Health Canada Santé Canada

NATURAL HEALTH PRODUCT

CINNAMON – *CINNAMOMUM VERUM*

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 December 18, 2018

Proper name(s), Common name(s), Source material(s)

Table 1. Proper name(s), Common name(s), Source material(s)

Proper name(s)	Common name(s)	Source material(s)		
		Proper name(s)	Part(s)	Preparation(s)
Cinnamomum verum	▸ Ceylon cinnamon ▸ Cinnamon ▸ True cinnamon ▸ Tvak	*Cinnamomum verum*	▸ Branch bark ▸ Shoot bark	Dried

References: Proper name: USDA 2018, Blumenthal et al. 2000, McGuffin et al. 2000; Common names: USDA 2018, ITIS 2018, O'Neil 2013, BHC 2006, API 2001, Blumenthal et al. 2000, McGuffin et al. 2000; Source materials: API 2001, Blumenthal et al. 2000, 1998.

Route of administration

Oral

Dosage form(s)

This monograph excludes foods or food-like dosage forms as indicated in the Compendium of Monographs Guidance Document.

Acceptable dosage forms for the age category listed in this monograph and specified route of administration are indicated in the Compendium of Monographs Guidance Document.

Use(s) or Purpose(s)

- Source of/Provides antioxidants (Gruenwald et al. 2010; Roussel et al. 2009; Halvorsen et al. 2006; Shan et al. 2005).
- (Traditionally) used in Ayurveda for bowel complaints such as indigestion, flatulency, diarrhea and vomiting (Paranjpe 2005; Kapoor 2001).
- (Traditionally) used in Herbal Medicine for digestive disturbances/digestive complaints such as mild spasms/cramps of the gastrointestinal tract/gastrointestinal colic, feeling of repletion/bloating, and flatulence/carminative (Godfrey et al. 2010; BHC 2006; Wichtl 2004; Blumenthal et al. 2000, 1998).
- (Traditionally) used in Herbal Medicine for loss of appetite (BHC 2006; Wichtl 2004; Blumenthal et al. 2000, 1998).

Note
Claims for traditional use must include the term “Herbal Medicine”, “Traditional Chinese Medicine”, or “Ayurveda”.

Dose(s)

Subpopulation(s)

Adults 18 years and older

Quantity(ies)

Antioxidant

Methods of preparation: Powder, Non-standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)

Not to exceed 4 grams of dried bark, per day (BHC 2006; Wichtl 2004; Blumenthal et al. 2000).

Digestive disturbances (Herbal Medicine); Appetite loss (Herbal Medicine)

Methods of preparation: Powder, Non-standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)

0.5 - 1.3 gram of dried bark, 3 times per day (BHC 2006; Wichtl 2004; Blumenthal et al. 2000).

Bowel complaints (Ayurveda)

Methods of preparation: Powder, Non-standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)

0.2 - 1 gram of dried bark, 3 times per day (API 2001; Kapoor 2001).

Direction(s) for use

Appetite loss (Herbal Medicine)

Take 30 minutes before meals.

Digestive disturbances (Herbal Medicine)

Take after meals (Wichtl 2004).

Duration(s) of use

No statement required.

Risk information

Caution(s) and warning(s)

All products

Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you are breastfeeding or have diabetes (NS 2018; Brinker 2010; Blumenthal et al. 2000; WHO 1999).

All products except antioxidants

Consult a health care practitioner/health care provider/health care professional/doctor/physician if symptoms persist or worsen.

Contraindication(s)

Do not use this product if you are pregnant (Brinker 2010; BHC 2006; Blumenthal 2000, 1998).

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.

Storage conditions

No statement required.

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.

References cited

Al-Jamal AR. Effects of cinnamon on blood glucose and lipid levels in diabetic patients (type 1). African Journal of Biochemistry Research 2009;3(5):181-184.

API 2001: The Ayurvedic Pharmacopoeia of India. Part I, Volume I, First Edition. Delhi (IN): The Controller of Publications; 2001 [Reprint of 1990 publication]. [Accessed 2018 September 25]. Available from: http://www.ccras.nic.in/

Bandara T, Uluwaduge I, Jansz ER. Bioactivity of cinnamon with special emphasis on diabetes mellitus: a review. International Journal of Food Sciences and Nutrition 2012;63(3):380-386.

Blumenthal M, Goldberg A, Brinckmann J. Herbal Medicine: Expanded Commission E Monographs. Boston (MA): American Botanical Council. 2000.

Blumenthal M, editor. The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines. Austin (TX): American Botanical Council in cooperation with Integrative Medicine Communications; 1998.

Blumenthal M, editor. The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines. Austin (TX): American Botanical Council in cooperation with Integrative Medicine Communications; 1998.

BHC 2006: Bradley PR, editor. British Herbal Compendium Volume 2: A Handbook of Scientific Information on Widely Used Plant Drugs—Companion to the British Herbal Pharmacopoeia. Bournemouth (GB): British Herbal Medicine Association; 2006.

Brinker F. Herb Contraindications and Drug Interactions, 4th edition. Sandy (OR): Eclectic Medical Publications; 2010.

