



## NATURAL HEALTH PRODUCT

### LICORICE – *GLYCYRRHIZA GLABRA*

This monograph is intended to serve as a guide to industry for the preparation of Product Licence Applications (PLAs) and labels for natural health product market authorization. It is not intended to be a comprehensive review of the medicinal ingredient.

#### Notes

- ▶ Text in parentheses is additional optional information which can be included on the PLA and product label at the applicant's discretion.
- ▶ The solidus (/) indicates that the terms and/or statements are synonymous. Either term or statement may be selected by the applicant.

**Date:** July 18, 2017

#### Proper name(s):

*Glycyrrhiza glabra* L. (Fabaceae) (USDA 2007)

#### Common name(s):

Licorice (McGuffin et al. 2000)

#### Source material(s):

Root and stolon (Mills and Bone 2005; ESCOP 2003; Blumenthal et al. 2000; Bradley 1992)

#### Route(s) of administration:

Oral

#### Dosage form(s):

This monograph is not intended to include foods or food-like dosage forms such as bars, chewing gums or beverages.

Dosage forms by age group:

- **Children 4-5 years:** The acceptable dosage forms are limited to chewables, emulsion/suspension, powders and solution/drops (Giacoaia et al. 2008; EMEA/CHMP 2006).
- **Children 6-12 years, Adolescents 13-17 years, and Adults  $\geq$  18 years:** The acceptable dosage forms include, but are not limited to capsules, chewables (e.g., gummies, tablets), liquids, powders, strips or tablets.

### Use(s) or Purpose(s):

- ▶ Traditionally used in Herbal Medicine as an expectorant to help relieve chest complaints, such as catarrhs, coughs and bronchitis (Mills and Bone 2005; ESCOP 2003; Hoffmann 2003; Blumenthal et al. 2000; Bradley 1992; Felter and Lloyd 1983 [1898], Grieve 1971 [1931]).
- ▶ Used in Herbal Medicine to help relieve inflammatory conditions of the gastrointestinal tract, such as gastritis in adults (ESCOP 2003; Hoffmann 2003; Bradley 1992).

### Dose(s):

Table 1: Dose information for dried licorice root and stolon presented as dose per day

Subpopulation		Dried licorice root and stolon (g/day)	
		Minimum	Maximum
Children <sup>1</sup>	4 y	0.1	2.5
Children and adolescents <sup>1</sup>	5-9 y	0.15	3.75
Adolescents <sup>1</sup>	10-14 y	0.3	7.5
Adolescents and adults <sup>1,2,3</sup>	$\geq$ 15 y	0.6	15

<sup>1</sup> Children and adolescent doses were calculated as a fraction of the adult dose (JC 2008). The use of licorice 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: Mills and Bone 2005; ESCOP 2003; Hoffmann 2003; Blumenthal et al. 2000; Bradley 1992.

<sup>3</sup> Includes breastfeeding women

Table 2: Dose information for glycyrrhizic acid presented as dose per day

Subpopulation		Glycyrrhizic acid (mg/day)	
		Minimum	Maximum
Children <sup>1</sup>	4 y	10	100
Children and adolescents <sup>1</sup>	5-9 y	15	150
Adolescents <sup>1</sup>	10-14 y	30	300
Adolescents and adults <sup>1,2,3</sup>	$\geq$ 15 y	60	600

<sup>1</sup> Children and adolescent doses were calculated as a fraction of the adult dose (JC 2008). The use of licorice 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: ESCOP 2003.

<sup>3</sup> Includes 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:**

Consult a health care practitioner for use beyond 4-6 weeks (ESCOP 2003; Hoffmann 2003; Blumenthal et al. 2000; Bradley 1992).

### **Risk information:**

#### **Caution(s) and warning(s):**

- ▶ Consult a health care practitioner if symptoms persist or worsen.
- ▶ Consult a health care practitioner prior to use if you are pregnant (ESCOP 2003; Hoffmann 2003; Bradley 1992).
- ▶ Consult a health care practitioner prior to use if you have a liver disorder (Brinker 2007; ESCOP 2003; Bradley 1992; McGuffin et al. 1997).

#### **Contraindication(s):**

- ▶ Do not use if you have hypokalemia, high blood pressure, or a kidney or cardiovascular disorder (Brinker 2007; ESCOP 2003; Bradley 1992).
- ▶ Do not use if you are taking thiazide diuretics, cardiac glycosides, corticosteroids, stimulant laxatives or other medications which may aggravate electrolyte imbalance (Brinker 2007; ESCOP 2003; Hoffmann 2003; Blumenthal et al. 2000; McGuffin et al. 1997).

#### **Known adverse reaction(s):**

No statement required.

### **Non-medicinal ingredients:**

Must be chosen from the current Natural Health Products Ingredients Database (NHPID) and must meet the limitations outlined in the database.

### **Specifications:**

- ▶ The finished product specifications must be established in accordance with the requirements described in the Natural and Non-prescription Health Products Directorate (NNHPD) *Quality of Natural Health Products Guide*.

- ▶ The medicinal ingredient must comply with the requirements outlined in the NHPID.
- ▶ The medicinal ingredient may comply with the specifications outlined in the pharmacopoeial monographs listed in Table 3 below.

