

Special Issue

Molecular Pharmacology and Biological Activities of Natural and Derivatives Bioactive Compounds

Message from the Guest Editors

Natural products (NPs) derived from plants, marine organisms, and microbes remain a cornerstone of drug discovery, offering diverse chemical scaffolds and novel mechanisms of action for traditional and modern medicine. Serving as templates for molecular optimization, NP research has expanded through advances in extraction, chemical synthesis, biotechnology, and computer-aided drug design (CADD). These tools enable scientists to create derivatives with enhanced efficacy, target affinity, and pharmacokinetics. Furthermore, NPs are vital for nutraceuticals and functional food colorants, providing immunomodulatory, anti-carcinogenic, and neuroprotective benefits. Despite these technological strides, optimizing new drug candidates remains challenging. The rise of novel human and animal pathologies, escalating antimicrobial resistance, and increasingly recalcitrant tumors urgently necessitate next-generation bioactive compounds. Consequently, there is a renewed global imperative to explore natural reservoirs for potent therapeutic agents capable of addressing complex neurological disorders and immune-related conditions.

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