

QUERCETIN

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 the statements are synonymous. Either term or statement may be selected by the applicant.

Date November 27, 2012

Proper name(s)

- ▶ 2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxy-4H-1-benzopyran-4-one (Ph.Eur. 2013; ChemID 2012; Merck 2012, Martindale 2011)
- ▶ 2-(3,4-dihydroxyphenyl)-3,5,7-trihydroxychromen-4-one (PubChem 2012)
- ▶ 3,3',4',5,7-pentahydroxyflavone (ChemID 2012; Merck 2012; Martindale 2011)

Common name(s)

quercetin (ChemID 2012; Merck 2012)

Source material(s)

- ▶ quercetin (Merck 2012; Martindale 2011)
- ▶ quercetin dihydrate (Ph.Eur. 2013; BP 2012; Merck 2012; Egert et al. 2011, 2008; Utesch et al 2008)
- ▶ quercetin isolate from one or more of the following plant sources:
 - Apple - *Malus domestica* Borkh. (Rosaceae), pericarp (Duke 1992)
 - Ash, Mountain/ Rowan - *Sorbus aucuparia* L. (Rosaceae), fruit (Häkkinen et al. 1999)
 - Bilberry/ Whortleberry/ Bog whortleberry/ Myrtle blueberry/ Myrtle whortleberry - *Vaccinium myrtillus* L. (Ericaceae), fruit (Erlund et al. 2003; Häkkinen et al. 1999)
 - Black currant - *Ribes nigrum* L. (Grossulariaceae), fruit (Erlund et al. 2003)
 - Brussels sprouts - *Brassica oleracea* L. var. *gemmifera* (DC) (Brassicaceae), sprout (Duke 1992)
 - Buckthorn, Sea - *Hippophae rhamnoides* L. (Elaeagnaceae), fruit (Häkkinen et al. 1999)

- Cabbage, Red/ White cabbage - *Brassica oleracea* L. var. *capitata* L. (Brassicaceae), leaf (Duke 1992)
- Cauliflower - *Brassica oleracea* L. var. *botrytis* L. (Brassicaceae), flower (Duke 1992)
- Chives - *Allium schoenoprasum* L. (Amaryllidaceae), leaf (Duke 1992)
- Chokecherry - *Prunus virginiana* L. (Rosaceae), fruit (Häkkinen et al. 1999)
- Cranberry/ American cranberry/ Large cranberry - *Vaccinium macrocarpon* Aiton (Ericaceae), fruit (Häkkinen et al. 1999; Duke 1992)
- Crowberry - *Empetrum* spp. L. (Empetraceae), fruit (Häkkinen et al. 1999)
- Evening-primrose - *Oenothera biennis* L. (Onagraceae), leaf (Duke 1992)
- Garlic - *Allium sativum* L. (Amaryllidaceae), bulb (Duke 1992)
- Himalayan mayapple - *Podophyllum hexandrum* Royle (Berberidaceae), rhizome (Duke 1992)
- Japanese pagoda tree - *Styphnolobium japonicum* L. (Fabaceae), flower (Kite et al. 2007)
- Kale, Curly/ Kitchen Kale/ Scotch Kale - *Brassica oleracea* L. var. *sabellica* L. (Brassicaceae), leaf (Duke 1992)
- Kohlrabi - *Brassica oleracea* L. var. *gongylodes* L. (Brassicaceae), shoot (Duke 1992)
- Lingonberry - *Vaccinium vitis-idaea* L. (Ericaceae), fruit (Erlund et al. 2003; Häkkinen et al. 1999)
- Mayapple/ American mandrake - *Podophyllum peltatum* L. (Berberidaceae), resin/ exudate/ sap (Duke 1992)
- Neem/ Bead tree/ Margosa - *Azadirachta indica* A. Juss. (Meliaceae), flower (Duke 1992)
- Oat - *Avena sativa* L. (Poaceae), straw (Duke 1992)
- Onion/ Shallot - *Allium cepa* L. (Amaryllidaceae), bulb (Duke 1992)
- Pear - *Pyrus communis* L. (Rosaceae), pericarp (Duke 1992)
- Pepper, Hot/ Capsicum/ Cayenne/ Red chili/ Tabasco - *Capsicum frutescens* L. (Solanaceae), fruit (Duke 1992)
- Spinach - *Spinacia oleracea* L. (Chenopodiaceae), leaf (Duke 1992)
- Sunflower - *Helianthus annuus* L. (Asteraceae), flower (Duke 1992)
- Sunflower - *Helianthus annuus* L. (Asteraceae), leaf (Duke 1992)
- Tea - *Camellia sinensis* (L.) Kuntze (Theaceae), leaf (Duke 1992)

Route(s) of administration

oral

Dosage form(s)

- ▶ The acceptable pharmaceutical dosage forms include, but are not limited to capsules, chewables (e.g. gummies, tablets), liquids, powders, strips or tablets.
- ▶ This monograph is not intended to include foods or food-like dosage forms such as bars, chewing gums or beverages.

Use(s) or Purpose(s)

Statement(s) to the effect of:

- ▶ An antioxidant (Merck 2012; Martindale 2011; Murray and Bongiorno 2006; Harborne et al. 1999).
- ▶ Used in Herbal Medicine as a capillary/ blood vessel protectant (Merck 2012; Martindale 2011; PDR 2008; Murray and Bongiorno 2006; Harborne et al. 1999).

Note

A claim for traditional use must include the term “Herbal Medicine”.

Dose(s)

Statement(s) to the effect of

Subpopulation(s)

adults (≥ 19 years)

Quantity(ies)

Antioxidant:

Up to 1200 mg quercetin, per day (NS 2012; Wang et al. 2009; Boots et al. 2008; PDR 2008; Erlund et al. 2003; Lamson and Brignall 2000; Hakkinen et al. 1999).

Capillary/ blood vessel protectant:

600-1200 mg quercetin, per day (PDR 2008; Murray and Bongiorno 2006).

Directions for use

Products providing 40-1200 mg quercetin, per day (Harwood et al. 2007):

- ▶ Take in 2 or 3 divided doses.
- ▶ Take with food/meals.

Duration of use

Statement(s) to the effect of:

Products providing 40-1200 mg quercetin, per day:

For use beyond 12 weeks, consult a healthcare practitioner (NS 2012; Harwood et al. 2007; Boyle et al. 2000).

Risk information

Statement(s) to the effect of

Caution(s) and warning(s)

Products providing 40-1200 mg quercetin, per day:
If pregnant or breastfeeding, consult a health care practitioner prior to use.

Contraindication(s)

No statement required.

Known adverse reaction(s)

No statement required.

Storage conditions

Statement(s) to the effect of

Store in a light-resistant container (Ph.Eur. 2013).

Non-medicinal ingredients

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

Specifications

- ▶ The finished product must comply with the minimum specifications outlined in the current NHPD *Compendium of Monographs*.
- ▶ The medicinal ingredient must comply with the requirements outlined in the *Natural Health Products Ingredients Database* (NHPID). In addition, the medicinal ingredient may comply with the quality specifications outlined in the Quercetin dihydrate monograph in the British and European Pharmacopoeias.

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