Medicinal plants - use in prevention and treatment of diseases - book review

Desi Eka Putri Empra

Correspondence

Desi Eka Putri Empra*

[1]Department of Biology, Universitas Gadjah Mada, Yogyakarta, Indonesia

*Corresponding Author: desiekaputriempra@mail.ugm.ac.id

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Book Review

A review of Hassan, B. (Ed.). (2020). Medicinal Plants - Use in Prevention and Treatment of Diseases. IntechOpen. doi: 10.5772/intechopen.83104.

A comprehensive exploration of medicinal plants and herbal medicines is the main topic in Medicinal Plants - Use in Prevention and Treatment of Diseases edited by Bassam Hassan (2020). This book aims to highlight the pharmacological properties, safety, efficacy, and mechanisms of action of various plant-based compounds across a wide range of health conditions.

The first chapter reviews the analgesic and anti-inflammatory effects of Ghanaian medicinal plants, focusing on their traditional uses, phytochemical components, and pharmacological activities. It highlights experimental methods for evaluating these effects and stresses the importance of combining traditional knowledge with scientific validation to develop effective plant-based therapies. The chapter serves as a valuable resource for advancing natural product research and supports the preservation of ethnobotanical heritage while encouraging further investigation into plant-based remedies for pain and inflammation. Additionally, the chapter effectively connects traditional medicine with modern pharmacology, providing a strong foundation for future studies in this field.

Chapter 2 explore the antimicrobial properties inherent in garlic (*Allium sativum* L.), focusing on the identification and characterization of specific genes responsible for these effects. It effectively outlines the biochemical compounds, such as diallyl sulphides, that contribute to garlic's ability to combat a wide range of pathogens. The discussion also highlights the potential of these natural antimicrobial agents as alternatives to conventional antibiotics, especially in the context of increasing antibiotic resistance. By integrating genetic insights with traditional knowledge, the chapter provides a solid foundation for future research into plant-based therapeutics, emphasizing the importance of natural products in drug discovery and disease management. The chapter is informative and well-structured, making a compelling case for the continued investigation of garlic's genetic resources in antimicrobial development.

The third chapter provides a comprehensive ethnobotanical survey of medicinal plants used in Northern Pakistan of the Western Himalayas, highlighting their significance in treating prevalent diseases such as hypertension, respiratory disorders, skin problems, and rheumatism. The authors systematically present data on plant species, parts used, modes of utilization, and disease categories, supported by quantitative indices like use value (UV), relative frequency of citation (RFC), family

importance value (FIV), and fidelity level (FL) to assess the importance and reliability of the medicinal plants documented. The detailed social and demographic profile of informants and the extensive listing of plant species underscore the rich traditional knowledge and reliance on native flora for healthcare in the region.

Chapter 4 explores bioinorganic chemistry and computational methods applied to herbal medicine for tuberculosis treatment. It emphasizes the role of natural compounds from medicinal plants and their interactions with *Mycobacterium tuberculosis* proteins, highlighting their potential as alternative therapies. The detailed explanation of computational drug discovery illustrates how bioinformatics accelerates identifying promising anti-TB agents.

Chapter 5 discusses the beneficial property of black garlic, a fermented product of fresh garlic with enhanced bioactive compounds like polyphenols and organosulfur compounds. It explains the production process and highlights black garlic's unique sensory qualities, such as its black colour and sweet taste without the typical garlic odor. The chapter also summarizes various therapeutic benefits supported by studies, including anticancer, antioxidant, and neuroprotective effects, making it a useful reference for researchers and nutrition experts interested in functional foods.

Chapter 6 highlights the rising incidence of fungal infections and the limitations of current antifungal drugs, such as toxicity, resistance, and relatively high cost. It pushed the urgent need for new antifungal agents with diverse structures and selective targets. Plant-derived natural products are presented as promising alternatives due to their chemical diversity and potential for safer, more effective treatments. The chapter reviews various antifungal phytocompounds and innovative formulation approaches to enhance efficacy, advocating further research to expand therapeutic options and improve patient outcomes.

Chapter 7 summarizes the prescribing patterns of traditional herbal medicines in Korean medicine clinics, showing that most prescriptions target disease treatment, especially musculoskeletal, digestive, and respiratory conditions. Decoction form of herbal medicines is mainly used for musculoskeletal diseases, while non-decoction types serve multiple purposes including health promotion. This chapter also outlines practitioner demographics and clinic locations, providing a clear, data-driven insight into clinical role of traditional herbal medicine in modern Korean medicine.

Chapter 8 discusses *Etlingera pavieana*, a Southeast Asian medicinal plant from the Zingiberaceae family, highlighting its botanical traits, traditional uses, and phytochemical composition, particularly phenylpropanoids like trans-4-methoxycinnamaldehyde. The chapter provides a summary of the rhizome's pharmacological effects, including anti-inflammatory, antioxidant, antiatherogenic, antimicrobial, and anticancer activities, supported by various studies. The chapter effectively connects traditional knowledge with scientific research, suggesting the plant's potential for developing therapeutic agents, while emphasizing the need for further in vivo toxicology and clinical trials to ensure safety and efficacy.

Chapter 9 delves into chemotherapy's development from chemical warfare origins to a key cancer treatment that targets rapidly dividing cells by damaging DNA or inhibiting mitosis. It emphasizes chemotherapy's dual role in curing or controlling cancer while causing significant side effects that require careful management by healthcare teams. Side effects are categorized by timing and frequency, highlighting the complexity of treatment. The chapter also notes the potential of medicinal plants to enhance chemotherapy effectiveness and reduce adverse effects, providing a balanced view of conventional and complementary cancer therapies.

Chapter 10 examine the herbal remedies in breast cancer prevention and treatment, emphasizing the selective toxicity of phytochemicals like artemisinin toward cancer cells and the potential of phytoestrogens in hormone therapy. It highlights the anticancer mechanisms of various plant compounds and stresses the need for clinical trials to validate their efficacy and safety. By linking traditional herbal knowledge with modern molecular research, the chapter underscores the promise of developing affordable, less toxic anticancer drugs from natural sources, while calling for further clinical exploration to realize their therapeutic potential.

The last chapter focuses the historical development and core principles of Chinese herbal medicine, emphasizing key texts like Shen Nong's Herbal Classic and the Compendium of Materia Medica. The author explains the fundamental properties of herbs, such as the four gases and five flavors, and describes how formulas are personalized based on patient symptoms. The integration of traditional knowledge with modern clinical practice, especially in treating female cancers, is clearly presented, highlighting the adaptability and depth of Chinese herbal medicine.

This book impressively bridges traditional ethnobotanical knowledge with modern scientific research, offering a rich and multifaceted exploration of medicinal plants and herbal medicines. The integration of ethnobotanical studies, pharmacological evaluations, and clinical insights highlights the importance of preserving indigenous knowledge while applying rigorous scientific methods to validate and optimize these natural therapies. The book stands out as a valuable resource that not only deepens understanding of herbal medicines but also advocates for their thoughtful incorporation into contemporary healthcare, addressing challenges like drug resistance, side effects, and accessibility. It inspires further research and development aimed at harnessing the full potential of medicinal plants for global health benefits.

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