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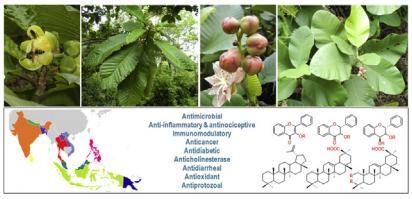
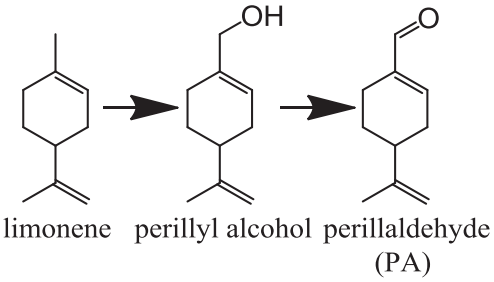
Graphical abstracts

REVIEW



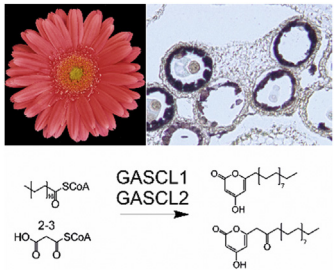
Species from the genus *Dillenia* have been widely used in medicinal folklore to treat cancers, wounds, jaundice, fever, cough, diabetes mellitus, and diarrhea as well as hair tonics. Flavonoids, triterpenoids, and miscellaneous compounds have been identified in the genus. Extracts and pure compounds from this genus have been reported for their antimicrobial, anti-inflammatory, cytotoxic, antidiabetic, antioxidant, antidiarrheal, and antiprotozoal activities.

MOLECULAR GENETICS AND GENOMICS

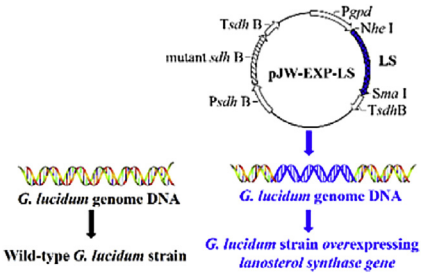


A cytochrome P450 type enzyme with perillyl alcohol and perillaldehyde synthases activities was isolated by analyzing an expressed sequence tag library from several oil types of pure lines of perilla. The recombinant protein catalyzed the hydroxylation and oxidation of limonene to perillyl alcohol and perillaldehyde.

METABOLISM



Gerbera tapetum localized GASCL1 and GASCL2 are tri-and tetraketide synthases capable of using long chain acyl-CoA starters.



Overexpression of lanosterol synthase gene increased the ganoderic acid content and the accumulation of lanosterol and ergosterol in a submerged *G. lingzhi* culture.

ECOLOGICAL BIOCHEMISTRY

Nineteen polyphenolic compounds were quantified from different parts of willowherb across 10 populations. Clear differences can be seen in the polyphenol fingerprints of leaves, flowers and stems.