



2 Editorial: The right decision

For a healthier next generation, authorities must ensure that effective nutrition measures are introduced without delay.

2 Letter to the Editor

“Review lacks balance”.

3 Micronutrient Forum addresses multiple micronutrient programs

The April meeting was designed to allow scientists and policy makers to take stock of the current scientific evidence and determine if “tipping points” had been reached for various questions.

4 Update on folate

Intake requirements vary considerably. Genetic variations can also influence how folate is utilized. Folic acid fortification has been associated with a 19–50% decrease in NTD.

6 FSA Board recommends mandatory fortification in UK

The final recommendation will be made to UK health ministers shortly.

7 ECSCA workshops prepare region for food fortification

The March meeting focused on refining regional guidelines to strengthen food quality control, inspection and enforcement mechanisms in the region.

Editorial:

The right decision

Consuming a healthy diet that contains all essential nutrients in adequate amounts may not be enough to guarantee good health, but good health cannot be achieved without an adequate diet. At its first international meeting in Istanbul, the Micronutrient Forum made some important steps towards dealing with its expanded mandate, to address all micronutrient deficiencies of public health significance. But although the scientific community generally recognizes the interactive role of micronutrients in metabolism, we are still a long way from introducing measures to ensure a health-promoting diet of all populations around the world.

I am sorry if my review of the WHO/FAO book in Nutriview 2007/1 seemed to suggest that food fortification is the only valid solution to malnutrition. I agree that fortification programs need to be part of a comprehensive strategy, and that the best way to obtain essential nutrients is through

a balanced, natural diet. On the other hand, how many people have the knowledge, the finances and the will power to consume the correct amounts of foods naturally rich in micronutrients?

A particular problem occupying health authorities right now (especially in Europe and Australia) is how to safely improve folate status enough to lower the number of births affected by neural tube defects (NTD). Eating foods naturally rich in folate may not provide the body levels needed by women at high risk. Supplementation has not brought the desired result either, partly because many pregnancies are unplanned. The only remaining alternative is to fortify a food with folic acid; but concern about the possibility of damage from high doses, about who should bear the cost, and about consumer choice is making the decision difficult. There is no alternative, though; if we want a healthier next generation, the right decisions have to be made pretty soon!



A. Bowley

Letter to the Editor:

I was drawn by the inclusion in Nutriview 2007/1 of a review of the WHO/FAO Guidelines on food fortification with micronutrients published in 2006 that I personally was closely involved with as an author. However the summary in your email as well as on the front page of Nutriview states that the book confirms that food fortification offers advantages over other types of interventions. True, but since all interventions (dietary diversification, supplementation, fortification and public health measures) may be said to have advantages over the others, to single out fortification may give the false impression that fortification is the intervention of choice over all others. We at FAO have strived to ensure that readers are informed that although food fortification can make an important contribution to combating micronutrient

malnutrition when and where existing food supplies and limited access fail to provide adequate levels of certain nutrients in the diet, fortification programmes need to be part of a comprehensive strategy along with dietary diversification, supplementation and public health measures for maximum effectiveness in combating micronutrient deficiencies. Your review does not give this balance. It does quote from the book by saying “dietary diversity is generally regarded as the most desirable and sustainable option” but then adds “is also the most difficult”. This is not what the publication says. On another point, although you do acknowledge that the book was published by WHO/FAO, the reference at the foot of the article only mentions WHO.

Brian Thompson, Senior Nutrition Officer and Group Leader, Household Food Security and Community Nutrition, Nutrition and Consumer Protection Division, United Nations Food and Agriculture Organization. brian.thompson@fao.org

Corrigendum

In the earliest web version of Nutriview 2007/1 the intake of iodine from a serving of unfortified foods and beverages (page 7) was shown as being between 3 mg and 80 mg. Of course, this should read 3 µg and 80 µg. Towards the end of the same article, it should also read: “New international recommendations suggest that pregnant and lactating women residing in areas of mild-to-moderate iodine deficiency are given an iodine supplement of about 150 µg daily”.

If these typos are in your copy, we are very sorry. Please correct them. Thank you

Conference report:

Micronutrient Forum addresses multiple micronutrient programs

The first Micronutrient Forum meeting, held in Istanbul, Turkey on April 16–18, 2007, summarized the available evidence and evaluated specific programmatic approaches for controlling deficiencies of vitamin A, iron, zinc, iodine and folate. The Micronutrient Forum, established in 2006, merges the International Vitamin A Consultative Group (IVACG) and the International Nutritional Anemia Consultative Group (INACG) with an expanded mandate to address all micronutrient deficiencies of public health significance. The theme of this first meeting was “Consequences and Control of Micronutrient Deficiencies: Science, Policy, and Programs—Defining the Issues.”

