Betel-like-scented Piper Plants as Diverse Sources of Industrial and Medicinal Aromatic Chemicals (Article)

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Abstract

Piper betle (Piperaceae) or betel leaf, known locally as "Phlu" has been used by people in Thailand for chewing for a long time. Additionally, the leaves are used for traditional remedies and folk customs, such as for weddings and housewarming ceremonies. More recently, the aromatic oil industry has used the leaves for oil distillation. Moreover, the oils are used in several household products. Over the past 12 years of our research on Piper species, we found that among the more than 43 species recorded, there are some plants other than P. betle that possess a betel-like scent, viz. P. betloides, P. crocatum, P. maculaphyllum, P. rubroglandulosum, P. semiimmersum, P. submultinerve, P. tricolor, and P. yinkiangense. As it was expected that these plants would contain similar useful chemicals, their extracts were screened for the chemical contents by GC-MS. The extracts contain some important chemical substances that are similar to the betel extract, namely, eugenol, isoeugenol, chavicol, caryophyllene, sabine, phellandrene, germacrene A and germacrene D, and sesquiterpenes. The results indicate that the eight plant species would have as high a potential as P. betle for industrial purposes. Moreover, as the plants are wild species they have a greater vigor, thus growing well and with more branching than betel. The diverse Piper species studied and documented are important for sustainable uses and can enable conservation management for posterity.

Author keywords

Betel plant; Betel-like-scented plants; GC-MS; Piper species; Thailand

Indexed keywords

EMTREE drug terms: 1h cycloprop[e]azulene; alpha amorphene; alpha cubeene; alpha ylangene; aromatic compound; beta cubeene; beta phellandrene; beta thuene; betel extract; bicyclogermacrene; caryophyllene; chavibetol; chavicol; eugenol; germacrene A; germacrene D; guaiacol; humulene; isoeugenol; linalool; phellandrene; phytol; pinene; plant extract; plant medicinal product; sabine; sesquiterpenes; terpine; unclassified drug; unindexed drug

EMTREE medical terms: Article; mass fragmentography; Piper (plant); Piper betle; Piper betloides; Piper crocatum; Piper maculaphyllum; Piper rubroglandulosum; Piper semiimmersum; Piper submultinerve; Piper tricolor; Piper yinkiangense; plant leaf; priority journal; solvent extraction; wild plant

Chemicals and CAS Registry Numbers: caryophyllene, 87-44-5; eugenol, 97-53-0; germacrene D, 23986-74-5; guaiol, 26638-03-9; 28930-19-0, 90-05-1; humulene, 6753-98-6; isoeugenol, 97-54-1; linalool, 78-70-6; phytol, 150-86-7; pinene, 80-56-8; sabine, 3387-41-5; terpine, 8013-00-1

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