



IntechOpen

IntechOpen Book Series
Biochemistry, Volume 22

Vitamin E in Health and Disease

Interactions, Diseases and Health Aspects

*Edited by Pınar Erkekoglu
and Júlia Scherer Santos*



Vitamin E in Health and Disease – Interactions, Diseases and Health Aspects

<http://dx.doi.org/10.5772/intechopen.87564>

Edited by Pınar Erkekoglu and Júlia Scherer Santos

Part of IntechOpen Book Series: Biochemistry, Volume 22

Book Series Editor: Miroslav Blumenberg

Contributors

Adnan Mansour Jasim, Mohammed Jasim Jawad, Israel Ehizuelen Ebhohimen, Owen Norma Izevbigie, Taiwo Stephen Okanlawon, Augustine Ododo Augustine Osagie, Claudineia Aparecida Sales de Oliveira Pinto, André Rolim Baby, Maria Valéria Robles Velasco, Thamires Batello Freire, Renata Miliani Martinez, Tércio Elyan Azevedo Azevedo Martins, Ramu Govindan, Tilak Meenakshisundaram, Navanita Sivaramakumar, Duraiswamy Basavan, Dhanabal Palanisamy, Podila Naresh, Mariyappan Kowsalya, Prasanna Rajeshkumar Mohan, Thangavel Velmurugan, Kattagounder Govindaraj Sudha, Saheb Ali, Vegim Zhaku, Nexhbedin Beadini, Sheqibe Beadini, Ashok Agarwal, Renata Finelli, Ralf Henkel, Sava Micic, Samia Ben Mansour-Gueddes, Dhoubha Saidana-Naija, Ahmad Farouk Musa, Miroslava Kačániová, Marianna Schwarzová, Katarína Fatrcová-Šrámková, Eva Tvrdá, Makhlof Chaalal, Siham Ydjedd, Mohd Aftab Aftab Siddiqui, Md. Faheem Haider, Farogh Ahsan, Asad Ali, Usama Ahmad, Lyudmyla P. Shvachko, Michael Zavelevych, Daniil Gluzman, Gennadii Telegeev, Júlia Scherer Santos, Guilherme Diniz Tavares, Thaís Nogueira Barradas

© The Editor(s) and the Author(s) 2021

The rights of the editor(s) and the author(s) have been asserted in accordance with the Copyright, Designs and Patents Act 1988. All rights to the book as a whole are reserved by INTECHOPEN LIMITED. The book as a whole (compilation) cannot be reproduced, distributed or used for commercial or non-commercial purposes without INTECHOPEN LIMITED's written permission. Enquiries concerning the use of the book should be directed to INTECHOPEN LIMITED rights and permissions department (permissions@intechopen.com).

Violations are liable to prosecution under the governing Copyright Law.



Individual chapters of this publication are distributed under the terms of the Creative Commons Attribution 3.0 Unported License which permits commercial use, distribution and reproduction of the individual chapters, provided the original author(s) and source publication are appropriately acknowledged. If so indicated, certain images may not be included under the Creative Commons license. In such cases users will need to obtain permission from the license holder to reproduce the material. More details and guidelines concerning content reuse and adaptation can be found at <http://www.intechopen.com/copyright-policy.html>.

Notice

Statements and opinions expressed in the chapters are these of the individual contributors and not necessarily those of the editors or publisher. No responsibility is accepted for the accuracy of information contained in the published chapters. The publisher assumes no responsibility for any damage or injury to persons or property arising out of the use of any materials, instructions, methods or ideas contained in the book.

First published in London, United Kingdom, 2021 by IntechOpen

IntechOpen is the global imprint of INTECHOPEN LIMITED, registered in England and Wales, registration number: 11086078, 5 Princes Gate Court, London, SW7 2QJ, United Kingdom
Printed in Croatia

British Library Cataloguing-in-Publication Data

A catalogue record for this book is available from the British Library

Additional hard and PDF copies can be obtained from orders@intechopen.com

Vitamin E in Health and Disease – Interactions, Diseases and Health Aspects

Edited by Pınar Erkekoglu and Júlia Scherer Santos

p. cm.