Dr Necdet Unuvar, Undersecretary for Health, opened the meeting on behalf of the Minister of Health of Turkey. Turkey has been very successful in reducing iron, zinc and iodine deficiencies using fortification and supplementation strategies. Dr Unuvar recommitted his government to achieving the objective of reducing micronutrient malnutrition in the years ahead.

Dr Alfred Sommer, Chair of the Micronutrient Forum Steering Committee, said that the meeting was designed to allow scientists and policy makers to take stock of the current scientific evidence and determine if “tipping points” had been reached for various questions. Reaching such a tipping point would mean that public health policy should be developed based on the evidence to guide programs in the field. An example of a potential tipping point highlighted at the meeting was newborn dosing with high-dose vitamin A in Asia. The study presented by Dr Keith West of the Johns Hopkins University, Baltimore, showed that vitamin A supplementation at birth may be more effective than periodic supplementation a few months into life.

The meeting also highlighted successful micronutrient programs that are achieving impact at a national level. One of these was presented by Dr Dora Akunyili, National Agency for Food and Drug Administration and Control in Nigeria. Since 1998, Nigeria has maintained >97% household level consumption of iodized salt, resulting in a significant decline in total goiter rate, and improvements in urinary iodine concentration.

In her closing address, Dr Meera Shekar, World Bank, congratulated the Forum participants for bringing all the micronutrients under one roof, making it more feasible to develop well-coordinated and effective programs. Dr Shekar focused



attention on interventions for which evidence of impact is strong enough to warrant investment of limited resources. These data are so strong that failure to take action would be ethically wrong. She urged a redoubling of efforts to attain universal salt iodization and vitamin A supplementation to children under 5 years of age. It is essential to improve iron and folic acid status in pregnant women, but additional work is needed to sort out appropriate approaches for reducing iron deficiency in children in malaria regions. Zinc is a cost-effective treatment for diarrhea, but data on its preventive use are not yet conclusive.

Food fortification is making good progress in developing countries and the recently released WHO/FAO guidelines for fortification will serve national policy makers well. Dr Shekar urged the development of program platforms that combine the most effective approaches for maternal and child health. Such program platforms would help the nutrition community to sell its messages by delivering clear, coherent, agreed-upon policies with known cost-benefit ratios.

Dr France Bégin, Micronutrient Initiative, South Africa, presented the results of a review of data on food fortification feasibility in Sub-Saharan

Dr Necdet Unuvar, the Undersecretary for Health of Turkey (right), and Dr Alfred Sommer, Chair of the Micronutrient Forum Steering Committee open the first Micronutrient Forum in Istanbul.



The Hagia Sophia mosque is maybe the most famous landmark of the ancient city of Istanbul

Africa. It found that opportunities to reach large numbers of people through food fortification exist. Industries processing basic foods are found in over 30 countries in the region, and some larger companies have extensive regional trade networks. Over 85% of the processed foods consumed in Africa are processed on the continent and industry capacity is increasing. These processed foods are increasingly consumed by women and children in the most vulnerable groups. Industry assessments reveal that fortification is economically feasible and that technical constraints are generally limited.

The meeting attracted participants from more than 60 countries. It was cohosted by the Micronutrient Forum Program Committee and the Local Organizing Committee of the Ministry of Health of Turkey. The Micronutrient Forum Program Committee and the Micronutrient Forum Secretariat

planned and organized the meeting with support from A2Z, the US Agency for International Development (USAID) and the Micronutrient and Child Blindness Project, with funds from USAID. Other major financial contributions were made by the Ministry of Health of Turkey, the Bill & Melinda Gates Foundation, SIGHT AND LIFE, UNICEF, and Unilever Food and Health Research Institute. Sponsors included Danone, GAIN, Kraft, BASF, The Coca-Cola Company, HJ Heinz Company, Mars, Inc., The Micronutrient Initiative, Monsanto Company, and the Procter & Gamble Company. A2Z is managed by the Academy for Educational Development (AED) through a cooperative agreement with the Health, Infectious Disease and Nutrition Office of the Bureau of Global Health, USAID. The ILSI Research Foundation serves as the Micronutrient Forum secretariat.