Table 3: Licorice monographs published in British, European and US Pharmacopoeias

Pharmacopoeia	Monograph
British Pharmacopoeia	Liquorice, Liquorice Root for use in THM, Liquorice Root for use in THMP
European Pharmacopoeia	Liquorice Root, Liquorice Ethanollic Liquid Extract
US Pharmacopoeia	Licorice, Powdered Licorice, Powdered Licorice Extract

### References cited:

Blumenthal M, Goldberg A, Brinkmann J, editors. Herbal Medicine: Expanded Commission E Monographs. Boston (MA): Integrative Medicine Communications; 2000.

Bove M. An Encyclopedia of Natural Healing for Children and Infants. New Canaan (CT): Keats Publishing, Incorporated; 1996.

Bradley PR, editor. British Herbal Compendium: A Handbook of Scientific Information on Widely Used Plant Drugs, Volume 1. Bournemouth (UK): British Herbal Medicine Association; 1992.

Brinker F. Online Updates and Additions to Herb Contraindications and Drug Interactions, 3<sup>rd</sup> edition. Sandy (OR): Eclectic Medical Publications; 2007. [Accessed 2008-02-01]. Available from: <http://www.eclecticherb.com/emp/updatesHCIDI.html>

EMA/CHMP 2006: European Medicines Agency: Pre-authorization Evaluation of Medicines for Human Use. Committee for Medicinal Products for Human Use. Reflection Paper: Next link will take you to another Web site Formulations of choice for the paediatric population. Adopted September 2006. EMA/CHMP/PEG/194810/2005. [Accessed on 2013 June 29].

ESCOP 2003: ESCOP Monographs: The Scientific Foundation for Herbal Medicinal Products, 2<sup>nd</sup> edition. Exeter (UK): European Scientific Cooperative on Phytotherapy and Thieme; 2003.

Felter HW, Lloyd JU. King's American Dispensatory, Volume 2, 18<sup>th</sup> edition. Sandy (OR): Eclectic Medical Publications; 1983 [Reprint of 1898 original].

Giacoa GP, Taylor-Zapata P, Mattison D. Eunice Kennedy Shriver National Institute of Child Health and Human Development Pediatric Formulation Initiative: selected reports from working groups. Clinical Therapeutics 2008; 30(11):2097-2101.

Grieve M. *A Modern Herbal, Volume 2*. New York (NY): Dover Publications; 1971 [Reprint of 1931 Harcourt, Brace & Company publication].

Hoffmann D. *Medical Herbalism*. Rochester (VT): Healing Arts Press; 2003.

JC 2008: Justice Canada. *Food and Drug Regulations*. (C.01.021). Ottawa (ON): Justice Canada; 2008. [Accessed 2008-01-23] Available from: <http://laws.justice.gc.ca/en/F-27/C.R.C.-c.870/text.html>

McGuffin M, Hobbs C, Upton R, Goldberg A, editors. *American Herbal Products Association's Botanical Safety Handbook*. Boca Raton (FL): CRC Press; 1997.

McGuffin M, Kartesz JT, Leung AY, Tucker AO, editors. *Herbs of Commerce*, 2<sup>nd</sup> edition. Silver Spring (MD): American Herbal Products Association; 2000.

McIntyre A. *Herbal Treatment of Children - Western and Ayurvedic Perspectives*. Toronto (ON): Elsevier Limited; 2005.

Mills S, Bone K. *The Essential Guide to Herbal Safety*. St. Louis (MO): Elsevier Churchill Livingstone; 2005.

Schilcher H. *Phytotherapy in Paediatrics: Handbook for Physicians and Pharmacists*. Stuttgart (D): Medpharm Scientific Publishers; 1997.

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

### References reviewed:

Brinker F. *Herb Contraindications and Drug Interactions*, 3<sup>rd</sup> edition. Sandy (OR): Eclectic Medical Publications; 2001.

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

Dried root and stolon:

- ▶ 3-12 g, per day (Mills and Bone 2005)
- ▶ 1.5-15 g, per day (ESCOP 2003)
- ▶ 5-15 g, per day (Blumenthal et al. 2000)
- ▶ 1-5 g, 3 times per day (Bradley 1992)

Decoction:



- ▶ 3-12 g dried root and stolon, per day (Mills and Bone 2005)
- ▶ 1.5-15 g dried root and stolon, per day (ESCOP 2003)
- ▶ 2-4 g dried root and stolon, 3 times per day (Blumenthal et al. 2000)
- ▶ 1-5 g dried root and stolon, 3 times per day (Bradley 1992)

**Directions for use:**

- ▶ Place ½ - 1 tsp of dried root and stolon in 250 ml (1 cup) of cold water, bring to a boil and simmer for 10-15 minutes (Hoffmann 2003).
- ▶ Take after meals (Blumenthal et al. 2000).  
3 g = 1 tsp. (Hoffmann 2003)

Fluidextract:

- ▶ 2-6 g dried equivalent, per day  
(1:1, 2-6 ml) (Mills and Bone 2005)
- ▶ 2-4 g dried equivalent, 3 times per day  
(1:1, 2-4 ml) (Blumenthal et al. 2000)

**Directions for use:** Take after meals (Blumenthal et al. 2000).

Tincture:

0.2-0.6 g dried equivalent, 3 times per day  
(1:5, 40% alcohol, 1-3 ml) (Hoffmann 2003)

Preparations providing the following quantity of glycyrrhizic acid:

- ▶ 60-600 mg, per day (ESCOP 2003)