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COSAMIN[®]ASU

An Advancement in Joint Health Supplementation

EXPAND YOUR ARMAMENTARIUM FOR JOINT HEALTH MANAGEMENT

Nutramax Laboratories, Inc., the trusted name in glucosamine/chondroitin sulfate research and the manufacturer of **Cosamin[®]DS**—the #1 Orthopedic Surgeon and Rheumatologist recommended glucosamine/chondroitin sulfate brand,[†]—now combines NMX1000[®] Avocado/Soybean Unsaponifiables with its researched FCHG49[®] Glucosamine Hydrochloride and TRH122[®] Sodium Chondroitin Sulfate to offer **Cosamin[®]ASU**, a comprehensive joint support formula.

Cosamin ASU contains Avocado/Soybean Unsaponifiables, commonly referred to as ASU, which have been used for years in Europe in the management of joint pain. ASU are the fraction of avocado and soybean oil which, after hydrolysis, does not produce soap. Additional studies on joint tissue cells have also shown that ASU reduce the expression of inflammatory markers that are associated with joint discomfort and the process of cartilage breakdown in the joints. Cosamin ASU also contains decaffeinated green tea for additional health benefit. Recent laboratory research indicates that EGCG, a major component in green tea, potentiates the anti-inflammatory properties of ASU.¹

The Glucosamine/chondroitin Arthritis Intervention Trial (GAIT), sponsored by the National Institutes of Health, was the first large-scale, multi-center clinical trial to test the effects of the dietary supplements glucosamine HCl and sodium chondroitin sulfate for the management of knee joint pain. The study was composed of more than 1,500 participants (men and women, 40+ years of age) from sixteen rheumatology centers across the nation. Patients enrolled had persistent knee pain of at least 6-months' duration and radiographic evidence of cartilage breakdown. Participants were randomized to one of five treatment protocols: placebo, celecoxib, glucosamine HCl, chondroitin sulfate, and the combination of glucosamine HCl and chondroitin sulfate. Researchers concluded that the combination of glucosamine HCl and chondroitin sulfate was significantly effective in managing moderate-to-severe knee pain and



The ingredients in Cosamin[®]ASU have been shown to work better than the combination of glucosamine + chondroitin sulfate in laboratory cell culture studies.

outperformed celecoxib as measured by OMER-ACT-OARSI response rates in this same subgroup of patients.² The chondroitin sulfate chosen for GAIT is found exclusively in Cosamin DS in the U.S.*

Prior to this study, two US published, randomized, double-blinded, placebo-controlled clinical trials concluded that the combination of glucosamine, chondroitin sulfate and manganese ascorbate that constitutes Cosamin DS is effective in reducing joint pain.^{3,4} In a third study, the authors of a published trial evaluating the use of delayed gadolinium-enhanced magnetic resonance imaging of cartilage (cGEMRIC) reported that study participants taking Cosamin DS in combination with exercise showed an increase in glycosaminoglycan content of cartilage in the knee.⁵

In vitro research has shown that the combination of chondroitin sulfate and glucosamine HCl in Cosamin® DS promotes biosynthesis of cartilage matrix components and inhibits the gene expression of pro-inflammatory mediators such as TNF- α , IL-1 β and COX-2 that lead to breakdown of the cartilage matrix.^{6,7,8,9}

Advances in ASU Research

Ameye and Chee reported in *Arthritis Research & Therapy*, "ASUs display anabolic, anti-catabolic, and anti-inflammatory effects on chondrocytes."¹⁰ A recent cell culture study on ASU (Au, *et al.*) showed that ASU suppress mediators involved in cartilage deterioration and pain. The authors stated that these observations provide a scientific rationale for the pain-reducing and anti-inflammatory effects of ASU in patients.¹¹