Crawford P. Effectiveness of cinnamon for lowering hemoglobin A1C in patients with type 2 diabetes: a randomized, controlled trial. Journal of the American Board of Family Medicine 2009; 22(5):507-512.

Godfrey A, Saunders PR, Barlow K, Gilbert C, Gowan M, Smith F. Principles and Practices of Naturopathic Botanical Medicine. Volume 1: Botanical Medicine Monographs. Toronto (ON): CCNM Press; 2010.

Halvorsen BL, Carlsen MH, Phillips KM, Bohn SK, Holte K, Jacobs DR Jr, Blomhoff R. Content of redox-active compounds (i.e., antioxidants) in foods consumed in the United States. American Journal of Clinical Nutrition 2006;84(1):95-135.

ITIS 2018: *Cinnamomum verum* J. Presl [2011] Integrated Taxonomic Information System (ITIS) [Internet]. Accessed 2018 September 25]. Available from: https://www.itis.gov/servlet/SingleRpt/SingleRpt?search_topic=TSN&search_value=501529#null

Kapoor LD. Handbook of Ayurvedic Medicinal Plants. Baton Roca (FL): CRC Press LLC; 2001.

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

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

NS 2018: Cinnamon (*Cinnamomum* spp.) Natural Standard Professional Monograph, Copyright © 2012 [Internet]. [Accessed 2018 September 25]. Available from: http://www.naturalstandard.com/

O'Neil MJ, Smith A, Heckelman PE, Budavari S, editors. The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals, 15th edition. Whitehouse Station (NJ): Merck & Co., Inc., 2013.

Paranjpe P. Indian Medicinal Plants: Forgotten Healers: A Guide to Ayurvedic Herbal Medicine. Delhi (IN): Chaukhamba Sanskrit Pratishthan; 2005.

Ph.Eur. 2012: European Pharmacopoeia. 7th edition. Strasbourg (FR): Directorate for the Quality of Medicines and HealthCare of the Council of Europe (EDQM); 2012.

Safdar M, Khan A., Khan MMA, Siddique M. Effect of various doses of cinnamon on blood glucose in diabetic individuals. Pakistan Journal of Nutrition 2004;3:268-272.

Shan B, Cai YZ, Sun M, Corke H. Antioxidant capacity of 26 spice extracts and characterization of their phenolic constituents. Journal of Agricultural and Food Chemistry 2005;53(20):77497759.

USDA 2018: USDA, ARS, National Genetic Resources Program. Germplasm Resources Information Network (GRIN) [Internet]. National Germplasm Resources Laboratory, Beltsville (MD). [*Cinnamomum verum* J. Presl: (Lauraceae). Last updated: 05-Oct-2009; Accessed 2018 September 25]. Available from: https://npgsweb.ars-grin.gov/gringlobal/taxonomydetail.aspx?id=70183

WHO 1999: World Health Organization. WHO Monographs on Selected Medicinal Plants, Volume 1. Geneva (CH): World Health Organization; 1999.

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

References reviewed

Anderson RA, Broadhurst CL, Polansky MM, Schmidt WF, Khan A, Flanagan VP, et al. Isolation and characterization of polyphenol type-A polymers from cinnamon with insulin-like biological activity. J Agric Food Chem. 2004;52(1):65-70.

Altschuler JA, Casella SJ, MacKenzie TA, Curtis KM. The effects of cinnamon on A1C among adolescence with type 1 diabetes. Diabetes Care 2007;30:813-816.

Baker W, Gutierrez-Williams G, White CM, Kluger J, Coleman CI. Effect of cinnamon on glucose control and lipid parameters. Diabetes Care 2008;31:41-43.

Blevins SM, Leyva MJ, Brown J, Wright J, Scofield RH, Aston CE. Effect of cinnamon on glucose and lipid levels in non–insulin dependent type 2 diabetes mellitus. Diabetes Care 2007;30:2236-2237.

Brinker F. Herb Contraindications and Drug Interactions (3rd Ed.). Sandy (OR): Eclectic Medical Publications; 2001.

Broadhurst CL, Polansky MM, Anderson RA. Insulin like biological activity of culinary and medicinal plant aqueous extracts in vitro. J Agric Food Chem 2000;48:849-852.

Canada Vigilance Adverse Reaction Online Database. Ottawa (ON): Marketed Health Products Directorate, Health Canada; 2011. [Accessed 2011 October 27]. Available from: http://webprod3.hc-sc.gc.ca/arquery-rechercheei/index-eng.jsp

Canadian Nutrient File (CNF), 2012 [Internet]. Ottawa (ON): Food and Nutrition, Health Canada. [Date Modified 2012 February 2; Accessed 2012 April 12]. Available from: http://webprod3.hc-sc.gc.ca/cnf-fce/index-eng.jsp

Carter JS, Pugh JA, Monterrosa A. Non-insulin-dependent diabetes mellitus in minorities in the United States. Ann Intern Med. 1996;125(1):221–232.

