Lime Flower

Species (Family)

(i) *Tilia cordata* Mill. (Tiliaceae)
(ii) *Tilia platyphyllos* Scop.
(iii) *Tilia* × *europaea* – hybrid of (i) and (ii)

Synonym(s)

Lime Tree, Linden Tree

Part(s) Used

Flowerheads

Pharmacopoeial and Other Monographs

BHC 1992[G6]
BHP 1996[G9]
BP 2001[G15]
Complete German Commission E (Linden)[G3]
Martindale 32nd edition[G43]
PDR for Herbal Medicines 2nd edition (Linden)[G36]
Ph Eur 2002[G28]

Legal Category (Licensed Products)

GSL[G37]

Constituents[G2,G6,G22,G49,G62,G64]

Acids Caffeic acid, chlorogenic acid and *p*-coumaric acid.

Amino acids Alanine, cysteine, cystine, isoleucine, leucine, phenylalanine and serine.

Carbohydrates Mucilage polysaccharides (3%). Five fractions identified yielding arabinose, galactose, rhamnose, with lesser amounts of glucose, mannose, and xylose; galacturonic and glucuronic acids;[1] gum.

Flavonoids Kaempferol, quercetin, myricetin and their glycosides.

Volatile oil Many components including alkanes, phenolic alcohols and esters, and terpenes including citral, citronellal, citronellol, eugenol, limonene, nerol, α-pinene and terpineol (monoterpenes), and farnesol (sesquiterpene).

Other constituents Saponin (unspecified), tannin (condensed) and tocopherol (phytosterol).

Food Use

Lime flower is listed by the Council of Europe as a natural source of food flavouring (category N2). This category indicates that lime flower can be added to foodstuffs in small quantities, with a possible limitation of an active principle (as yet unspecified) in the final product.[G16] In the USA, lime flower is listed as GRAS (Generally Recognised As Safe).[G65]

Herbal Use

Lime flower is stated to possess sedative, antispasmodic, diaphoretic, diuretic and mild astringent properties. Traditionally it has been used for migraine, hysteria, arteriosclerotic hypertension, feverish colds, and specifically for raised arterial pressure associated with arteriosclerosis and nervous tension.[G2,G6,G7,G8,G64]

Dosage

Flowerhead 2–4 g by infusion.

Liquid extract 2–4 mL (1 : 1 in 25% alcohol).

Tincture 1–2 mL (1 : 5 in 45% alcohol).

Pharmacological Actions

In vitro and animal studies

In vitro, lime flower has been reported to exhibit antispasmodic activity followed by a spasmogenic effect on rat duodenum.[2] The actions were inhibited by atropine and papaverine, and reinforced by acetylcholine. The diaphoretic and antispasmodic properties claimed for lime flower have been attributed to *p*-coumaric acid and the flavonoids.[G39,G60] In addition, a number of actions have been associated with volatile oils including diuretic, sedative and antispasmodic effects, which may also account for some of the reputed uses of lime flower.[3–5] Volatile oils are not thought to possess any true diuretic activity, but to act as a result of certain terpenoid components having an irritant action on the kidneys during renal excretion.

Lime flower has been documented to possess a restricted range of antifungal activity.[6]

Side-effects, Toxicity

Excessive use of lime flower tea may result in cardiac toxicity.[G60] However, the rationale for this statement is not included by the author.

Contra-indications, Warnings

It is advised that lime flower should be avoided by individuals with an existing cardiac disorder.[G22,G39,G60]

Pregnancy and lactation The safety of lime flower has not been established. In view of the lack of toxicological data, excessive use of lime flower during pregnancy and lactation should be avoided.

Pharmaceutical Comment

The chemistry of lime flower is well documented. Little scientific information was located to justify the reputed herbal uses of lime flower, although some correlation can be made with the known pharmacological activities of the reported constituents. The lack of toxicological data, together with a warning concerning cardiac toxicity, indicates that excessive use of lime flower should be avoided.

References

See also General References G2, G3, G6, G9, G11, G15, G16, G22, G25, G32, G36, G37, G39, G43, G49, G56, G60, G62 and G64.

1 Kram G, Franz G. Structural investigations on the water soluble polysaccharides of lime tree flowers (*Tilia cordata* L.). *Pharmazie* 1985; 40: 501.

2 Lanza JP, Steinmetz M. Actions comparees des exraits aqueux de graines de *Tilia platyphylla* et de *Tilia vulgaris* sur l'intestin isolé de rat. *Fitoterapia* 1986; 57: 185.

3 Taddei I *et al.* Spasmolytic activity of peppermint, sage and rosemary essences and their major constituents. *Fitoterapia* 1988; 59: 463–468.

4 Svendsen AB, Scheffer JJC. *Essential Oils and Aromatic Plants. Proceedings of the 15th International Symposium on Essential Oils.* Dordrecht: Martinus Nijhoff, 1984; 225–226.

5 Sticher O. Plant mono-, di- and sesquiterpenoids with pharmacological and therapeutical activity. In: Wagner H, Wolff P, eds. *New Natural Products with Pharmacological, Biological or Therapeutical Activity.* Berlin: Springer-Verlag, 1977: 137–176.

6 Guerin J-C, Reveillere H-P. Antifungal activity of plant extracts used in therapy. I Study of 41 plant extracts against 9 fungi species. *Ann Pharm Fr* 1984; B: 553–559