Secondary Metabolites from Medicinal Natural Products

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ABSTRACT

Medicinal natural products, shaped by evolutionary pressures and ecological interactions, are reservoirs of structurally diverse and biologically potent secondary metabolites. These compounds, including terpenoids, flavonoids, alkaloids, and lignans, serve as crucial chemotaxonomic markers and therapeutic agents, contributing to both traditional medicine systems and modern drug discovery pipelines. South Korea is also known to have many indigenous medicinal plants that show excess number of secondary metabolites. My research integrates classical natural product chemistry with advanced metabolomics, spectroscopic techniques, and bioactivity-guided isolation to uncover and characterize novel secondary metabolites from understudied medicinal plants. This presentation will highlight recent findings from our investigation of regionally significant species, and other endemic flora with documented ethnomedical use. Emphasis will be placed on the structural elucidation of novel compounds, the biosynthetic logic underlying their production, and their functional roles as anti-inflammatory, antimicrobial, and metabolic disease-modulating agents. Moreover, the talk will address how climate-adaptive metabolomics and traditional knowledge integration can together illuminate new leads for therapeutic development and valorization of biodiversity. By bridging phytochemistry, omics technologies, and bioactivity screening, our work contributes to the growing field of evidence-based natural product research and supports sustainable bio-utilization of medicinal plant resources.

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