

MODERN EXTRACTION TECHNIQUES

for Natural Products

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Editors
Chua Lee Suan
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PREFACE

For centuries, people have extracted natural products to obtain plant ingredients for nutritional, cosmetic, and medicinal applications. Malaysia is rich in biodiversity and provides an abundant supply of natural resources. Since the demand for compounds from fruits, vegetables, and herbs continues to grow, the need for efficient and environmentally sustainable extraction technologies is of extreme importance. This book presents various processes of extracting bioactive compounds to optimize the yield and pharmacological properties.

The idea for this book emerged from the growing need to document and advance Malaysia's longstanding heritage in herbal and plant-based remedies, which have been passed down through generations. Over the years, the study of natural product extraction has evolved from traditional empirical practices to more scientific and technology-driven approaches. This book builds upon earlier compilations and research efforts in the field, and aims to bridge the gap between traditional wisdom and modern scientific advancements.

Traditional extraction technologies such as maceration and soxhlet extraction are effective, but they are often time-consuming and resource-intensive. The emergence of green technologies such as supercritical fluid extraction (SFE), subcritical water extraction (SWE), ultrasound-assisted extraction (UAE), and microwave-assisted extraction (MAE), offers promising alternatives. These techniques not only enhance efficiency but also align with the global push for sustainability.

This book provides insights into the advanced techniques, their mechanisms, and applications using local resources such as propolis, sirih, rambutan peel, brown algae, and local herbal materials. By integrating traditional knowledge with innovative technological approaches, the book

serves as a comprehensive reference for researchers, practitioners, and students who are striving to achieve excellence in the field of natural product extraction.

This book will benefit readers from a well-rounded understanding of both conventional and emerging extraction techniques, supported by real examples involving Malaysian plant resources. The book not only provides readers with the theoretical knowledge of extraction principles and mechanisms but also provides practical insights into method optimization and potential industrial applications. By offering a blend of scientific depth and applied relevance, this book serves as a valuable guide for academic researchers, industry professionals, and students seeking to harness the potential of natural products through innovative and sustainable practices.

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