



# MEDCO FORUM<sup>®</sup>

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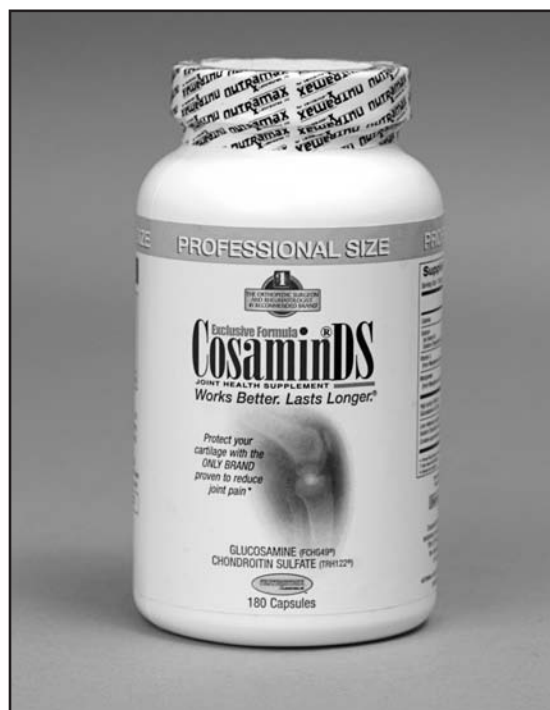
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## PUBLISHED CLINICAL TRIALS CONCLUDE JOINT HEALTH SUPPLEMENTS EFFECTIVE IN REDUCING JOINT PAIN

### Randomized, Large-Scale, Multi-Center GAIT Study

Sponsored by the National Institutes of Health, the Glucosamine/chondroitin Arthritis Intervention Trial (GAIT) is the first large-scale, multi-center clinical trial to test the effects of the dietary supplements glucosamine hydrochloride (HCl) and sodium chondroitin sulfate for the management of knee joint pain.

The study included more than 1,500 participants (men and women, 40+ years of age) with persistent knee pain of at least 6 months duration and radiographic evidence of cartilage breakdown at sixteen rheumatology centers across the nation. Participants were randomized to one of five treatment protocols: placebo, celecoxib, glucosamine HCl, chondroitin sulfate, and the combination of glucosamine HCl and chondroitin sulfate.



*In vitro* research has shown that the combination of chondroitin sulfate and glucosamine HCl in Cosamin<sup>®</sup> DS promotes biosynthesis of the cartilage matrix and inhibits the gene expression of pro-inflammatory mediators.

Researchers concluded that the combination of glucosamine HCl and chondroitin sulfate was significantly effective in managing moderate to severe knee pain and outperformed celecoxib as measured by OMERACT-OARSI response rates in this same subgroup of patients.<sup>1</sup> The chondroitin sulfate chosen for GAIT is found exclusively in Cosamin<sup>®</sup> DS in the U.S.\*

### Randomized, Placebo-Controlled, Single-Center Studies

Hendersonville Orthopedics Associates evaluated the oral combination of glucosamine HCl, sodium chondroitin sulfate, and manganese ascorbate (Cosamin<sup>®</sup> DS) for knee joint pain. Ninety-three patients with cartilage deterioration of the knee participated. After initial evaluation, researchers assessed patients every two months, across a six-month period. Patients with mild or moderate radiographic changes taking Cosamin<sup>®</sup> DS showed significant improvement at 4 and 6 months ( $P=0.003$  and  $P=0.04$ , respectively) in comparison to the placebo group.<sup>2</sup> A 16 week crossover trial of thirty-four males from the U.S. Navy diving and special warfare commands also demonstrated significant improvement in knee pain from administration of Cosamin<sup>®</sup> DS.<sup>3</sup>

### The Destructive Cycle of Cartilage Loss

Physical damage and age-related changes to cartilage may permanently destroy cartilage cells and disrupt the natural cycle of replacing old or damaged components of the cartilage matrix. The result is the loss of cartilage matrix and the beginning of the downward cycle of joint deterioration. Deteriorating cartilage cells, as well as the cells that line the fibrous joint capsule, also release enzymes that further break down the matrix structures. This compromises the ability of the remaining cartilage cells to regenerate the matrix.

### Endogenous Glucosamine and Chondroitin Sulfate

Glucosamine is an amino monosaccharide (2-amino-2-deoxyglucose) produced within cells and utilized as the basic molecular "building block" of

glycosaminoglycans throughout the body, including the hyaluronan, keratan sulfate and chondroitin sulfate of the cartilage matrix. Chondroitin sulfate (CS) is composed of repeating disaccharide subunits of D-glucuronic acid and sulfated forms of N-acetylgalactosamine and is responsible for the water-retaining capacity of cartilage.

