Forward

The heterocyclic chemistry is one of the pillars of modern scientific exploration, influencing medicinal chemistry, organic synthesis, and materials science. Four-membered rings, because of their distinctive structural and functional features, are established as unique among heterocyclic compounds. Their innate reactivity and versatility make these compounds crucial for synthetic challenges, vital scaffolds in developing bioactive compounds, and fascinating tools for pharmacologists. Sustainability is the key criterion for the expansion of modern science and is an inevitable aspect in all disciplines. Green chemistry occupies the centre stage of sustainable development, especially the organic synthesis of heterocycles, which has been known as a requisite tool for green and sustainable chemical developments.

The book *"Bioactive Four-Membered Heterocycles: Natural Products, Green Synthesis, and Bioactivity"* edited by Prof. Jitender Mohan Khurana and Dr. Bubun Banerjee, involves twelve chapters that delve profoundly into the synthesis, biological importance, and pharmaceutical applications of the valuable molecules and portray specific environmentally cognizant approaches to synthesizing four-membered heterocycles tailored toward reducing ecological footprints and highlighting entrepreneurial innovation. The comprehensive studies covering bioactivity studies added value to the monographs, showing evidence that these compounds tackles global health issues. The discussion bridges chemical synthesis to biological applications, emphasizing the crucial drug discovery and design aspect.

Moreover, the discussions on the naturally occurring bioactive four-membered heterocycles will complement the rest by providing an overall view of their importance in nature and industry. Under this purview, I believe that this book entitled'*Bioactive Four-Membered Heterocycles: Natural Products, Green Synthesis, and Bioactivity*' will serve as an invaluable, insightful, and comprehensive resource for chemists, biologists, and interdisciplinary researchers, offering abroad abstract knowledge to extend future discoveries in modern medicine.

This book, edited by Prof. Jitender Mohan Khurana and Dr. Bubun Banerjee, is going to be a valuable resource for researchers working in the intriguing field of pharmacology. The first chapter describes commercially available drugs with four-membered heterocycles. Chapter 2 discusses the chemistry and biology of β-lactams as anticancer agents, while the 3rd chapter demonstrates the role of four-membered heterocycles in drugs and drug designing. Chapter 4 focuses on the synthesis of pyrrole-substituted β-lactams by diverse catalytic methods, and the Green synthesis of bioactive oxetanes is discussed in Chapter 5. Chapter 6 provides an elaborative literature related to the Four-membered heterocycles via photochemical means. Chapter 7 describes explicitly the Applications of Paternò-Büchi reactions for the construction of the four-membered heterocycles. Further, the synthesis of four-membered heterocycles by microwave irradiation is deliberated in Chapter 8. The synthesis of four-membered heterocycles under electrolysis is summarized in Chapter 9. Chapter 10 up-

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dates exclusively on the advances in Organocatalyzed synthesis of four-membered heterocycles. The applications of four-membered heterocycles to construct higher-membered heterocycles are described in Chapter 11, while Chapter 12 deals with the industrial applications of four-membered heterocycles

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