Clinical Practice Guidelines for the Prevention and Management of Diabetes in Canada. Canadian Journal of Diabetes 2008:32(suppl 1).

Dugoua JJ, Seely D, Perri D, Cooley K, Forelli T, Mills E, Koren G. From type 2 diabetes to antioxidant activity: a systematic review of the safety and efficacy of common and cassia cinnamon bark. Can. J. Physiol. Pharmacol 2007;85:837-847.

Gruenwald J, Freder J, Armbruester N. Cinnamon and health. Critical Reviews in Food Science and Nutrition 2010;50(9):822-834.

Hlebowicz J, Darwiche G, Björgell O, Almé LO. Effect of cinnamon on postprandial blood glucose, gastric emptying, and satiety in healthy subjects. American Journal of Clinical Nutrition 2007;85:1552-1556.

Hlebowicz J, Hlebowicz A, Lindstedt S, Björgell O, Höglund P, Holst JJ, et al. Effects of 1 and 3g cinnamon on gastric emptying, satiety, and postprandial blood glucose, insulin, glucosedependent insulinotropic polypeptide, glucagon-like peptide 1, and ghrelin concentrations in healthy subjects. American Journal of Clinical Nutrition 2009;89:815-821.

Imparl-Radosevich J, Deas S, Polansky MM et al. Regulation of PTP-1 and insulin receptor kinase by fractions from cinnamon: implications for cinnamon regulation of insulin signalling. Horm Res 1998;50:177-182.

Jarvill-Taylor KJ, Anderson RA, Graves DJ. A hydroxychalcone derived from cinnamon functions as a mimetic for insulin in 3T3–L1 adipocytes. J Am Coll Nutr. 2001;20(4):327–236.

JEFCA Evaluation. Summary of Evaluations Performed by the Joint FAO/WHO Expert Committee on Food Additives: Cinnamaldehyde. [Accessed 2011 October 31]. Available from http://www.inchem.org/documents/jecfa/jeceval/jec_418.htm

Joint Food and Agriculture Organization of the United Nations (FAO)/World Health Organization (WHO) Expert Committee on Food Additives. WHO Food Additives Series: 60. Safety evaluation of certain food additives. Geneva (CH): World Health Organization. 2009. Available from http://www.inchem.org/documents/jecfa/jecmono/v60je01.pdf

Leung AY, Foster S. Encyclopedia of Common Natural Ingredients: Used in Food, Drugs and Cosmetics. Second edition. New York (NY): John Wiley & Sons; 1996.

Qin B, Nagasaki M, Ren M, Bajotto G, Oshida Y, Sato Y. Cinnamon extract (traditional herb) potentiates in vivo insulin-regulated glucose utilization via enhancing insulin signaling in rats. Diabetes Res Clin Pract. 2003;62:139-148.

Roussel AM, Hininger I, Benaraba R, Ziegenfuss TN, Anderson RA. Antioxidant effects of a cinnamon extract in people with impaired fasting glucose that are overweight or obese. J Am Coll Nutr 2009;28:16-21.

Solomon TPJ, Blannin AK. Effects of short-term cinnamon ingestion on in vivo glucose tolerance. Diabetes Obes Metab 2007;8:895-901.

Solomon TPJ, Blannin AK. Changes in glucose tolerance and insulin sensitivity following 2 weeks of daily cinnamon ingestion in healthy humans. Eur J Appl Physiol. 2009;105:969-976.

Soni R, Bhatnagar V. Effect of cinnamon (Cinnamonum cassia) intervention on blood glucose of middle aged adult male with non-insulin dependent diabetes mellitus (NIDDM). Ethno-Med 2009;3:141-144.

United Kingdom Prospective Diabetes Study (UKPDS) Group. Intensive blood-glucose control with sulphonylureas or insulin compared with conventional treatment and risk of complications in patients with type 2 diabetes (UKPDS 33). Lancet 1998;352:837-853.

United States Department of Agriculture (USDA), Agricultural Research Service. Nutrient Data Laboratory. Spices, cinnamon, ground. NDB. No: 02010. 2011. [Accessed 2011-10-31]. Available from http://www.nal.usda.gov/fnic/foodcomp/cgi-bin/measure.pl

Vanschoonbeek K, Thomassen BJW, Senden JM, Wodzig WKWH, van Loon LJC. Cinnamon supplementation does not improve glycemic control in postmenopausal type 2 diabetic patients. J Nutr 2006;136:977-980.

WHO Food Additives Series 46: Cinnamyl Alcohol and Related Substances. 2010. [Accessed 2011-10-31]. Available from: http://www.inchem.org/documents/jecfa/jecmono/v46je07.htm

WHO Food Additives Series 14: Cinnamaldehyde. 2010. [Accessed 2011-10-31]. Available from: http://www.inchem.org/documents/jecfa/jecmono/v14je07.htm

Ziegenfuss TN, Hofheins JE, Mendel RW, Landis J., Anderson RA. Effects of a water-soluble cinnamon extract on body composition and features of the metabolic syndrome in pre-diabetic men and women. J Int Soc Sports Nut. 2006;3:45-53.