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# **Micronutrient Deficiencies in the First Months of Life**

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# Preface

Micronutrient deficiencies in the first six months of life are often undervalued in the context and priorities of global malnutrition because they are hard to define and detect, and their effects may be subtle or even visible only later in life when health consequences may be irreversible. Although increased attention has rightly been given in recent years to micronutrient deficiencies during early childhood, pregnancy and lactation, there remains a relative lack of evidence about the prevalence, health consequences and causes of early infantile micronutrient deficiencies across vast, still undernourished populations in the world. The 52nd Nestlé Nutrition Workshop held in Dubai, United Arab Emirates in October 2002, sought to fill this gap in knowledge and expose research priorities by convening distinguished scientists from all over the world to address this critical area of early human nutrition. Formal presentations were enhanced by vivid discussions by a particularly competent and motivated audience.

The present volume reviews current knowledge on different steps that need to be taken to identify, prevent and treat micronutrient deficiencies in the first six months of life: quite logically, it starts by exploring the new Dietary Reference Intakes, as they were recently derived with respect to micronutrients for a healthy North American infant population, along with expert primers on assessing micronutrient status and assuring dietary micronutrient adequacy in mothers and their young infants. The volume presents separate state-of-the-art reviews on the etiology, pathogenesis, epidemiology, clinical aspects, prevention and treatment of key trace element and vitamin deficiencies such as iodine, iron, zinc, selenium, and vitamins A, D and K at this early age in life. It also begins to reveal complex micronutrient interactions within the maternal-infant dyad and their implications for neonatal health and infant survival. Unique challenges facing clinicians in maintaining adequate micronutrient status of preterm infants are presented, as are the effects of micronutrient deficiencies and their prevention on

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immune competence, resistance to major infections such as HIV, risk of birth defects and on neurointellectual development.

As always in good science, this workshop replied to some questions but raised many others as both the frontiers of knowledge and horizons for research in this vital area of human nutrition were exposed. Thus, we trust that the content of this volume both informs the nutrition and pediatric communities on the 'state of the art' in this area, while serving to stimulate further research on the prevalence and health implications of micronutrient deficiencies in the first months of life.

*K. P. West Jr. and F. M. Delange*

# Foreword

It is sometimes difficult to assess the micronutrient status and recommendations for micronutrients as well as their appropriate application in young infants. For this 52nd Nestlé Nutrition Workshop, which took place in October 2002 in Dubai, the topic 'Micronutrient Deficiencies in the First Months of Life' was chosen. It was not only the deficiency of individual minerals, trace elements and vitamins such as iodine, iron, zinc, selenium, vitamin A, E and K per se that we were interested in, but more importantly the impact these deficiencies have upon public health, growth, morbidity and mortality. Furthermore, we wanted to know what preventive measures, starting even during pregnancy, may exist. In order to answer these and other questions we brought together the knowledge of various experts in different fields in order to better understand the pathogenesis of and the preventive as well as therapeutic implications for diseases such as birth defects, rickets, hypothyroidism, anemia, xerophthalmia, bleeding tendencies, and disturbed psychomotor development.

I would like to thank the two chairmen, Prof. *François Delange* and Prof. *Keith West*, who are well-known experts in this field, for putting the program together and inviting as speakers the opinion leaders in the field of micronutrients in health and various disease conditions. Scientists invited from 27 countries contributed to the discussions that are published in this book. Dr. *Maged Iskander* and his team from Nestlé Middle East provided all the logistic support in order that the participants gain an appreciation of Arabic hospitality. Dr. *Denis Barclay*, from the Nutrition Strategic Business Division in Vevey, Switzerland, was responsible for the scientific coordination. His cooperation with the chairpersons was essential for the success of this workshop.

*Prof. Wolf Endres, MD*

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