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Anticancer Potential of Bioactive Compounds in Premna serratifolia, Premn...



Anticancer Potential of Bioactive Compounds in Premna serratifolia, Premna odorata, and Premna tomentosa: A Review of In Vitro Evidence

By

Febriyanti, RM (Febriyanti, Raden Maya) ; Rafif, SN (Rafif, Syauqi Nawwar) ; Mikdar, NN (Mikdar, Nazwa Nuraizza) ; Hikmatiana, BN (Hikmatiana, Billa Nidia) ; Maisyarah, IT (Maisyarah, Intan Timur) ; Khatib, A (Khatib, Alfi) ; Muhaimin, M (Muhaimin, Muhaimin)

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Abstract

The genus Premna (Lamiaceae), widely distributed across tropical and subtropical regions, is renowned for its ethnomedicinal applications, including cardiotonic, antimicrobial, hepatoprotective, and antitumor properties. Despite these promising uses, the current body of literature relies predominantly

on in vitro evidence, with limited knowledge regarding in vivo validation, metabolism, and bioavailability. This review synthesizes findings from the past decade on the *Premna serratifolia* group (*P. serratifolia*, *P. odorata*, and *P. tomentosa*), focusing on their bioactive compounds and mechanisms of in vitro anticancer activity. The compounds identified- such as flavonoids, terpenoids, and steroids-exhibit diverse actions, including cell cycle arrest, apoptosis induction, inhibition of metastasis, oxidative stress modulation, and autophagy. Key compounds like quercetin, kaempferol, and stigmasterol demonstrate multi-targeted actions, effectively regulating pathways such as PI3K/AKT and NF-kappa B while selectively targeting cancer cells. These findings underscore chemopreventive potential from *P. serratifolia* group and their ability to complement conventional cancer therapies, potentially reducing side effects and overcoming drug resistance. Furthermore, the review validates the ethnomedicinal use of *Premna* species and bridges traditional knowledge with modern oncology. However, the absence of comprehensive in vivo and clinical data warrants further research to fully harness these compounds' potential. This study highlights *P. serratifolia*, *P. odorata*, and *P. tomentosa* as promising sources for novel plant-derived anticancer agents, offering opportunities for future drug discovery.

Keywords

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Addresses

¹ Univ Padjadjaran, Fac Pharm, Dept Biol Pharm, Bandung, West Java, Indonesia

² Univ Padjadjaran, Herbal Study Ctr, Bandung, West Java, Indonesia

³ Univ Padjadjaran, Fac Pharm, Pharmacist Profess Study Program, Bandung, West Java, Indonesia

⁴ Int Islamic Univ Malaysia, Dept Pharmaceut Chem, Kulliyyah Pharm, Kuantan, Malaysia

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