Print ISBN 978-1-83968-837-9

Online ISBN 978-1-83968-838-6

eBook (PDF) ISBN 978-1-83968-839-3

ISSN 2632-0983

Contents

Preface	XIII
Section 1	
Vitamin E Applications in Pathological Conditions	1
Chapter 1	3
Vitamin E in Human Skin: Functionality and Topical Products <i>by Claudineia Aparecida Sales de Oliveira Pinto, Tércio Elyan Azevedo Martins, Renata Miliani Martinez, Thamires Batello Freire, Maria Valéria Robles Velasco and André Rolim Baby</i>	
Chapter 2	27
Pharmaceutical Applications of Vitamin E TPGS <i>by Adnan Mansour Jasim and Mohammed Jasim Jawad</i>	
Chapter 3	47
Vitamin E in Chronic Myeloid Leukemia (CML) Prevention <i>by Lyudmyla Shvachko, Michael Zavelevich, Daniil Gluzman and Gennadii Teleguev</i>	
Chapter 4	61
Vitamin E and Derivatives in Skin Health Promotion <i>by Júlia Scherer Santos, Guilherme Diniz Tavares and Thaís Nogueira Barradas</i>	
Chapter 5	75
Role of Vitamin E in Boosting the Immunity from Neonates to Elderly <i>by Mariyappan Kowsalya, Mohan Prasanna Rajeshkumar, Thangavel Velmurugan, Kattakgounder Govindaraj Sudha and Saheb Ali</i>	
Chapter 6	95
Role of Vitamin E in Pregnancy <i>by Mohd Aftab Siddiqui, Usama Ahmad, Asad Ali, Farogh Ahsan and Md. Faheem Haider</i>	
Chapter 7	117
Impact of Vitamins and Minerals Enriched Flora in the Management of Calciphytoliths: A Special Focus on Vitamin E <i>by Ramu Govindan, Tilak Meenakshisundaram, Navanita Sivaramakumar, Podila Naresh, Duraiswamy Basavan and Dhanabal Palanisamy</i>	

Role of Vitamin E in Pregnancy

*Mohd Aftab Siddiqui, Usama Ahmad, Asad Ali,
Farogh Ahsan and Md. Faheem Haider*

Abstract

Vitamins play important roles in female health. They are essential for many functions, including menstruation and ovulation, oocyte (egg) quality and maturation. Vitamin E was first discovered in 1922 as a substance necessary for reproduction. It has become widely known as a powerful lipid-soluble antioxidant. There are various reports on the benefits of vitamin E on health in general. Vitamin E helps your body create and maintain red blood cells, healthy skin, eyes and strengthens your natural immune system. However, despite it being initially discovered as a vitamin necessary for reproduction, to date studies relating to its effects in this area are lacking. Vitamin E supplementation may help reduce the risk of pregnancy complications involving oxidative stress, such as pre-eclampsia. This chapter is written to provide a review of the known roles of vitamin E in pregnancy.

Keywords: Vitamin E, Pregnancy, Oxidative stress, Tocopherol

1. Introduction

Vitamin E is an important micronutrient in the human body. Vitamin E maintains various body functions. It plays a very important role in maternal health and child development [1]. Vitamin E is an essential fat-soluble micronutrient for higher mammals and functions as an antioxidant for lipids [2]. American scientists Herbert McLean Evans and Katherine Scott Bishop discovered vitamin E in 1922. Vitamin E is an essential lipid-soluble vitamin. It was initially denoted as an “anti-sterility factor X” that was necessary for reproduction. The vital role of vitamin E in reproduction was first investigated 80 years ago [3]. It was named according to a consecutive alphabetical order preceded by the discovery of vitamins A to D. Later vitamin E was called alpha-tocopherol, according to the Greek term “tokos” childbirth, “phero” to bear, and -ol indicating alcohol. Vitamin E is also called the “protecting vitamin” [4]. The amount of vitamin E is determined by age. For adults, the safest dose of vitamin E supplements is 1,500 IU/day for natural forms and 1,000 IU/day for man-made (synthetic) forms. **Table 1** shows the average daily prescribed doses as determined by the Food and Nutrition Board of the Institute of Medicine [5–7].

Some vitamin E containing foods include wheat, rice bran, barley, oat, coconut, palm, and annatto [8–9]. Other sources include rye, amaranth, walnut, hazelnut, poppy, sunflower, maize and the seeds of grape and pumpkins [10]. The richest sources are nuts, spinach, whole grains, olive oil, and sunflower oil [11]. Vitamin E now refers to eight different isoforms that belong to two categories, four saturated analogues (α , β , γ , and δ) called tocopherols and four unsaturated analogues