
Beverages: Processing and Technology

**Dr. Deepak Mudgil
Dr. Sheweta Barak**



Published by

SCIENTIFIC PUBLISHERS (INDIA)

Jodhpur –

5 A, New Pali Road
P.O. Box 91
Jodhpur - 342 001 INDIA

Delhi –

● 4806/24, Ansari Road
Daryaganj
New Delhi - 110 002 INDIA

© 2018, Authors

All rights reserved. No part of this publication or the information contained herein may be reproduced, adapted, abridged, translated, stored in a retrieval system, computer system, photographic or other systems or transmitted in any form or by any means, electronic, mechanical, optical, digital, by photocopying, recording or otherwise, without written prior permission from the publisher. Any breach will attract legal action and prosecution without further notice.

Disclaimer: While every effort has been made to avoid errors and omissions, this publication is being sold and marketed on the understanding and presumption that neither the editors (or authors) nor the publishers nor the printers would be liable in any manner whatsoever, to any person either for an error or for an omission in this publication, or for any action to be taken on the basis of this work. Any inadvertent discrepancy noted may be brought to the attention of the publisher, for rectifying it in future editions, if published.

This book contains information obtained from authentic and highly regarded sources. Reasonable efforts have been made to publish reliable data and information, but the editors and publisher cannot assume responsibility for the validity of all materials or the consequences of their use. The editors and publisher have attempted to trace and acknowledge the copyright holders of all material reproduced in this publication and apologize to copyright holders if permission and acknowledgement to publish in this form have not been obtained. If any copyright material has not been acknowledged please write and let us know so that we may rectify it.

Trademark Notice: Publications or corporate names may be trademarks, and are used only for identification and explanation in bonafide intent without intent to infringe.

ISBN: 978-93-87869-36-3

Visit the Scientific Publishers (India) website at
<http://www.scientificpub.com>
Printed in India

PREFACE

Food technology is developing as an emerging field from career point of view in India. In the last decade, many educational organizations including university departments, institutions, colleges and deemed universities have started undergraduate, postgraduate and doctorate degree programmes related to Food Technology, Food Processing, Food Engineering and allied courses such as Dairy Technology, Post Harvest Technology, Foods and Nutrition, Agricultural and Food Process Engineering etc. Ministry of Food Processing Industries of India (MFPI) established two specific institutions working on different aspects of food technology. Beverages is now-a-days a very interesting and important topic of discussion and research. That's why it is a major subject in B.Tech, M.Tech, & M.Sc. course curriculum of above mentioned disciplines. The book "**Beverages: Processing & Technology**" will cover topics such as Introduction to Beverages, Role of Ingredients and Additives in Beverages, Fruit Juice Processing, Processing of Specific Fruits & Vegetables Juices, Cereal Based Beverages, Soft Carbonated Beverages, Alcoholic Beverages, Dairy Based Beverages, Sports Beverages, Tea Processing, Technology of Coffee Manufacture, Cocoa and Chocolate Based Beverages, Packaging of Beverages & Functional Beverages. We wish to acknowledge authors for their contribution in the preparation of this book. The patience of Scientific Publishers (India) and the assistance provided by Scientific Publishers staff members are highly appreciated. Last but not least we must thank our family for their love, support and encouragement.

Deepak Mudgil
Sheweta Barak

CONTRIBUTORS

Amrita Poonia (Ph.D.)

Centre of Food Science &
Technology,
Institute of Agricultural Science,
BHU, Varanasi, Uttar Pradesh, India

Anceta Khatak (Ph.D.)

Centre of Food Science and
Technology, CCSHAU,
Hisar, Haryana

Anil Kumar (Ph.D.)

Department of Food Science &
Technology,
G.B. Pant University of Agri. &
Technology,
Pantnagar, Uttarakhand, India

Anindita Debnath (Ph.D.)

Faculty of Dairy Technology,
WBUAFS, Mohanpur Campus,
Nadia, Kolkata, West Bengal, India

Ankit Goyal (Ph.D.)

Department of Dairy Chemistry,
Mansinhbhai Institute of Dairy and
Food Technology,
Mehsana, Gujarat, India

Ashwani Kumar (Ph.D.)

