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SUGARS IN NUTRITION

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## Preface

Sugar is a part of our daily lives, and it is difficult to imagine life without it. Yet, do we ever think about how relatively recently sugar entered the regular food patterns of Western man? In this volume Norman Kretchmer provides a glimpse of the history of sugar, how it travelled around the world from its hearthland in New Guinea to become an important agricultural and trading commodity, later to become the driving force behind the notorious slave trade, and, more recently, an important international industrial commodity. John Desmarchelier gives us some insights into the sugar industry and the powerful international political and financial lobbies involved. The subject of nonnutritive sweeteners is introduced, and the role of receptors and transduction mechanisms for sweet taste is reviewed.

The second part of the Workshop addressed the biochemistry and physiology of sugars, including digestion and absorption, and biophysical aspects of enzyme regulation with reference to defects in sugar digestion. John Hopwood discusses mucopolysaccharides' degradation in the lysosome and how this function is disturbed in the mucopolysaccharide storage diseases.

The clinical implications of sugars in our daily diets are considered next. Eleazar Shafir presents the metabolism of disaccharides and monosaccharides and how sucrose (table sugar) and fructose can have significant lipogenic effects. The importance of dietary fiber and unabsorbed carbohydrates is addressed by Pierre Würsch, and the effects of increased sucrose consumption on metabolism of carbohydrates and lipoproteins in individuals with insulin resistance by Clarie Hollenbeck.

Obesity has become a very important diet-related disorder in industrialized countries. Mark Wahlqvist and Sharon Marks discuss the pathogenesis, clinical importance, and assessment of obesity in a clinical setting, as well as goals and methods to achieve dietary management of this difficult disorder. We then consider the potentially devastating effects of recent and continuing westernization of the diet and other lifestyle changes on rapidly developing populations, such as American Indians, Australian Aborigines, and Pacific Islanders. Paul Zimmet and coauthors colorfully introduce this subject with the subtitle "Hunter-Gatherers in the Fast Lane."

The last five chapters consider other clinical aspects of sugars, including disorders of carbohydrate metabolism, and congenital and acquired disorders of carbohydrate digestion and absorption, which can cause sugar-induced diarrhea. Also addressed is why intestinal lactase activity persists in some groups of humans, notably those from Northern and Western Europe, whereas most humans and other mammals lose their intestinal lactase after weaning and then become intolerant of dietary lactose (the sugar of milk). Henri-Géry Hers presents a comprehensive discussion of the pathophysiology and clinical features of the glycogen storage diseases. The Work-

shop ended with Australian nutrition consultant, Rosemary Stanton, discussing the role of sugars in the diets of athletes.

As is customary with Nestlé Nutrition Workshops, the presentations are interspersed with transcripts of the discussions which, we hope, bring the Workshop alive for those who were not fortunate enough to be with us in Sydney for this stimulating and pleasant meeting.

MICHAEL GRACEY M.D., PH.D.

All three of us have long-standing interests in clinical disorders of children that involve sugar. In the light of important new advances that have been made towards the understanding and more effective treatment of these diseases, it seemed timely to us to review these disorders with the assistance of experts on other aspects of sugar that usually elude practicing clinicians.

We feel gratified that our objectives were achieved by bringing together key contributors from clinical pediatrics, clinical research, basic biochemistry and physiology, and behavioral sciences, as well as from industry, internal medicine, sports medicine, and dietetics.

We hope that the excitement and free exchange of ideas that characterized our meeting are conveyed faithfully in this volume through the chapters and through the discussions which they stimulated.

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As cochairmen and editors of this extremely enjoyable, professionally satisfying, and stimulating Workshop, we thank all our contributors to the program.