The proceedings of the first Micronutrient Forum will be published in the SIGHT AND LIFE Magazine. Additional information about the meeting is available on the Micronutrient Forum website: <http://www.micronutrientforum.org>.

This report is based on the Micronutrient Forum news release.

Feature: Update on folate

Folate is a B-group vitamin that functions as a coenzyme in one carbon (1-C) metabolism. An adequate intake is essential for the optimal synthesis and functioning of numerous cell components, including nucleic acids and nucleotides. Foliates occurring naturally in foods (mainly orange juice, dark green leafy vegetables, asparagus, strawberries, peanuts and legumes) are in the polyglutamate form. The oxidised, monoglutamate form used in supplements and food fortification (folic acid) is rarely found naturally in foods.

Recent research and experience have increased our knowledge about human intake requirements for folate, the effects of food fortification with folic acid on health, factors affecting bioavailability, and folate-related genetic polymorphisms.

Folate intake requirements vary considerably

In 1998, the US Institute of Medicine introduced the concept of Dietary Reference Intakes (DRI), and shifted the focus of folate intake recommendations from quantities to prevent severe deficiency symptoms to those that promote optimum health. To account for differences in bioavailability between dietary folate and folic acid, the DRI is expressed as Dietary Folate Equivalents (DFE). Assuming that folic acid consumed with a meal is about 85% bioavailable, and food folate is about 50% bioavailable, a DFE of folic acid is calculated by multiplying the amount in micrograms by 1.7 (while a DFE of food folate is the same as the number of micrograms). A recent long-term feeding study supports the validity of this cal-

ulation. The currently recommended allowance for adults in the USA and Canada is 400 µg DFE daily (600 µg during pregnancy).

After consumption, natural food folate must be converted to the monoglutamate form before it can be absorbed. Many factors (folate entrapment in foods, folate instability during passage through the stomach, inhibition by food constituents, alteration of jejunal pH, drugs and alcohol) can affect this process. This means the amount of folate consumed that becomes available for metabolism can vary considerably between individuals.

Genetic variations can also influence how folate is utilized. The most extensively studied polymorphism (a mutation present in a population at a frequency of 1% or more of alleles) associated with folate metabolism is a substitution at base pair 677 in the gene encoding the enzyme methylenetetrahydrofolate reductase (MTHFR). This polymorphism (about 12% of the total population has the TT genotype and 50% has the CT genotype) reduces DNA methylation (metabolism of homocysteine). Affected individuals tend to have higher plasma homocysteine levels, and an increased risk of neural tube defects and chronic disease, especially when their folate status is low. In response to folate repletion, individuals with the TT genotype (but not those with the CC genotype) show a significant increase in DNA methylation.

In recent years, the coordinated roles of the cytosolic and mitochondrial phases of 1-C metabolism have become better understood. The currently accepted model separates the synthesis

The 9th Edition of Present Knowledge in Nutrition (PKN), edited by Dr Barbara A. Bowman and Dr Robert M. Russell was published in 2006 by the International Life Sciences Institute (ILSI). For further details and to order, please see the ILSI web site: <http://www.ils.org/Publications/Present+Knowledge+in+Nutrition> or contact: ILSI Press, One Thomas Circle, NW, Washington, DC 20005-5802; Telephone: 202-659-0074; Fax: 202-659-3859



of 1-C units in mitochondria from the biosynthetic reactions that require folate-linked 1-C units in cytosol. It relies on the rapid transfer of 1-C units as serine and glycine across the inner mitochondrial membrane, and the unidirectional transfer of formate out of mitochondria into the cytosol.

Drugs impair folate metabolism

Folate status can be impaired in people treated with folate antagonists such as methotrexate, anticonvulsants such as phenytoin, antiinflammatory drugs such as sulfasalazine, and antiglycemia drugs such as biguanides. It is therefore important to ensure a balance between drug therapy and supplementation to prevent a severe folate deficiency and still maintain drug efficacy.

Chronic alcohol consumption can also interfere with folate absorption, decrease hepatic folate uptake, and increase urinary excretion. A folate-deficient diet together with chronic alcohol consumption can accelerate the development of liver injury and various types of cancer.

Health risks associated with folate deficiency

Neural tube defects (NTD) resulting from the failure of fusion of neural folds in the developing embryo in women with a folate deficiency, have received the most attention in recent years. Up to 70% of NTDs are considered “folate preventable”. Possible mechanisms for the increased risk include high maternal homocysteine concentrations, decreased rates of DNA synthesis due to impaired formation of the DNA constituent thymidylate (dTMP), and elevations in the ratio of S-adenosylmethionine/S-adenosylhomocysteine (key regulator of methyltransferase activity). In pregnancies complicated by a NTD, maternal serum contains antibodies that block the cellular uptake of folate.

