doesn’t cost much. The national milling industry now considers flour fortification as a normal part of doing business.

The paper concludes that food fortification is one of the best investments for development that a country can make.

A. Bowley

Corrigendum

In Nutriview 2008/3, page 6, the illustration showing ingredient costs was incorrect. It put the amount of vegetable oil that could be spoiled by a poor quality vitamin A at 67 kg. This should be 67 metric ton as described correctly in the article. The corrected version of 2008/3 is now available on the website at: <http://www.nutritionimprovement.com/nutriview.html>. We are sorry for the inconvenience.

News in brief:

Home fortification of complementary foods effective

To assess the effects of increasing micronutrient intakes on growth, motor development and iron status of six-month-old infants in Ghana, Adu-Afarwuah et al. provided mothers with one of three supplements, and instructed them to add the product to the infants' usual home-prepared complementary food (fermented, maize-based porridge) every day for six months [1, 2]. There were about 100 children in each group. The supplements tested were:

1. 'Sprinkles', a powder in single-dose sachets containing the vitamins A, C, D and folic acid, as well as iron and zinc;
2. 'Nutritabs', single-dose crushable tablets containing the vitamins A, B-complex, C and folic acid, as well as calcium, potassium, selenium, copper, iodine, iron and zinc;
3. 'Nutributter', a concentrated ready-to-use spread in 200g foil packs (daily dose 20g) containing the same nutrients as 'Nutritabs' plus essential fatty acids and milk powder.

At baseline, all infants were receiving breast milk, and average growth status was normal. Groups did not differ significantly in demographic/socioeconomic characteristics or morbidity. Field workers collected data on morbidity and supplement consumption at weekly intervals, and calculated energy intake every month.

When the infants were twelve months old, the investigators compared anthropometric status, morbidity, micronutrient status and motor milestone acquisition (ability to stand/walk with assistance or independently) of the supplemented infants with a control group of 96 non-supplemented infants of the same age.

All the supplements tested improved iron status and anemia prevalence, but only 'Nutributter' had an impact on growth. The investigators suggest that the effect on linear growth was largely due to the essential fatty acids in it, rather than to increased energy intake. The other groups showed the typical developing-country decline in relative length-for-age between 6 and 12 months compared to WHO growth standards. Almost half of the infants in the 'Nutributter' group (49%) were able to walk independently at 12 months, compared to 39% of those fed 'Sprinkles', 36% of those fed 'Nutritabs', and 25% of the non-supplemented controls. Normal developmental standards set this figure at 50%.

This study adds to the evidence for feeding a lipid-based nutrient spread to support healthy growth and development. Only the children who received the fortified spread showed no deficits in growth or motor development compared to international standards. Furthermore, it did not decrease complementary food intake from the local diet, and more of the mothers who fed 'Nutributter' to their child said they would buy the supplement at a relatively high price, if it became available.

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Events:

19th International Congress of Nutrition (ICN 2009) "Nutrition Security for All" 4-9 October 2009, Bangkok, Thailand

The 19th International Congress of Nutrition aims to provide the highest quality scientific program and give participants the opportunity to meet and exchange ideas with internationally recognized speakers and experts in the field. The Congress will address nutrition as an integrative science, linking with other disciplines such as biomedical and life sciences, food and agriculture, and social and behavioral sciences to engage and advance evidence-guided policies and programs within comprehensive food and health delivery systems. Deadline for abstract submissions is 14 February 2009. For more information please contact: <http://www.icn2009.com>

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