Food Technology and Nutrition,
School of Agriculture, Lovely
Professional University,
Phagwara, Punjab, India

Beenu Tanwar (Ph.D.)

Department of Dairy Technology,
Mansinhbhai Institute of Dairy and
Food Technology,
Mehsana, Gujarat, India

Bhopal Singh (Ph.D.)

Dairy Technology Division, ICAR-
National Dairy Research Institute,
Karnal, Haryana, India

C.S. Chopra (Ph.D.)

Department of Food Science &
Technology, G.B. Pant University of
Agri. & Technology,
Pantnagar, Uttarakhand, India

Charul Chaudhary (Ph.D.)

Dayalbagh Educational Institute
(Deemed University)
Dayalbagh, Agra, (UP), India

Chetan N. Dharaiya (Ph.D.)

SMC College of Dairy Science,
AAU, Anand, Gujarat, India

Deepak Mudgil (Ph.D.)

Department of Dairy & Food
Technology, MIDFT,
Mehsana, Gujarat, India

Deepika Kathuria (M.Sc.)

Department of Food Science &
Technology, G.B. Pant University of
Agri. & Technology,
Pantnagar, Uttarakhand, India

Jaspreet Kaur (M.Sc.)

Food Technology and Nutrition,
School of Agriculture, Lovely
Professional University,
Phagwara, Punjab, India

Meenakshi Singh (Ph.D.)

Department of Food Science &
Quality Control
KVA DAV College for Women,
Karnal, India

Neha Duhan (M.Tech.)

Centre of Rural Development and
Technology
Indian Institute of Technology (IIT),
Delhi, India

Piverjeet Kaur (M.Sc.)

Food Technology and Nutrition,
School of Agriculture, Lovely
Professional University,
Phagwara, Punjab, India

Rekha Rani (Ph.D.)

Faculty of Dairy Technology,
Warner College of Dairy
Technology, SHUATS,
Allahabad, U.P., India

S.K. Sharma (Ph.D.)

Department of Food Science &
Technology,
G.B. Pant University of Agri. &
Technology,
Pantnagar, Uttarakhand, India

Sapna Dhawan (M.Tech.)

Department of Food Technology,
MDU,
Rohtak, Haryana, India

Sheweta Barak (Ph.D.)

Department of Dairy & Food
Technology
MIDFT, Mehsana, Gujarat, India

Simran Arora (M.Sc.)

Centre of Food Science and
Technology, CCSHAU,
Hisar, Haryana

Suman Kumari (M.Sc.)

Department of Food Technology,
MDU,
Rohtak, Haryana, India

Vandana Chaudhary (Ph.D.)

College of Dairy Science and
Technology
LLRUVAS,
Hisar, Haryana, India

Vikas Kumar (Ph.D.)

Food Technology and Nutrition,
School of Agriculture, Lovely
Professional University,
Phagwara, Punjab, India

Yogesh Gat (Ph.D.)

Food Technology and Nutrition,
School of Agriculture, Lovely
Professional University,
Phagwara, Punjab, India

CONTENTS

1. Introduction to Beverages
– Deepak Mudgil **1**
2. Role of Ingredients and Additives in Beverages
– Deepak Mudgil
3. Fruit Juice Processing
– Amrita Poonia
4. Processing of Specific Fruits and Vegetables Juices
– Sapna Dhawan & Suman Kumari
5. Cereal Based Beverages
– Sheweta Barak
6. Soft Carbonated Beverages
– Vandana Chaudhary
7. Alcoholic Beverages
– Aneeta Khatak, Charul Chaudhary & Simran Arora
8. Dairy Based Beverages
– Bhopal Singh, Rekha Rani, Chetan N. Dharaiya & Anindita Debnath

9. Sports Beverages

– Neha Duhan

10. Tea Processing

*– Vikas Kumar, Jaspreet Kaur, Beenu Tanwar,
Ankit Goyal, Yogesh Gat, Ashwani Kumar & Piverjeet Kaur*

11. Technology of Coffee Manufacture

– Anil Kumar, Deepika Kathuria, S. K. Sharma & C. S. Chopra

12. Cocoa and Chocolate Based Beverages

– Meenakshi Singh

13. Packaging of Beverages

– Sheweta Barak

14. Functional Beverages

– Deepak Mudgil