Pregnancy increases maternal folate requirements to ensure proper embryonic development. Folate deficiency is therefore also associated with other poor pregnancy outcomes (including fetal growth retardation, preeclampsia, spontaneous abortion and heart defects). Affected pregnancies have an increased risk for preterm delivery and low birthweight. Congenital heart defects account for more deaths than NTDs.

A poor folate status has been associated with increased risk for developing cancer (especially

colorectal cancer) and vascular disease. Two meta-analyses concluded that a 25% reduction in plasma homocysteine (achieved by taking 800 µg folic acid daily) significantly reduces the risk for ischemic heart disease and stroke. It is still an unresolved issue whether supplemental folic acid will reduce the incidence of vascular disease, however.

Folic acid fortification effective

Following the widespread fortification of cereal grain products in the USA, the median serum folate concentration of the population has increased from 12.5 to 32.2 nmol/L and the median red cell folate concentration has increased from 392 to 625 nmol/L. This is a greater increase than expected, possibly due to the overage of folic acid added. Based on reports from the USA, Canada and Chile, folic acid fortification has been associated with a 19–50% decrease in NTD incidence so far.

A Tolerable Upper Intake Level of 1000 µg folic acid was established in 1998 to accommodate concerns that food fortification with folic acid might increase the risk of masking a vitamin B12 deficiency, especially in elderly people. So far, there is no evidence from the USA that this masking has increased as a result of folic acid fortification.

Folate assessment unsatisfactory

Various methods have been developed for the assessment of folate in foods and in clinical specimens. Nevertheless, further improvement and standardization of folate analysis is still required. A fully optimized and validated method for the measurement of food folate is highly desirable, because traditional methods probably underestimate actual content.

When assessing folate status, serum concentrations show recent intakes, while red cell folate levels indicate body stores. It is also important to evaluate changes in metabolic function. While changes in plasma total homocysteine are considered a sensitive indicator, they are not specific, and may be influenced by other factors.

Priorities for future studies on folate include determining the effects of pregnancy and other conditions of altered physiology, effects of various disease states, and effects of genetic polymorphism of key enzymes on whole-body folate kinetics.



Folate deficiency is associated with poor pregnancy outcomes. Pregnancy increases maternal folate requirements, and women of childbearing age should ensure an adequate folate status before conception.

A summary of the most important advances in knowledge from Chapter 22, Present Knowledge in Nutrition, 9th edition, by Dr Lynn B. Bailey, Professor of Human Nutrition, and Dr Jesse F. Gregory III, Professor of Food Science and Human Nutrition at the University of Florida. General Editor for this series is Dr Noel W. Solomons of the Center for Studies of Sensory Impairment, Aging and Metabolism (CeSSIAM) in Guatemala City.

Feature:

FSA Board recommends mandatory fortification in UK

On May 17, 2007, the Board of the UK Food Standards Agency (FSA) unanimously agreed that a form of mandatory fortification with folic acid should be recommended to UK health ministers. This would be as part of a package of measures to help prevent neural tube defects (NTDs), which can result in miscarriage, neonatal death or lifelong disability. The Board also asked for further work to consider whether folic acid should be added to either bread or flour and agreed that controls on voluntary fortification were an essential part of its recommendation.

The Board sent a strong message to Health Departments that they need to carry out further work on this issue around educating the public and, in particular, potentially at-risk groups. At its open board meeting, the Board debated a range of options to increase folate intakes of young women in order to prevent pregnancies affected by NTDs such as spina bifida. Currently NTDs affect 700–900 pregnancies in the country every year. The Board's decision to recommend adding folic acid to either bread or flour will also improve the diets of 13 million people who currently don't eat enough folate.

The Board wants controls on voluntary addition of folic acid to products such as breakfast cereals and spreads. It also wants clearer public advice on the taking of supplements to prevent overconsumption by some groups. The Board's decision was made during its open public meeting and forms part of an extensive and scientifically robust process, including:

- Analysis and advice from the independent government Scientific Advisory Committee on Nutrition (SACN)
- Risks and benefits to both specific groups and the whole population
- Public consultation on a range of options
- Consumer research on the options
- Consideration of the ethics of adding folic acid to a food
- Monitoring the impact of mandatory fortification in other countries.

