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Mass spectra in identification of bioactive compounds from natural products

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Identification of bioactive compounds remains one of the main objectives in natural product research. Mass spectrometry (MS) provides an important resource in the elucidation and identification of these compounds as it gives information on the molecular mass and structural features. Our research group has focused on finding new and natural sources of bioactives from medicinal plants and ferns, with special targets for anti-oxidant, tyrosinase inhibition, anti-bacterial and anti-cancer properties. This paper will report on the identification of a few bioactive polyphenolic compounds such as flavonoids, flavonols, polymeric tannins, etc., through the use of HPLC, LC-MS and ESI-MS. Emphasis is also placed on the interpretation of the ESI-MS fragmentation patterns of a heterogeneous polymeric proanthocyanidin (condensed tannins) possessing selective cytotoxicity towards colon cancer cells HT29 (IC_{50} 7.0 ± 0.3 $\mu\text{g}/\text{mL}$), strong radical scavenging activity (IC_{50} 5.6 ± 0.1 $\mu\text{g}/\text{mL}$) and bactericidal activity which was isolated from a medicinal fern of the *Blechnaceae* family. Spectroscopic spectra showed that the proanthocyanidin was a heterogeneous polymer possessing epicatechin subunits with up to 12 degree of polymerization and co-existing with minor units of epiafzelechin and epigallocatechin at C4-C8 inter-flavonoid linkages. Structure-activity relationships of the identified proanthocyanidin with the reported bioactivities will be discussed.

Biography

How-Yee Lai holds a PhD in Chemistry from Monash University. She has done her MSc and BSc degrees in Biochemistry from the University of Malaya. She is currently a Senior Lecturer and the Deputy Dean (for the Academic Affairs and Student Experience) at the School of Biosciences, Taylor's University. Her research interests lie in the evaluation, isolation and elucidation of bioactive compounds from plants, such as ferns and mangroves and targeting on bioactivities such as antioxidative, antimicrobial, tyrosinase inhibition, anti-cancer and anti-obesity properties. She has published in various international journals.

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