"While ASU is a potent agent alone, it complements the positive effects of the other active ingredients in the Cosamin formulation," notes Carmelita G. Frondoza, Ph.D., the Director of Research and Development at Nutramax Laboratories, Inc. "Having ASU in the formula is beneficial, as ASU, glucosamine hydrochloride, and chondroitin sulfate were shown in cell culture studies to work better together than glucosamine and chondroitin sulfate alone." Dr. Frondoza explains further, "Laboratory research has shown the combination in Cosamin ASU to extend across multiple cell types in the joint by inhibiting expression of inflammatory markers involved in the process of cartilage breakdown. The combination of these ingredients also stimulates proteoglycan and collagen production while being effective at suppressing inflammatory markers. In contrast to the inhibitory effect of some pharmaceutical agents, the combination product does not block expression of mediators completely, which is of importance, as low levels of the mediators are necessary for normal organ and tissue function and repair."

A Clinician's Viewpoint

C.T. Moorman, III, MD, Associate Professor, Orthopaedic Surgery, Director of Sports Medicine, Duke Medical Center,

and Head Team Physician, Duke Athletics (Durham, NC)^{***} notes that, "It is well established that glucosamine and chondroitin sulfate stimulate chondrocytes to produce cartilage matrix components and minimize cartilage breakdown." Dr. Moorman went on to say that clinical response to Cosamin has been considerable. "We have a very large, very active baby boomer population with worn cartilage, but this group does not want to be constrained by pain and desires improved performance. These patients often come in with knee injuries and we discover, incidentally, a cartilage injury. For these patients, I have found that Cosamin fits well into my armamentarium as a first-line choice for management of joint pain. I will recommend short-term use of anti-inflammatory medication in response to acute pain or flairs-ups, but only for a day or so because the anti-inflammatories work against the healing of the cartilage cells, whereas the glucosamine and chondroitin sulfate work for them. The addition of ASU further enhances the combination by reducing the expression of inflammatory markers. I have been using Cosamin ASU myself, and have responded well to it." Dr. Moorman also finds that Cosamin is helpful in management of another population of patients—younger athletes. "We see athletes with chondral or other knee injuries that require surgical repair, such as microfracture or cartilage transplant procedures. We recommend Cosamin routinely for these patients." ♦

Composition and Availability of Cosamin®ASU

Cosamin ASU is manufactured 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 also supports *in vitro* laboratory research and clinical studies on its products.

Cosamin ASU is available in an easy to swallow capsule that when taken as directed provides a daily dosage of 800 mg Sodium Chondroitin Sulfate, 1500 mg Glucosamine HCl, and 400 mg Avocado/Soybean Unsaponifiables Blend.^{**}

To Learn More

As an over-the-counter dietary supplement, **Cosamin ASU** is available nationally at CVS and Rite Aid pharmacies. For more information about Cosamin ASU or for a full list of regional and online retailers, visit www.cosaminasu.com, or call toll free at 1-888-886-6442.

These statements have not been evaluated by the Food & Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Cosamin® DS contains Nutramax Laboratories® exclusive researched FCHG49® Glucosamine and TRH122® Sodium Chondroitin Sulfate which exceed the standards and specifications set forth in the U.S. Pharmacopeia (USP).

Cosamin®ASU contains FCHG49® Glucosamine, TRH122® Sodium Chondroitin Sulfate and NMX1000® Avocado/Soybean Unsaponifiables, Nutramax Laboratories® exclusive proprietary researched specifications.

[†]Source: SLACK Incorporated Market Research Survey, June 2005 and February 2006. Survey conducted of orthopedic surgeons and rheumatologists relating to glucosamine/chondroitin sulfate brands.

^{††}National Institutes of Health is not affiliated with and does not endorse Nutramax Laboratories, Inc. or its Cosamin® products.

^{†††}Containing a minimum of 300 mg of ASU powder standardized to contain a minimum of 30% avocado/soybean unsaponifiables.

^{***}Duke University is not affiliated with and does not endorse Nutramax Laboratories, Inc. or its Cosamin® products.

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