

## *Statement*

### **National Seminar on Importance of Zinc in Human Health**

The National Seminar on Importance of Zinc in Human Health, organized by International Life Sciences Institute (ILSI)-India and ILSI Human Nutrition Institute, Washington in association with Indian Council of Medical Research and National Institute of Nutrition, was held in New Delhi on 25-26 October 2004. The seminar was addressed by 22 national and international experts, and attended by other representatives from diverse fields including Government, International and National bodies, medicine, pediatrics, public health, nutrition, agriculture, food technology, economics, industry and media (*Annexure I*).

In five separate sessions the seminar discussed functions and importance of zinc in nutrition, zinc deficiency in human beings and in soil in India, economic implications of zinc deficiency, strategies to eliminate zinc deficiency and the role of partnerships in steps to be undertaken.

#### **Importance of Zinc**

The Seminar recognized that zinc is an essential micronutrient for healthy functioning of the human body. Though present in tiny amounts, it is critical to life and its deficiency can have a variety of adverse consequences.

#### **Zinc Deficiency**

Zinc deficiency may occur due to diets inadequate in bioavailable zinc, certain diseases like diarrhea, loss of zinc in processing foods, and poor soil deprived of zinc, which can reduce the zinc content in agricultural products.

The prevalence of zinc deficiency has not been adequately investigated, partly due to lack of suitable biomarkers. Based on the food balance data, it is estimated that a large section of the world population is at risk of developing zinc deficiency. The risk of deficiency is highest in populations, which consume predominantly cereal-based diets with little or no meat consumption. Severe zinc deficiency in India is rare; however, predictions based on dietary patterns indicate that mild or moderate deficiency could be widespread.

There are no Indian RDAs for zinc but suggested intake is 15.5 mg per day for an adult person. This suggested intake was based on information available in late eighties and needs to be updated. It is therefore important that RDAs for different sections of population by age and sex are scientifically estimated by the recent data and techniques.

#### **Zinc Deficiency in Soil**

Zinc is an important element in soil and can affect nutrient value of crops. Zinc deficiency in soil reduces agricultural productivity as also zinc content in agricultural products. Zinc deficiency is high in soils of several states in India.

#### **Preventive and therapeutic effects of zinc**

Zinc deficiency in children results in stunting, underweight, and increased risk of infections like diarrhea and pneumonia. Randomized controlled trials indicate that approximately one RDA (10-12 mg) supplementation reduces the number and severity of diarrheal episodes. The cost effectiveness and the therapeutic benefit for diarrhea is now accepted and zinc therapy is recommended by bodies including Indian

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Academy of Pediatrics, World Health Organization and United Nations Children's Fund. Zinc supplementation has been shown to decrease under five mortality, but this remains to be confirmed in larger trials.

### Next Steps

The Seminar made the following recommendations:

#### *Programmatic Issues*

- It must be recognized that zinc is one of the essential micronutrients, which should not be considered a food contaminant. The Prevention of Food Adulteration rules need to be amended to that effect.
- Therapeutic use of zinc in treating diarrhea is well established and recommended by international bodies. Similar benefits have also been demonstrated for pneumonia. Pharmaceutical industry should take the initiative to manufacture and market suitable isolated pediatric formulations of zinc.
- There is not enough awareness about the importance of zinc in human health. Such awareness should be created among public and medical practitioners.
- Zinc deficiency in soil should be corrected through zinc application.

#### *Research Issues*

- It is urgently necessary to develop new biomarker(s) to measure human zinc status so that the extent of zinc deficiency can be directly and easily identified.
- A national survey should be undertaken to assess the prevalence of zinc deficiency in populations in different parts of the country with varied food habits so that focused attention can be given to populations, which are at high risk.

- Relevant data needs to be generated to clarify the interaction between zinc and iron.
- Food technology research should be encouraged to identify and assess the feasibility of zinc fortification of candidate foods including complementary diets. These could be followed up by human efficacy trials.
- Alternative strategies can also be followed like conventional breeding and plant genetic engineering for enhancing zinc content of edible portion of agricultural products.

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#### ***Annexure - I***

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2. Dr Kumudha Aruldas, Population Foundation of India, New Delhi.
3. Dr Shally Awasthi, King George Medical University, Lucknow
4. Dr Satinder Bajaj, Lady Irwin College, New Delhi.
5. Dr K C Bansal, Indian Agricultural Research Institute, New Delhi
6. Dr O Masee Bateman, United States Agency for International Development, New Delhi

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8. Dr Nita Bhandari, All India Institute of Medical Sciences, New Delhi
9. Mr Sanjay Kumar Bhasin, University College of Medical Sciences, Delhi
10. Dr. (Mrs) C M Bhat, Indian Agricultural Research Institute, New Delhi
11. Dr S N Bhat, Nestle India Ltd, Gurgaon
12. Mr K Bhatia, National Seeds Corporation Ltd, GOI, New Delhi
13. Dr. (Mrs) Neelam Bhatia, National Institute of Public Cooperation and Child Development (NIPCD), New Delhi.
14. Dr (Mrs) S Bhatnagar, All India Institute of Medical Sciences, New Delhi
15. Dr Robert Black, John Hopkins University, Bloomberg School of Public Health, Maryland
16. Dr Saraswati Bulusu, The Micronutrient Initiative, New Delhi
17. Ms Sheena Chhabra, United States Agency for International Development, New Delhi
18. Mr Bhagirath Choudhary, ISAAA South Asia Office, New Delhi
19. Dr. Panna Choudhury, Lok Nayak Hospital, New Delhi
20. Mr Robert Clay, United States Agency for International Development, New Delhi
21. Dr Vatssla Dadhwal, All India Institute of Medical Sciences, New Delhi
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  77. Dr. Rajiv Tandon, MOST, New Delhi
  78. Dr Sunita Taneja, Society for Applied Studies, New Delhi
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