



PANTOTHENIC ACID

- Date:** August 16, 2007
- Proper name(s):** Pantothenic acid (Sweetman 2007; O'Neil et al. 2001)
- Common name(s):** Pantothenic acid, vitamin B₅ (Sweetman 2007; O'Neil et al. 2001)
- Source material(s):**
- ▶ Calcium-*d*-pantothenate
(Sweetman 2007; IOM 2003; O'Neil et al. 2001)
 - ▶ Calcium-*dl*-pantothenate
(Sweetman 2007; IOM 2003; O'Neil et al. 2001)
 - ▶ Pantethine
(Sweetman 2007; O'Neil et al. 2001)
 - ▶ *d*-Panthenol/Dexpanthenol
(Sweetman 2007; IOM 2003; O'Neil et al. 2001)
 - ▶ *dl*-Panthenol
(Sweetman 2007; IOM 2003; O'Neil et al. 2001)
 - ▶ *d*-Pantothenic acid
(Sweetman 2007; O'Neil et al. 2001)
 - ▶ *dl*-Pantothenic acid
(Sweetman 2007; O'Neil et al. 2001)

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

Route(s) of administration: Oral

Dosage form(s): Those pharmaceutical dosage forms suited to oral administration, including but not limited to chewable tablets, caplets, capsules, strips, lozenges, powders or liquids where the dose is measured in drops, teaspoons or tablespoons, are acceptable. This monograph is not intended to include food-like dosage forms such as bars, gums or beverages.

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

General: A factor in the maintenance of good health (IOM 2006; IOM 1998).

Specific:

- ▶ Helps the body to metabolize carbohydrates, fats and proteins (IOM 2006; Shils et al. 2006; Groff and Gropper 2000; IOM 1998).
- ▶ Helps in tissue formation (Shils et al. 2006; Groff and Gropper 2000; IOM 1998).

Dose-specific:

For products providing daily doses of pantothenic acid at or above the Adequate Intake (AI) (adjusted for the life stage groups), the following use or purpose is acceptable:

Helps to prevent pantothenic acid deficiency (IOM 2006; Shils et al. 2006; Groff and Gropper 2000; IOM 1998).

[Note: Pantothenic acid deficiency is rare in North America (IOM 2006; Groff and Gropper 2000; IOM 1998).]

See Appendix 1 for definitions and Table 3 in Appendix 2 for AI values.

Dose(s):

Table 1: Dose information for pantothenic acid presented as dose per day

Life stage group		Pantothenic acid (mg/day)	
		Minimum ¹	Maximum ²
Children	1-3 y	0.2	500
	4-8 y	0.2	500
Adolescents	9-13 y	0.2	500
	14-18 y	0.4	500
Adults ³	≥ 19 y	0.4	500

¹Based on approximately 5% of the highest AI (IOM 2006). See Appendix 1 for definitions and Table 2 in Appendix 2 for AI values.

²Maximum dose supported by the following reference: HC 2006.

³Includes pregnant and breastfeeding women.

Conversion factors (USP 30):

Table 2: Conversion of pantothenic acid source material quantity into pantothenic acid quantity

Source material (1 mg)	Pantothenic acid quantity (mg)
<i>d</i> -Pantothenic acid	1.00
<i>d</i> -Panthenol	1.07
Calcium- <i>d</i> -pantothenate	0.92
<i>dl</i> -Pantothenic acid	0.50
<i>dl</i> -Panthenol	0.54
Calcium- <i>dl</i> -pantothenate	0.46

Duration of use: No statement required.

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

Caution(s) and warning(s): No statement required.

Contraindication(s): No statement required.

Known adverse reaction(s): No statement required.

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:

Groff J, Gropper S. *Advanced Nutrition and Human Metabolism*, 3rd edition. Belmont (CA): Wadsworth/Thomson Learning; 2000.

HC 2006: Health Canada. NHPD Expert Advisory Committee Issue Analysis Summary: What is an appropriate maximum daily dose for pantothenic acid? Ottawa (ON): Natural Health Products Directorate, Health Canada; 2006.

IOM 2006: Institute of Medicine. Otten JJ, Pitzel Hellwig J, Meyers LD, editors. *Institute of Medicine. Dietary Reference Intakes: The Essential Guide to Nutrient Requirements*. Washington (DC): National Academies Press; 2006.

IOM 2003: Institute of Medicine. Committee on Food Chemicals Codex, Food and Nutrition Board, Institute of Medicine. *Food Chemicals Codex*, 5th edition. Washington (DC): National Academies Press; 2003.

IOM 1998: Institute of Medicine. Panel on Folate, other B Vitamins, and Choline and Subcommittee on Upper Reference Levels of Nutrients, and the Standing Committee on the Scientific Evaluation of Dietary Reference Intakes, Food and Nutrition Board, Institute of Medicine. *Dietary Reference Intakes for Thiamin, Riboflavin, Niacin, Vitamin B₆, Folate, Vitamin B₁₂, Pantothenic Acid, Biotin and Choline*. Washington (DC): National Academies Press; 1998.

O'Neil MJ, Smith A, Heckelman PE, Budavari S, editors. The Merck Index: An Encyclopedia of Chemicals, Drugs, and Biologicals, 13th edition. Whitehouse Station (NJ): Merck & Co., Inc.; 2001.

Shils ME, Olson JA, Shike M, Ross AC, editors. Modern Nutrition in Health and Disease, 10th edition. Philadelphia (PA): Lippincott Williams and Wilkins; 2006.

Sweetman SC, editor. Martindale: The Complete Drug Reference, 35th edition. London (UK): Pharmaceutical Press; 2007.

USP 30: The United States Pharmacopeia and the National Formulary (USP 30/NF 25). Rockville (MD): United States Pharmacopeial Convention, Inc.; 2007.

Appendix 1: Definitions

Adequate Intake (AI): The recommended average daily intake level based on observed or experimentally determined approximations or estimates of nutrient intake by a group (or groups) of apparently healthy people that are assumed to be adequate; used when a Recommended Dietary Allowance (RDA) cannot be determined (IOM 2006).

Recommended Dietary Allowances (RDA): The average daily dietary nutrient intake level sufficient to meet the nutrient requirements of nearly all (97-98%) healthy individuals in a particular life stage and gender group (IOM 2006).

Appendix 2: AI Values

The AI values for pantothenic acid are provided below. For the purpose of this monograph, these values are intended to:

- ▶ provide targets for setting appropriate supplement dosage levels;
- ▶ provide the minimum dose for the use of the dose-specific use or purpose: “Helps to prevent pantothenic acid deficiency”;
- ▶ facilitate the optional labelling of % AI values.

Table 3: Adequate Intake values for pantothenic acid based on life stage group (IOM 2006)

Life stage group		Pantothenic acid (mg/day)
Children	1-3 y	2
	4-8 y	3
Adolescents	9-13 y	4
	14-18 y	5
Adults	≥ 19 y	5
Pregnancy	14-50 y	6
Breastfeeding	14-50 y	7