

## LINDEN

**Date:** February 13, 2008

**Proper and common name(s):**

Table 1: Proper and common name(s)

Proper name(s) <sup>1</sup>	Common name(s) <sup>2</sup>
<i>Tilia cordata</i> Mill. (Tiliaceae) (USDA 2004)	Linden, small-leaf linden, small-leaf lime tree, tilia
<i>Tilia platyphyllos</i> Scop. (Tiliaceae) (USDA 2007)	Linden, large-leaf linden, large leaf lime, tilia
<i>Tilia x europaea</i> L. / <i>Tilia x vulgaris</i> Hayne (Tiliaceae) <sup>3</sup> (USDA 2005)	Linden, European linden, European lime tree, tilia

<sup>1</sup>At least one of the following additional references was consulted per proper name: Wichtl 2004; BHP 1996.

<sup>2</sup>At least one of the following references was consulted per common name: McGuffin et al. 2000; Wiersema and León 1999.

<sup>3</sup>*T. x europaea* L. is a hybrid of *T. cordata* and *T. platyphyllos*.

Note: The solidus (/) indicates that the terms are synonyms. Either term may be selected by the applicant.

**Source material(s):** Flower (Bradley 1992; Felter and Lloyd 1983 [1898])

**Route(s) of administration:** Oral

**Dosage form(s):** Those suited to the allowable route(s) of administration. This monograph is not intended to include food-like dosage forms such as bars, chewing gums or beverages.

**Use(s) or Purpose(s):** Statement(s) to the effect of:

- ▶ Traditionally used in Herbal Medicine as a nervine to help relieve nervousness (Wichtl 2004; Hoffmann 2003; Bradley 1992) and restlessness (Bradley 1992; Felter and Lloyd 1983[1898]).
- ▶ Traditionally used in Herbal Medicine to help relieve coughs and irritation of the throat in colds and catarrh of the respiratory tract (Wichtl 2004; Blumenthal et al. 2000; Bradley 1992; Felter and Lloyd 1983 [1898]).

**Dose(s):**

Table 2: Dose information for linden flower presented as dose per day

Subpopulation		Linden flower (g/day)	
		Minimum	Maximum
Children <sup>1</sup>	2-4 y	0.2	2
Children and adolescents <sup>1</sup>	5-9 y	0.4	3
Adolescents <sup>1</sup>	10-14 y	0.8	6
Adolescents and adults <sup>1,2,3</sup>	≥ 14 y	1.5	12

<sup>1</sup> Children and adolescent doses were calculated as a fraction of the adult dose (JC 2008). The use of linden in children and adolescents is supported by the following references: McIntyre 2005; Schilcher 1997; Bove 1996.

<sup>2</sup> Adult dose supported by the following references: Hoffmann 2003; Blumenthal et al. 2000; Bradley 1992; Felter and Lloyd 1983[1898].

<sup>3</sup> Includes pregnant and breastfeeding women

See Appendix 1 for examples of appropriate dosage preparations, frequencies of use and directions for use, according to cited references. The purpose of Appendix 1 is to provide guidance to industry.

**Duration of use:** No statement required.

**Risk information:** Statement(s) to the effect of:

**Caution(s) and warning(s):** Consult a health care practitioner if symptoms persist or worsen.

**Contraindication(s):** No statement required.

**Known adverse reaction(s):** Hypersensitivity and/or an allergy are known to occur; in which case, discontinue use (Mills and Bone 2005; De Smet 1993).

**Non-medicinal ingredients:** Must be chosen from the current NHPD *List of Acceptable Non-medicinal Ingredients* and must meet the limitations outlined in the list.

**Specifications:** Must comply with the minimum specifications outlined in the current NHPD *Compendium of Monographs*.

**References cited:**

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USDA 2007: United States Department of Agriculture, Agricultural Research Service, National Genetic Resources Program. Germplasm Resources Information Network (GRIN). *Tilia platyphyllos* Scop. National Germplasm Resources Laboratory, Beltsville (MD). [Accessed 2008-01-23]. Available from: [http://www.ars-grin.gov/cgi-bin/npgs/html/tax\\_search.pl](http://www.ars-grin.gov/cgi-bin/npgs/html/tax_search.pl)

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Wichtl M, editor. Herbal Drugs and Phytopharmaceuticals: A Handbook for Practice on a Scientific Basis, 3<sup>rd</sup> edition. Stuttgart (D): Medpharm GmbH Scientific Publishers; 2004.

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Barnes J, Anderson LA, Philipson JD. Herbal Medicines, 3<sup>rd</sup> edition. London (UK): The Pharmaceutical Press; 2007.

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Mills S, Bone K. Principles and Practice of Phytotherapy. Toronto (ON): Churchill Livingstone; 2000.

**Appendix 1:** Examples of appropriate dosage preparations, frequencies of use and directions for use

Dried flower: 2-4 g, per day (Blumenthal et al. 2000)

Infusion:

- ▶ 1.8 g dried flower, 3 times per day (Hoffmann 2003)
- ▶ 1.8-2 g dried flower, 1-2 times per day (Blumenthal et al. 2000)
- ▶ 2-4 g dried flower, 3 times per day (Bradley 1992)
- ▶ 2-2.6 g (30 or 40 grains) dried flower, per day (Felter and Lloyd 1983 [1898])

**Directions for use:** Pour 150 ml to 473 ml (1 pint) of boiling water over dried flowers and infuse for 10-15 minutes (Hoffmann 2003; Blumenthal et al. 2000; Felter and Lloyd 1983 [1898]).

1.8 g = 1 tsp. (Wichtl 2004)

Fluidextract:

- ▶ 2 g dried equivalent, 1-2 times per day (1:1, 2 ml) (Blumenthal et al. 2000)
- ▶ 2-4 g dried equivalent, 3 times per day (1:1, 25% alcohol, 2-4 ml) (Bradley 1992)

Tincture:

- ▶ 0.5-1 g dried equivalent, 3 times per day (1:5, 40% alcohol, 2.5-5 ml) (Hoffmann 2003)
- ▶ 2 g dried equivalent, 1-2 times per day (1:5, 10 ml) (Blumenthal et al. 2000)
- ▶ 0.8-2 g dried equivalent, 3 times per day (1:5, 25% alcohol, 4-10 ml) (Bradley 1992)