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Phytochemical and biological activities of *Litsea elliptica* Blume

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Litsea elliptica Blume is tropical tree widely distributed in South East Asia. Traditionally, it is used for treating headaches, fevers and stomach ulcer. Scientific studies have justified its insecticidal properties and revealed its potent antioxidant, antimicrobial and cytotoxic activities. This present study explores the antibacterial, phytochemical analysis, antioxidant and cytotoxic properties of its leaf extracts. 500 mg/mL of its methanolic extract demonstrated moderate inhibition on *S. aureus* (zone of inhibition=7.50 mm) compared to *B. spizizenii*, *E. coli* and *P. aeruginosa* which showed no visible inhibition zone vs. 20 mg/mL of streptomycin (positive control) which showed significant zones of inhibitions of 15 mm, 25 mm, 19 mm and 12 mm, respectively. Phytochemical analysis revealed 45 compounds in its Mixed Leaves Extract (MLE) and 19 compounds in its Young Leaf Extract (YLE). The methanolic MLE that showed the highest phenolic (134.9 mg GAE/g) and flavonoid (15.90 mg RE/g) content did not produce the correspondingly highest antioxidant activity (IC_{50} =1,556.66 ppm) compared to the ethanolic (TPC=108.00 mg GAE/g, TFC=12.39 mg RE/g; IC_{50} =5,330.04 ppm) and aqueous (TPC=89.83 mg GAE/g, TFC=6.49 mg RE/g, IC_{50} =1,248.09 ppm) extract. Nonetheless, YLE showed higher antioxidant activities (IC_{50} (MeOH)=338.96 ppm; IC_{50} (EtOH)=2,656.21 ppm; IC_{50} (Aq)=259.88 ppm) compared to the MLE. MLE was found to be more cytotoxic towards the A549 lung carcinoma cell line compared to YLE via apoptosis. Our analysis indicated that the treated cells show mitochondrial mediated apoptosis. We also observed changes in the architecture of the nucleus that resembled condensation and fragmentation. This suggests that MLE has taken a multi-targeted approach to induce apoptosis in the A549 cancer cell. Overall, these results suggest that the both young and matured leaves of *L. elliptica* have demonstrated activity against A549 carcinoma cell lines.

Biography

May Poh Yik Goh is a currently pursuing PhD in Biotechnology from the University of Brunei Darussalam (UBD) and has obtained her Bachelor's Degree in Molecular Genetics and Biotechnology from Curtin University of Technology, WA. Her current work mainly involves biological and chemical studies on the anti-cancer, antioxidant and antibacterial properties as well as the phytochemical composition of various local medicinal plant species with ethno medicinal values.

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