

Glucosamine hydrochloride

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GLUCOSAMINE HYDROCHLORIDE Help on accessing alternative formats, such as Portable Document Format (PDF), Microsoft Word and PowerPoint (PPT) files, can be obtained in the alternate format help section. (PDF Version - 97 KB) 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 1, 2019 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 ingredient(s) Source material(s) Preparation(s) Common name(s) Proper name(s) Organism group(s) 1 Part(s) 2-Amino-2-deoxy-beta-D-glucopyranose hydrochloride Glucosamine HCl Glucosamine hydrochloride Glucosamine hydrochloride N/A Crab Kill Lobster Prawn Shrimp Exoskeleton Isolate *Aspergillus flavus* var. *oryzae* *Aspergillus melleus* *Aspergillus niger* *Aspergillus niger* var. *awamori* *Monascus pilosus* *Monascus purpureus* *Rhizopus oryzae* N/A Whole Fermented References: Proper name: USP 32 2009, Kralovec and Barrow 2008, Sweetman 2007; Common names: USP 32 2009, Kralovec and Barrow 2008, Sweetman 2007; Source information: ITIS 2008; Kralovec and Barrow 2008. 1 The specific organisms used as source material(s) must be indicated in the Animal Tissue Form (ATF); simply indicating "crustaceans" is insufficient. 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 any age category listed in this monograph for the specified route of administration are listed in the Compendium of Monographs Guidance Document. Use(s) or Purpose(s) Helps to maintain healthy cartilage/joint health (Towheed and Anastassiades 2007; Braham et al. 2003; Houpt et al. 1999). Dose(s) Subpopulation(s) Adults 18 years and older Quantity(ies) 1,500 - 2,000 milligrams of Glucosamine hydrochloride, per day (Braham et al. 2003; Houpt et al. 1999). Direction(s) for use No statement required. Duration(s) of Use Use for at least 1 month to see beneficial effects (Mehta et al. 2007; Usha and Naidu 2004; Houpt et al. 1999; Qiu et al. 1998). Risk Information Caution(s) and warning(s) Consult a health care practitioner/health care provider/health care professional/doctor/ physician if symptoms worsen. Consult a health care practitioner/health care provider/health care professional/doctor/ physician prior to use if you are pregnant or breastfeeding (Sivojelezova et al. 2007). Contraindication(s) No statement required. 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 Boon H. 2000. Glucosamine. In: *Herbs: Everyday Reference for Health Professionals*. Chandler F, editor, pp 136-138. Nepean (ON): Canadian Pharmacists Association and Canadian Medical Association. Braham R, Dawson B, Goodman C. 2003. The effect of glucosamine supplementation on people experiencing regular knee pain. *British Journal of Sports Medicine* 37:45-49. Fetrow CW, Avila JR. 2004. *Professional's Handbook of Complementary and Alternative Medicines*, 3rd edition. Philadelphia (PA): Lippincott Williams and Wilkins. Herrero-Beaumont G, Ivorra JAR, Trabado MC, Blanco FJ, Benito P, Martín-Mola E, Paulino J, Marenco JL, Porto A, Laffon A, Araújo D, Figueroa M, Branco J. 2007. Glucosamine sulfate in the treatment of knee osteoarthritis symptoms- a randomized, double-blind, placebo-controlled study using acetaminophen as a side comparator. *Arthritis and Rheumatism* 56(2):555-567. Houpt JB, McMillan R, Wein C, Paget-Dellio SD. 1999. Effect of glucosamine hydrochloride in the treatment of pain of osteoarthritis of the knee. *Journal of rheumatology* 26(11):2423-2430. ITIS 2008: Integrated Taxonomic Information System. Taxon Based on Biological Information System [online]. Canadian Biodiversity Information Facility, Government of Canada. [Accessed 2019 May 24]. Available from: <https://www.cbif.gc.ca/eng/integrated-taxonomic-information-system-itis/?id=1381347793621> Kralovec A,

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Journal of Medicine 354(8):795-808. Yu JG, Boies SM, and JM Olefsky. 2003. The effect of oral glucosamine sulphate on insulin sensitivity in human subjects. Diabetes Care 26(6): 1941-1942. Zachara NE, Hart GW. 2006. Cell signaling, the essential role of O-GlcNAc!. Biochimica et biophysica acta 1761(5-6):599-617. Date Modified 2008-12-19 Top of page Important Notices

MEDICINAL INGREDIENT(S)

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.

