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Sunlight, Vitamin D and Skin Cancer

Third Edition

Springer

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Preface

The powerful rays of the sun represent a *conditio sine qua non* for life on earth in its present form and a major driver for human evolution. However, solar radiation exerts both positive and negative effects on human health. As a result of this dilemma, there is an ongoing controversy and intense discussion in scientific communities and the general population to answer this fundamental question of environmental medicine: how much sun is good for human health? The first two editions of "*Sunlight, Vitamin D and Skin Cancer*," designed and organized to be up-to-date reviews, were widely recognized benchmarks on the subject when published in 2008 and 2014, respectively. This new and extended volume continues to include extensive, in-depth chapters covering the most important aspects of the ongoing debate on how much sun is good/optimal for human health and how to balance between positive and negative effects of solar and artificial UV radiation. As a result of a mountain of new information about the health benefits caused by the UV-induced cutaneous synthesis of vitamin D, this book has been expanded substantially to include many new topics. It is generally accepted that UV exposure represents the most important risk factor for the development of non-melanoma skin cancer. Additionally, assessment of sun exposure parameters has consistently shown an association between the development of malignant melanoma and short-term intense UV exposure, particularly burns acquired in childhood. As a consequence, protection of the skin from UV radiation is an integral part of skin cancer prevention campaigns. However, more chronic less-intense UV exposure has not been found to be a risk factor for melanoma and in fact has been found in some studies to be protective. Moreover, besides many other photoproducts, 90% of all requisite vitamin D is formed within the skin through the action of the sun – a serious problem, for a connection between vitamin D deficiency and many severe diseases, including various types of cancer (e.g., colon, prostate, and breast cancer), has been demonstrated in a large number of studies. Hence, the association between vitamin D deficiency and various diseases, including internal malignancies, has opened a debate among dermatologists and other clinicians on how to balance between positive and negative effects of solar and artificial UV exposure. The goal of this volume is to provide a comprehensive highly readable, updated, and extended overview on our present knowledge of positive and negative effects of UV exposure, with a focus on vitamin D and skin cancer. Topics are discussed in depth by leading

researchers and clinicians ranging from the newest findings in endocrinology (including the relevance of non-classical vitamin D metabolites), epidemiology, histology, photobiology, immunology, cytogenetics, and molecular pathology to new concepts for disease prevention and treatment. Experts in the field as well as health-care professionals not intimately involved in these specialized areas have provided the most significant and timely information related to these topics. It is the aim of this third edition to summarize essential up-to-date information for every clinician or scientist interested in how to balance between positive and negative effects of UV exposure to minimize the risks that are associated with insufficient (e.g., developing vitamin D deficiency) and excessive (e.g., skin cancer) exposure. Again, all the chapters are written by authors who are experts in their respective research areas, and I am grateful for their willingness to contribute to this book. I am convinced that this edition will be as successful as the previous ones. I would also like to express my thanks to Larissa Albright, Anthony Dunlap, Murugesan Tamilselvan, and all the other members of the Springer Nature staff for their expertise, diligence, and patience in helping me complete this work.

Enjoy the reading!

Homburg/Saar, Germany Jörg Reichrath

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