

Advanced Dairy Science and Technology

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Preface

Advanced Dairy Science and Technology is designed to provide students, researchers, academicians, and professionals with a comprehensive understanding of the rapidly evolving dairy sector. The dairy industry has undergone remarkable transformation in recent decades through the integration of scientific innovations, modern processing technologies, biotechnology, automation, and sustainable production practices. This book aims to bridge the gap between fundamental dairy science and emerging technological advancements shaping the future of dairy production and management.

The contents of this book cover essential aspects of milk chemistry, microbiology, dairy engineering, processing technologies, quality assurance, food safety, packaging, value-added dairy products, and innovations such as artificial intelligence, blockchain traceability, precision fermentation, and smart dairy systems. Emphasis has also been placed on sustainability, environmental responsibility, and consumer-driven developments that are increasingly influencing global dairy markets.

The objective of this text is not only to present scientific principles but also to encourage critical thinking and practical application in real-world dairy operations. Each chapter has been structured to support academic learning as well as industrial relevance, making the book useful for undergraduate and postgraduate students, dairy technologists, food scientists, and professionals working in allied sectors.

It is hoped that this book will serve as a valuable resource for understanding both conventional dairy practices and the future directions of dairy science and technology, contributing to innovation, food security, and sustainable development in the dairy industry.

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CONTENTS

S. NO.		PAGE NO.
1.	Fundamentals of Advanced Dairy Science and Technology <i>Thorat Dinesh Damodhar</i>	1-12
2.	Milk Chemistry and Biochemical Composition <i>Ghule Balaji Kishanrao</i>	13-24
3.	Dairy Microbiology and Food Safety Management <i>Shivraj B. Patil</i>	25-38
4.	Advances in Milk Processing and Preservation Techniques <i>Balasaheb D. Landge</i>	39-50
5.	Functional Dairy Products and Nutraceutical Applications <i>A. P. Naik.</i>	51-62
6.	Fermented Dairy Products: Science and Technology <i>Sunil M. Gaikwad</i>	63-74
7.	Innovations in Cheese, Butter, and Ice Cream Technology <i>Mahesh Namdevrao Ambore</i>	75-86
8.	Quality Control and Analytical Techniques in Dairy Industry <i>Ranjan B. Yedatkar</i>	87-98
9.	Dairy Waste Management and Sustainable Processing Technologies <i>Arvind V. Shinde</i>	99-110
10.	Emerging Trends and Future Perspectives in Dairy Science and Technology <i>Thorat Dinesh Damodhar, Ghule Balaji Kishanrao, Mahesh Namdevrao Ambore, Balasaheb D. Landge</i>	111-122

11. Evaluation of Microbial Contamination in Dairy Butter Samples Sold in Nanded Town of Marathwada Region During Summer **123-130**

Omprakash A. Kadam, Megha. S. Suryawanshi, Ranjan B. Yedatkar