DOSAGE FORM(S)

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

DOSE(S)

Nakamura H, Masuko K, Yudoh K, Kato T, Kamada T, Kawahara T. 2007. Effects of glucosamine administration on patients with rheumatoid arthritis. Rheumatology International 27(3):213-218. Nakamura M, Barberi AJ, Antonetti DA, LaNoue KF, Robinson KA, Buse MG, Gardner TW. 2001. Excessive Hexosamines Block the Neuroprotective Effect of Insulin and Induce Apoptosis in retinal Neurons. The Journal of Biological Chemistry 270(23):43748-48755. Noack W, Fischer M, Förster KK, Rovati LC, Setnikar I. 1994. Glucosamine sulfate in osteoarthritis of the knee. Osteoarthritis and Cartilage 2(1):51-59. Ossendza RA, Grandval P, Chinoune F, Rocher F, Chapel F, Bernardini D. 2007. Hépatite aiguë cholestatique à la Glucosamine forte®. Gastroentérologie clinique et biologique 31(4):449-450. Ostojic SM, Arsic M, Prodanovic S, Vukovic J, Zlatanovic M. 2007. Glucosamine administration in athletes: effects on recovery of acute knee injury. Research in Sports Medicine 15(2):113-124. Persiani S, Roda E, Rovati LC, Locatelli M, Giacobelli G, Roda A. 2005. Glucosamine oral bioavailability and plasma pharmacokinetics after increasing doses of crystalline glucosamine sulfate in man. Osteoarthritis and Cartilage 13(12):1041-1049. Rashad S, Revell P, Hemingway A, Low F, Rainsford K, Walker F. 1989. Effect of non-steroidal anti-inflammatory drugs on the course of osteoarthritis. The Lancet 14(2)(8668):914-915. Reginster JY. 2007. The efficacy of glucosamine sulfate in osteoarthritis: financial and nonfinancial conflict of interest. Arthritis and Rheumatism 56(7):2105-2110. Reichelt A, Förster KK, Fischer M, Rovati LC, Setnikar I. 1994. Efficacy and safety of intramuscular glucosamine sulfate in osteoarthritis of the knee. A randomised, placebo-controlled, double-blind study. Arzneimittelforschung 44(1):75-80. Robertson LA, Kim AJ, Werstuck GH. 2006. Mechanisms linking diabetes mellitus to the development of atherosclerosis: a role for endoplasmic reticulum stress and glycogen synthase kinase-3. Canadian Journal of Physiology and Pharmacology 84(1):39-48. Rozendaal RM, Koes BW, van Osch GJ, Uitterlinden EJ, Garling EH, Willemssen SP, Ginai AZ, Verhaar JA, Weinans H, Bierma-Zeinstra SM. 2008. Effect of glucosamine sulfate on hip osteoarthritis: a randomized trial. Annals of Internal Medicine 148(4):268-277. Runkel DR, Cupp MJ. 1999. Glucosamine sulfate use in osteoarthritis. American journal of health-system pharmacy: American Journal of Health-System Pharmacy 56(3):267-269. Sandy JD, Gamett D, Thompson V, Verscharen C. 1998. Chondrocyte-mediated catabolism of aggrecan: aggrecanase-dependent cleavage induced by interleukin-1 or retinoic acid can be inhibited by glucosamine. The Biochemical Journal 335 (Pt 1):59-66. Schuster E, Dunn-Coleman N, Frisvad JC, Van Dijck PW. 2002. On the safety of Aspergillus niger--a review. Applied Microbiology and Biotechnology 59(4-5):426-435. Scroggie DA, Albright A, MD Harris. 2003. The effect of glucosamine-chondroitin supplementation on glycosylated haemoglobin levels in patients with type 2 diabetes mellitus: a placebo-controlled, double-blinded, randomized clinical trial. Archives of Internal Medicine 163(13): 1587-1590. Tannis AJ, Barban J, Conquer JA. 2004. Effect of glucosamine supplementation on fasting and non-fasting plasma glucose and serum insulin concentrations in healthy individuals. Osteoarthritis and Cartilage 12(6):506-511. The Arthritis and Glucosamine Information Centre. Glucosamine Side effects. Raleigh (NC):

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RISK INFORMATION

Caution(s) and warning(s) Consult a health care practitioner/health care provider/health care professional/doctor/ physician if symptoms worsen.Consult a health care practitioner/health care provider/health care professional/doctor/ physician prior to use if you are pregnant or breastfeeding (Sivojelezova et al. 2007). Contraindication(s) No statement required. 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.

STORAGE CONDITION(S)

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

1The specific organisms used as source material(s) must be indicated in the Animal Tissue Form (ATF); simply indicating "crustaceans" is insufficient. Route of Administration Oral

Common name(s)	Source ingredient(s)	Source material(s)	Preparation(s)
Proper name(s)	Organism group(s)1	Part(s)	
Glucosamine HClGlucosamine hydrochloride	Glucosamine hydrochloride	N/A	CrabKillLobsterPrawnShrimp
N/AAspergillus nigerAspergillus niger var. awamori	WholeMonascus pilosusMonascus purpureus	WholeFermented	