

Linden Tree, Lime Tree



Tilia spp.

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Common names in Spanish: Arbol de tila, Flor de tila, Tilia, Tilo, Sirimo, Yaca (Adame and Adame, 2000; Berdoncés, 1998; Martinez, 1989).

Botanical family: Tiliaceae.

Medicinal parts: The flowers and bracts, as well as the inner bark (Gruenwald et al., 2000; Arteché and Vanaclocha 1998).

History

Linden tree is used in traditional medicine primarily as a non-narcotic sedative for sleep disorders or anxiety (Adame and Adame, 2000; Martinez, 1989), although, paradoxically, it has also been regarded as a stimulant (Foster and Tyler, 2000; Lewis and Elvin-Lewis, 1977). In medieval times, Linden flower was used as a diaphoretic, to promote sweating and for the treatment of chills and colds (Pahlow, 2001; Foster and Tyler, 2000; Pierce, 1999).

The bract and flower infusion (tea) is also employed against ailments of the upper respiratory tract, due to the expectorant and antiseptic action of its constituents (Gruenwald et al., et al., 2000; Berdoncés 1998). Linden tree is also a popular remedy against insomnia and anxiety throughout Latin America (Viola et al. 1994). Other less common uses of Linden include it as a digestive aid and to help decrease high blood pressure, as well as to treat arteriosclerosis (Duke et al., 2002; Ody, 2000; Bremness 2000; Arteché and Vanaclocha, 1998).

The carbon (charcoal) made from the twigs and inner bark is considered as extremely adsorbent and useful against diarrhea and intoxications, as it acts in the same fashion as activated charcoal, adsorbing

some of the toxins (Starek 2001; Gruenwald et al., 2000; Berdoncés, 1998). The charcoal is also employed externally against skin ulcerations (Gruenwald et al., 2000).

Honey made from nectar of the Linden tree is purported to be the most prized in the world, being used as part of medicinal preparations and liqueurs (Bremness 2000; Berdoncés 1998)



Active principles

- Flavonoids including: quercitrin, kaempferol, astragalín, hyperoside, among others (Mc Cann, 2003; Bruneton 2000; Gruenwald et al., 2000; Toker et al., 2000; Arteché and Vanaclocha, 1998).
- Mucilage (10%) including arabino galactans, uronic acid; other carbohydrates (Arteché and Vanaclocha, 1998; Kram and Franz, 1985).
- Tannins (2%): the relation between tannin and mucilage content is very important and related to pleasant flavor (Schulz et al., 2001; Mc Cann, 2003; Foster and Tyler, 2000).
- Derivatives of Caffeic acid, such as chlorogenic acid.

Applications in herbal therapy

- Flower and bract are ingested as infusions (teas) against anxiety and insomnia (Adame and Adame 2000; Miller and Murray 1998; Viola et al. 1994; Martínez 1989; Chiej 1983).
- As a diaphoretic, to promotes sweating (Mc Cann, 2003; Schulz *et al.* 2001; Bruneton 2000; Foster and Tyler 2000; Gruenwald et al., 2000; Weiss and Fintelmann 2000).
- As a digestive tonic and to cure intestinal disorders (Gruenwald et al., 2000; Bremness 2000).
- The bract and flower infusion is also employed against ailments of the upper respiratory tract, due to the expectorant and antiseptic action of its constituents (Schulz *et al.* 2001; Chevallier 2000; Gruenwald et al., 2000; Arteché and Vanaclocha, 1998; Bremness 2000).
- To treat high blood pressure due to proposed vasodilatory effect (Bremness, 2000; Ody, 2000; Arteché and Vanaclocha, 1998).
- As a mild diuretic (Barnes et al., 2002; Gruenwald et al., 2000; Arteché and Vanaclocha, 1998).
- Against migraine headaches (Foster and Tyler 2000), especially those due to hepato-biliary (liver and gall bladder) dysfunction (Arteché and Vanaclocha, 1998)
- “Linden water” is used as a skin tonic to soothe rheumatic pain (Bremness, 2000)
- The alcoholic extracts of the flowers have antimicrobial properties, especially against some types of bacteria that may cause oral cavity infections (Suciu et al., 1988).

- Germany's Commission E has approved Linden flower for the treatment of cough and bronchitis (Gruenwald et al., 2000; Blumenthal, 2000).
- Linden flowers contain antioxidant and free radical scavenging compounds (Choi et al., 2002; Yildirim et al., 2000).
- The charcoal made from the inner bark (known in Spanish as *albura*), taken internally, serves as an adsorbent to treat intoxications and diarrhea (Starek, 2001; Arteché and Vanaclocha, 1998).
- Topically, the charcoal made from the inner bark is used to treat skin abrasions and ulcers (Arteché and Vanaclocha, 1998).

Safety/Precautions

- Linden flower infusions (teas) have generally been regarded as non-toxic and diluted teas are commonly given to overanxious children as a mild sedative (Arteché and Vanaclocha, 1998; Bremness, 2000).
- Damage to heart muscle (myocardium) has rarely been recorded, and this only after excessive and prolonged usage in susceptible individuals. Nonetheless, patients with heart problems should not use this herb in large amounts or during prolonged periods of time (Duke et al., 2002; McCann, 2003; Pahlow, 2001; Foster and Tyler, 2000).
- According to one source (Bremness, 2000), the ingestion of the very old and stale flowers of "little-leaf" Linden (*T. cordata*) should be avoided, as these could cause mild intoxication. Foster and Tyler (2000) doubt that this statement has any bearing in fact.
- Do not drive a motor vehicle or operate heavy machinery after ingesting this herb, as Linden may cause drowsiness (McCann, 2003).
- Use with caution in hypotensive patients (McCann, 2003).
- A case of contact dermatitis from handling Linden has been reported (Picardo et al., 1988).
- Allergy due to exposure to this plant or its pollen is also possible in susceptible individuals (Weber, 2003; Mur et al., 2001).

Herb/Drug interactions

- Avoid taking Linden infusions (teas) concurrently with benzodiazepinic drugs, since Linden has active benzodiazepine receptor ligands and potentiation of the sedative or anxiolytic drug's effects might occur (Viola et al., 1994).
- Do not ingest concurrently with other herbs that could lower blood pressure, such as mistletoe, for example, as the hypotensive effects could be augmented (Brinker, 2001).
- Linden tree preparations have been implicated decreasing non-heme iron, presumably due to the plant's flavonol content (Hurrell et al., 1999), although el-Shobaki et al. (2000), recommend linden tea for children to encourage iron absorption.

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