

Advances in Food Process Engineering

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PREFACE

Food Process Engineering has witnessed remarkable transformations in recent decades, driven by the urgent need for sustainable technologies, effective waste valorization, and the growing consumer demand for natural, safe, and functional food products. The book “Advances in Food Process Engineering” is a compilation of recent innovations, emerging techniques, and interdisciplinary research in the domain, particularly focusing on bio-based materials, novel extraction techniques, and food preservation strategies.

This volume brings together eight carefully selected chapters that reflect the dynamic evolution of food process engineering. Each chapter is grounded in experimental work and offers insights into practical applications that contribute to enhanced food quality, safety, sustainability, and nutritional functionality. From the application of sodium alginate and kadam leaf extract coatings to extend the shelf life of cape gooseberry, to microwave-assisted protein extraction from mustard meal, the book explores cutting-edge research and development across diverse food matrices.

In particular, this book emphasizes the utilization of agro-industrial by-products, such as lemon waste, pineapple peel, coconut shell, and mustard meal, highlighting their potential to be transformed into valuable food additives, packaging materials, and bioactive compounds. It also introduces readers to eco-leather as a secondary packaging material, biodegradable films, and microencapsulation techniques, reflecting the growing trend toward green technologies and circular economy principles in food systems.

The intended audience includes food scientists, process engineers, researchers, graduate students, and industry professionals who are interested in sustainable innovation and novel applications in food processing. We hope this compilation will serve as both a reference and inspiration for ongoing research and industrial applications.

We extend our heartfelt gratitude to the contributing authors for their valuable research and to all those who supported the creation of this volume. It is our sincere belief that this book will contribute meaningfully to the growing body of knowledge in food process engineering and foster new ideas for future innovations.

CONTENTS

S. No.	Title	Page No.
1	The application of sodium alginate and aqueous extract of kadam (<i>Neolamarckia cadamba</i>) leaf coating to extend the shelf life of cape gooseberry	1 - 27
2	Sodium alginate and mustard protein-based emulsion gels	28 - 52
3	Sodium alginate and lemon (<i>Citrus limon</i>) waste-based biodegradable film	53 - 78
4	Antimicrobial & Antioxidant activity of extracts of Pineapple (<i>Ananas comosus</i>) peel waste	79 - 91
5	Optimization of ultrasound-assisted extraction of bioactive compounds from green coconut shell	92 - 102
6	Development and shelf-life study of sensorial accepted microencapsulated Spirulina enriched cookies	103 - 117
7	Development of Eco-leather and its Utilization in Secondary Food Packaging: A Sustainable Approach	118 - 136
8	Microwave Assisted protein extraction from mustard MEAL (<i>Brassica juncea</i>) and determination of its functional properties	137 - 161