Various countries, including the USA, Chile and Canada, have already fortified flour with folic acid. Since the USA introduced the measure around ten years ago, it has seen a drop of more than a quarter in such birth defects.

Dame Deirdre Hutton, Chair of the FSA Board, said: "The Food Standards Agency is committed to policy making that benefits people's health. After a detailed discussion about this issue, there was unanimous and strong support for recommending to health ministers that there be mandatory fortification of a food. The Board also agreed that further exploration is needed on whether it should be flour or bread that is fortified. The Board recognizes that this move, as part of a package of measures, will help prevent birth defects in pregnancy and have wider health benefits for the rest of the population. The Board was also reassured by the significant science that the benefits outweigh potential risks. I'd like to also pay tribute to SACN's in-depth and robust work on this difficult issue. And also the commitment demonstrated by Agency colleagues to produce the thorough and quality material that enabled the Board to properly assess the weight of evidence and come to a sensible and proportionate decision". Professor Alan Jackson, Chair of the SACN, commented: "I am delighted that the FSA Board has accepted SACN's recommendation around mandatory fortification. This will undoubtedly bring real benefits to the population and is an important step forward for public health in the UK".

On June 14, the FSA Board met again to discuss the practicalities of implementing mandatory fortification, and gave the FSA the go-ahead to prepare plans to add folic acid to some food. The FSA will make its final recommendation to UK health ministers shortly. In the meantime, the UK Federation of Bakers has signalled its support for the move. The Federation strongly advises that fortification of flour at the milling stage is the most viable solution. The Medical Research Council (MRC) has also come out in support of the FSA decision. MRC chief executive Dr Colin Blakemore said: "There is clear evidence that folic acid prevents devastating birth defects and it is good to see this important British discovery moving into public health policy here... The Food Standards Agency has done a careful assessment of the benefits and any possible risks before making this recommendation".



The issue of whether bread or flour should be fortified with folic acid in the UK is still unclear. The FSA wants to provide a degree of consumer choice and consider the impacts on industry while ensuring that public health takes priority.

Source: Food Standards Agency, Room 245 Aviation House, 125 Kingsway, London WC2B 6NH. Tel: 020 7276 8888. Email: press.mailbox@foodstandards.gsi.gov.uk

Conference report:

ECSA workshops prepare region for food fortification

In March 2007, technical workshops were held at the Kibo Palace Hotel, Arusha, Tanzania (organized by the ECSA Secretariat with assistance from USAID/EA, the USAID Micronutrient and Child Blindness Project A2Z and UNICEF/ESARO) to focus on refining regional guidelines and strengthen food quality control, inspection and enforcement mechanisms in the region. This was in an effort to promote the application of standards and food quality control systems in order to strengthen food fortification programs in the ECSA countries.

Harmonizing regional regulations and standards

The first workshop (March 26–28, 2007) was attended by representatives of the national bureaus of standards, and senior representatives of the national food fortification alliances from ECSA countries. The participants were taken through a calculator that makes it easy to formulate production fortification levels and regulatory fortification levels. In formulation, the user of the calculator is required to specify the at-risk segment of the population that will presumably consume high amounts of the nutrient in the fortified food, the average intakes of fortified food of that group and the amounts of nutrient that the group is receiving from other sources/interventions. The calculator gives, among other information, the premix formulation, estimates on the cost of the program, recommended fortification formulas, etc.

The participants highly appreciated the calculator as well as the subsequently generated guidelines specifying minimum and maximum levels of micronutrients required in the proposed food vehicle at factory and market levels. Countries were motivated to develop national logos and revise or introduce nutrition and health claims, while strengthening their enforcement. A task force, made up of representatives from national standards organizations, was constituted to explore the modalities of incorporating the guidelines into existing regional standards of the chosen staple foods and advise the ECSA Secretariat on promoting the adoption and use of the regional standards to enhance food fortification in the region.

It is envisaged that recommendations from this workshop will favor free trade agreements, and encourage fair trade practices within the region. This will not only support economic growth in

Background

In November 2002, the Ministers of Health of the East, Central and Southern Africa (ECSA) Region instructed the Secretariat to promote food fortification initiatives in the region. Through partnering with other institutional partners (USAID/MOST, GAIN, UNICEF, MI, ICCIDD and others), the Secretariat organized key regional workshops to explore the existing capacity and opportunities for fortification in the region. These workshops helped to facilitate a dialogue between stakeholders, sensitizing governments and the private sector on the elements and importance of partnerships upon which the food fortification program can thrive.