### How Cosamin® DS Works

In vitro research has shown that the combination of chondroitin sulfate and glucosamine HCl in Cosamin® DS promotes biosynthesis of the cartilage matrix and inhibits the gene expression of pro-inflammatory mediators such as TNF- $\alpha$ , IL-1 $\beta$  and COX-2 that lead to breakdown of the cartilage matrix. An in vivo study using delayed gadolinium-enhanced magnetic resonance imaging of cartilage (cGEMRIC) showed that Cosamin® DS supports cartilage glycosaminoglycan content of the knee.<sup>4</sup>

### Clinical Experience and Suggested Use

Nicholas DiNubile, Team Orthopaedic Consultant for the Philadelphia 76's and author of the best selling book, *FrameWork: Your 7-step Program for Healthy Muscles, Bones, and Joints*, advocates using "joint supplements for virtually every patient with osteoarthritis." Dr. DiNubile notes, "I recognize that not all patients respond to it. I tell all patients that they need to choose a high quality brand and give it two months. I steer them to Cosamin® DS, because (1) independent labs have tested Cosamin® DS and confirmed that it meets label claims, (2) in terms of quality, it is pharmaceutical grade, and (3) it is the only low molecular weight (LMW) Chondroitin sulfate sold in U.S. I take the time to go over this information with all of my patients, whether it is individuals with osteoarthritis or even those recovering from knee surgeries in which we are trying to regenerate joint surface or articular cartilage."

"In my opinion and experience, Cosamin® DS is one part of treating patients

with osteoarthritis" says Robert "Bob" Schenck Jr., Professor and Chair, Department of Orthopaedic Surgery, University of New Mexico School of Medicine. Dr. Schenck notes that "Cosamin® DS is tolerated well by patients and is a relatively harmless substance."

David S. Hungerford, MD, Professor, Orthopedic Surgery, Johns Hopkins University, shared "We use a 3-month trial in most patients who present with anything less than very severe arthritis of the knee. We will also do that for patients with arthritis of the hips and hands. I don't see any reason not to do this and in our experience about 70% of patients will show sufficient improvement that they will want to continue. Some become totally asymptomatic."

Both Drs. DiNubile and Hungerford also personally use Cosamin® DS. "I began taking Cosamin® DS 11 years ago, mostly for arthritis in my hands" shared Dr. Hungerford. My right index finger had become so painful that I had stopped using it and was considering having a DIP fusion. Within 3 months all symptoms in that joint were gone and I could use it normally and this has continued to the present. I also have arthritis in both knees as the result of an automobile accident as a teenager, and swelling has been reduced to negligible and the symptoms are no worse than they were 11 years ago."

Initial administration is three capsules per day for the first 4 to 8 weeks, after which daily dosage can be reduced to two capsules. Clinical trials report nominal side effects—primarily gastrointestinal problems including flatulence, nausea, or changes in stool consistency—with incidence of side effects comparable to placebo. There are no known drug interactions or serious side effects with Cosamin® DS.

### Composition and Availability of Cosamin® DS

Cosamin® DS capsules are supplied in packages of 72, 108, 210, and 230-count

sizes. Each capsule contains 400 mg TRH122® 95% LMW chondroitin sulfate (CS), 500 mg FCHG49® 99% glucosamine HCl, 3 mg manganese and 16 mg vitamin C (as ascorbate).

Cosamin® DS compressed tablet formulation is supplied in packages of 75 and 150-count sizes. Each tablet contains 400 mg TRH122® 95% LMW CS and 500 mg FCHG49® 99% glucosamine HCl.

As an over-the-counter dietary supplement, Cosamin® DS is available at pharmacies and discount stores. Patients can request a discount coupon online at [www.cosamin.com](http://www.cosamin.com).

Following standards practiced by the pharmaceutical industry, Nutramax Laboratories, Inc. is an industry leader in setting and adhering to high standards in manufacturing and quality control. Nutramax Laboratories, Inc. also supports in vitro laboratory research and clinical studies on its products. ♦

### To Learn More

To learn more about Cosamin® DS, visit [www.nutramaxlabs.com](http://www.nutramaxlabs.com), call 1-800-925-5187, or e-mail to [contactus@nutramaxlabs.com](mailto:contactus@nutramaxlabs.com).

### References:

1. Clegg DO, Reda DJ, Harris CL, et al. *The New England Journal of Medicine* 2006;354(8):795-808.
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4. Williams A, Gillis A, McKenzie C, et al. *American Journal of Roentgenology* 2004;182:167-172.

\* National Institutes of Health is not affiliated with and does not endorse Nutramax Laboratories, Inc. or its product Cosamin® DS.

^ Cosamin® DS contains FCHG49® Glucosamine Hydrochloride and TRH122® Low Molecular Weight Sodium Chondroitin Sulfate, Nutramax Laboratories® exclusive proprietary researched specifications.