
Advances in Diabetes Research and Management

Rana Noor
Editor

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 Springer

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ISBN 978-981-19-0026-6

ISBN 978-981-19-0027-3 (eBook)

<https://doi.org/10.1007/978-981-19-0027-3>

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The registered company address is: 152 Beach Road, #21-01/04 Gateway East, Singapore 189721, Singapore

Preface

Diabetes mellitus is a major health problem affecting approximately 425 million people worldwide. Physiologically, the body is unable to control blood glucose levels in the blood which results in high blood glucose (hyperglycemia). The implications of hyperglycemia are frequent urination, weight loss, cardiovascular diseases, and damage to nerves, kidneys, and eyes. Diabetes mellitus is classified into Type I and Type II, while the former present in 5–10% of the population occurs when the immune system of the body damages insulin-producing B-cells of the pancreas leading to a deficiency of insulin in the body. Type 2 diabetes is the more common form of the disease characterized by the loss of ability to respond to insulin. This book discuss the latest research in the field of diabetes and management and also presents the new technologies that have been introduced to facilitate early diagnosis and the new potential therapies for these complications. It highlight the molecular mechanisms of the microvascular and macrovascular complications of diabetes 2 mellitus and review the most prevalent microvascular complications. The book discusses the molecular mechanisms involved in the development of diabetic complications. It also explore the molecular mechanisms of metabolic and immunological abnormalities affecting several organs due to diabetes and discuss the applications of nanotechnology for diagnostics, monitoring, and treatment for diabetes. It reviews the development of novel glucose measurement and insulin delivery strategies for diabetes management. The chapter also examine the point-of-care (POC) diagnostics for enhancing glucose measuring sensitivity, temporal response, and discusses a closed-loop system that continuously monitors blood glucose and releases insulin in a controlled and self-regulated fashion. Importantly, it reviews the immense potential of stem cell therapy in diabetes mellitus and molecular mechanisms that relate gut microbiota to the onset of insulin resistance and diabetes. It is a valuable source for students, researchers, and practitioners working in the area of glucose metabolism, diabetes, and endocrinologists.

New Delhi, India

Rana Noor

Contents

Biochemical Assay for Measuring Diabetes Mellitus	1
Taniya Sur, Aishwariya Das, Sheerin Bashir, Sambit Tarafdar, Bhanumati Sarkar, and Nithar Ranjan Madhu	
Diabetes and Other Comorbidities: Microvascular and Macrovascular Diseases Diabetes and Cancer	21
V. Nithya, P. Sangavi, R. Srinithi, K. T. Nachammai, S. Gowtham Kumar, D. Prabu, and K. Langeswaran	
Diabetes and Cardiovascular Disorder	41
S. Santhi Priya and K. Kumar Ebenezer	
Diabetes and Neurological Disorder	63
Iyashwarya Bhaskar Kalarani and Ramakrishnan Veerabathiran	
Diabetic and Nephropathy	81
Langeswaran Kulanthaivel, Geevaprabhakaran Ganesan, Chandrashekar Kirubhanand, and Gowtham Kumar Subbaraj	
Technology in the Management of Type 1 and Type 2 Diabetes Mellitus: Recent Status and Future Prospects	111
Titans Biswas, Biplab Kumar Behera, and Nithar Ranjan Madhu	
The Broader Aspects of Treating Diabetes with the Application of Nanobiotechnology	137
Rupak Roy, Aditi Chakraborty, Kartik Jana, Bhanumati Sarkar, Paramita Biswas, and Nithar Ranjan Madhu	
A Comprehensive Pharmacological Appraisal of Indian Traditional Medicinal Plants with Anti-diabetic Potential	163
Chandan Kumar Acharya, Balaram Das, Nithar Ranjan Madhu, Somnath Sau, Manna De, and Bhanumati Sarkar	

Diabetes Management: From “Painful” Pricks to “Pain-Free” Bliss	195
Bhuvaneswari Ponnusamy, Ponnulakshmi Rajagopal, Raktim Mukherjee, Swetha Panneerselvam, and Selvaraj Jayaraman	
Diabetes Mellitus and iPSC-Based Therapy	225
Dibyashree Chhetri, Rajesh Nanda Amarnath, Sunita Samal, Kanagaraj Palaniyandi, and Dhanavathy Gnanasampanthapandian	
Influence of Ketogenic Diet on Diabetes	247
Natesan Sella Raja, Varsha Singh, and Subhashree Sivakumar	

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