In the workshop held in Lusaka, Zambia, in 2004 [see report in Nutriview 2004/2], representatives from the ECSA member countries agreed on fortification of five key staple foods (salt with iodine, oil with vitamin A, sugar with vitamin A, maize and wheat flour with iron, zinc and the B complex, including folate). Four groups were constituted to follow up on the key elements of the program (a regulations, standards and food quality control group; a laboratory analysis network group; a technical and trade support group; a regional coordination and resource mobilization and advocacy group).

At the following regional meetings in Johannesburg, South Africa, in July 2004, and Kampala, Uganda, in August/September 2005 [see reports in Nutriview 2004/4 and 2006/1] the groups presented their accomplishments and planned future activities. During the Kampala workshop, the regulations and food quality control group presented provisional regional guidelines to harmonize standards for the staple foods proposed for fortification in the region.

Objectives of the quality control and monitoring workshop

- I Share concepts of regulatory monitoring, program monitoring and evaluation
- II Agree on the roles of all institutions involved in quality control, enforcement and monitoring of the fortification program
- III Understand the necessary quality control points throughout the production and distribution chain of a fortified food
- IV Provide input for the manuals on control and monitoring of fortified foods
- V Agree on the way forward to create a regional system for premix certification and develop a plan of action to establish a regional premix certification

Objectives of the regulations and standards workshop

- I Learn how to formulate fortification standards
- II Generate guidelines specifying minimum, average and tolerable maximum levels of micronutrients required in the proposed food vehicle at factory and market levels
- III Set quality specifications for mixes and premixes
- IV Learn to use a computational program to facilitate calculations for fortified foods
- V Introduce Codex Alimentarius and some country guidelines on use of logos and health claims applicable to fortified foods

the region but will also promote adequate attention to public health nutrition.

Strengthening quality control and monitoring

The technical workshop on quality control and monitoring (March 29–30, 2007) immediately followed the meeting on regulations and standards. It was attended by representatives of the food control departments and participants from the national fortification alliances who had attended the first meeting. This second workshop aimed to strengthen quality control and inspection, and conceptualize a regional mechanism for certification of micronutrient mixes and premixes in the ECSA region. Participants were introduced to the elements and concepts of regulatory monitoring and evaluation of food fortification programs. They learned to appreciate the roles of each government institution and the private sector in the food quality control chain. They were intrigued to realize how detailed the process of food quality control can be. This became especially clear during the discussions on the characterization of the chain of production and trade of a staple food. In such a case, a country is supposed to decide on the geographical division to be used to identify the sequence of production/importation and distribution of the food until it reaches the consumer. At each level, the country has to

make an estimation of the total amount of the industrially-produced food that is distributed through that level, as well as the number of units (countries, factories, distribution centers, etc) that are included on each of them, and then decide on where and how intense inspection of that food will take place for the purpose of food control. Participants also discussed how protocols of food control for fortified foods are designed. After being shown manuals for internal and external monitoring of fortified foods, and for monitoring at market and importation sites, participants had the opportunity to comment on the manuals' applicability. Regarding quality control of mixes and premixes, the participants were introduced to the code practice for food premix operations, and taken through the laboratory assays for food quality control. Finally, each country had the opportunity to share its experience with food premix control.

ECSA countries were motivated to review existing national protocols based on the regional guidelines provided, and to integrate the acquired knowledge on food control activities in the national protocols of food control. A discussion on the establishment of a regional premix certification was initiated and a task force was constituted to further explore the modalities and requirements of a regional premix certification system.

Carol Tom, Regional Food Fortification Advisor A2Z Project/ ECSA, Arusha, Tanzania

Events:

5th South East Asian Nutrition Leadership Program, August 27–31 2007, Indonesia

In a rapidly changing society, it is imperative to build strong leadership skills for nutritionists working in government institutions, academia, food industries, etc in South East Asia. Leadership skills enable people to build vision, recognize needs, direct change and empower others to achieve. Candidates must be aged 40 years or less and proficient in English; they must have a Master degree in human nutrition and at least

2 years experience, a Master degree in another field with at least 5 years experience in human nutrition, a PhD or be studying for a PhD in human nutrition or a related field.

Further information and application forms: Junita Dara, SEAMEO TROP MED RCCN-UI, Program Development and Consultancy Division, JI Salemba Raya 6 Jakarta, Indonesia. Tel: +62-213914017. Email: pdc@seameo-rccn.org

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