



## CLINICAL STUDY REFERENCES: Joint & Cartilage Health (GLUCOSAMINE, CHONDROITIN, MSM, BORON)

Familiarizing oneself with relevant scientific research is critical to understanding nutritional supplements at a deeper level. Clinical studies on supplement ingredients can be accessed in many ways, from visiting a local University library to using an online database such as PubMed. (See last page to learn more about using the PubMed database.) Some useful studies on ingredients related to **joint and cartilage health** are noted below.

### GLUCOSAMINE & CHONDROITIN

*Prog Drug Res* 2000;55:81-103

#### **Glucosamine and chondroitin sulfates in the treatment of osteoarthritis: a survey.**

de los Reyes GC, Koda RT, Lien EJ  
Dept of Pharmaceutical Sciences, School of Pharmacy, U Southern California, LA

*Clin Orthop* 2000 Dec;(381):229-40

#### **In vivo chondroprotection and metabolic synergy of glucosamine & chondroitin sulfate.**

Lippiello L, Woodward J, Karpman R, Hammad TA  
Division of Orthopaedic Surgery, Maricopa Medical Center, Phoenix, AZ, USA  
Mineral Metabolism and Clinical Research, University of Texas Southwestern Medical Center, Dallas 75235

*Wien Med Wochenschr* 2000;150(5):87-90

#### **Polymeric chondroitin sulfate vs. monomeric glucosamine for the treatment of osteoarthritis.**

Menzel EJ  
Institut für Immunologie, Universität Wien. ernst.johannes.menzel@univie.ac.at

*Rheum Dis Clin North Am* 1999 May;25(2):379-95

#### **Nutraceuticals as therapeutic agents in osteoarthritis. The role of glucosamine, chondroitin sulfate, and collagen hydrolysate.**

Deal CL, Moskowitz RW  
Division of Rheumatology, Case Western Reserve U School of Medicine, Univ Hospitals, Cleveland, Ohio

*Med Hypotheses* 2000 May;54(5):798-802

#### **Sulfated glycosaminoglycans and glucosamine may synergize in promoting synovial hyaluronic acid synthesis.**

McCarty MF, Russell AL, Seed MP  
NutriGuard Research, La Jolla, CA, USA

*Arch Intern Med* 2003 Jul 14;163(13):1587-90

#### **The effect of glucosamine-chondroitin supplementation on glycosylated hemoglobin levels in patients with type 2 diabetes mellitus: a placebo-controlled, double blinded, randomized clinical trial.**

Scroggie DA, Albright A, Harris MD  
Department of Rheumatology, 59th Medical Wing, Wilford Hall Medical Center, Lackland Air Force Base, Lackland, TX 78236

*J Rheumatol* 2000 Jan;27(1):205-11

#### **A meta-analysis of chondroitin sulfate in the treatment of osteoarthritis.**

Leeb BF, Schweitzer H, Montag K, Smolen JS  
Lower Austrian Center for Rheum, Stockerau Hospital, Austria

### CHONDROITIN

*J Rheumatol* 2001 Jan;28(1):173-81

#### **Chondroitin sulfate in osteoarthritis of the knee: a prospective, double blind, placebo controlled multicenter clinical study.**

Mazieres B, Combe B, Phan Van A, Tondut J, Grynfeldt M  
Service de Rhumatologie, CHU Rangueil, Toulouse, France

*Osteoarthritis Cartilage* 1998 May;6 Suppl A:25-30

#### **Efficacy and tolerability of chondroitin sulfate 1200 mg/day vs chondroitin sulfate 3 X 400 mg/day vs placebo.**

Bourgeois P, Chales G, Dehais J, Delcambre B, Kuntz JL, Rozenberg S  
Dept of Rheum, Pitie Salpêtrière Hospital, Paris, France

*Osteoarthritis Cartilage* 2004 Apr;12(4):269-76

#### **Intermittent treatment of knee osteoarthritis with oral chondroitin sulfate: a one-year, randomized, double-blind, multicenter study versus placebo.**

Uebelhart D, Malaise M, Marcolongo R, DeVathaire F, Piperno M, Mailleux E, Fioravanti A, Matoso L, Vignon E  
Department of Rheumatology, Institute of Physical Medicine, University Hospital Zurich, Switzerland

## MSM

*Osteoarthritis Cartilage* 2006 Mar;14(3):286-94

### **Efficacy of methylsulfonylmethane (MSM) in osteoarthritis pain of the knee: a pilot clinical trial.**

Kim LS, Axelrod LJ, Howard P, Buratovich N, Waters RF  
Southwest College Research Institute, Southwest College of  
Naturopathic Medicine and Health Sciences, Tempe, AZ 85282, USA

*Anticancer Res* 2003 Jan-Feb;23(1A):453-8

### **Aspirin and methylsulfonylmethane (MSM): a search for common mechanisms, with implications for cancer prevention.**

Ebisuzaki K  
Departments of Microbiology and Immunology and of  
Biochemistry, University of Western Ontario, London, Ontario

## BORON

*Environ Health Perspect* 1994 Nov;102 Suppl 7:83-5

### **Essentiality of boron for healthy bones and joints.**

Newnham RE  
Rex Newnham and Associates, North Yorkshire, England

## TIPS & GUIDELINES FOR USING PUBMED

**PubMed is an online research database.** It provides access to literally millions of clinical studies that have been published in selected scientific journals. The PubMed database is part of the National Library of Medicine at the National Institutes of Health.

To research a topic on PubMed, go to: [www.pubmed.com](http://www.pubmed.com). Doing this will redirect you to the site's actual URL: [www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed](http://www.ncbi.nlm.nih.gov/entrez/query.fcgi?DB=pubmed). (You may also type the actual URL into your browser – it's just more complicated. Save the page as a bookmark to avoid this step in the future.)

Once on the PubMed site, find the search bar near the top of the page and enter the keywords you desire. Hit the Go button to the right of the search bar (or your "return" key) to bring up studies in the database that are relevant to your search.

### TIPS FOR SUCCESSFUL SEARCHING

- **Narrow down your search by entering more than one keyword or phrase.**
- **Surround phrases with quotation marks.**  
(Example: instead of calcium citrate, type "calcium citrate.")
- **Use commas or the word AND** in upper case letters to separate multiple keywords or phrases.  
(Example: instead of calcium citrate bone, type in "calcium citrate" AND bone.)
- **To find a specific study whose authors or title are known, include one or more last names** of the authors and a few choice words from the title as keywords. (Note: This is the easiest way to pull up the studies noted in Pioneer's Clinical Study References.)

### VIEWING ABSTRACTS VS SUMMARIES

When you hit "Go," studies will be displayed in what is called **summary** form. The summary only provides journal name & volume number, date of publication, author names and title - the same points noted in these clinical reference pages. For information about the study's results and conclusions, you will want to view an **abstract** of the study - a paragraph describing a study's objective, procedure and findings.\*

- **To view a single abstract**, click on the authors' names (appearing in blue) in the summary.
- **To view several abstracts**, click in the boxes located to the left of the summaries. Then select "Abstract" from the pull down Display menu (located below the left side of the search bar, under the folder icons).
- **To view additional studies on the same topic**, click on the words "Related Articles" (appearing in blue) located to the right of each study summary or abstract.

\*Note: Not all studies on PubMed are available as abstracts, but it is sometimes possible to find the abstract – even the full text – elsewhere on line by entering the title or author in a search engine, such as Google or Dogpile.

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