



Glucosamine

Article by **Dr. John McMenemy**, Medical Advisor for Studio7Multisport

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Introduction

In today's world of mass media marketing we hear of many promises of fitness and health found in pills and powders. Glucosamine is no exception. Where it is an exception however is the fact that this drug has a number of solid studies that look at it's effectiveness. Glucosamine is a medicine that is considered to be a dietary supplement by the FDA (Food and Drug Administration). When this is combined with chondroitin sulfate – you now have one of the most popular supplements on the market with sales that reach in the hundreds of millions annually.

Pharmacology

So what is glucosamine?? It is an endogenous aminomonosaccharide synthesized from glucose and utilized for biosynthesis of glycoproteins and glycosaminoglycans. Well that clears things up, right? Maybe not. Basically this is a compound found in nearly all tissues of the body with the highest concentration in the cartilage – thus it's use for joint problems. There is some debate on whether the glucosamine "sulfate" form is more effective then glucosamine "hydrochloride" form and this debate has not been resolved. The exact mechanism for the way glucosamine helps is not known. Stimulating chondrocyte activity is one; incorporating sulfur in the cartilage which helps with stabilization is another and even altering gene expression to help protect the cartilage is yet another.

Studies

Glucosamine has been looked at for a variety of medical problems but the most common use is for osteoarthritis. To say this drug has been studied would be an understatement. Looking at studies before 2006 show mixed results. There is the appearance that studies supported by glucosamine producers had favorable results whereas the studies done by more neutral parties had less favorable results. It also appears that studies done in one place had a hard time being reproduced in another. There was a very significant trial in 2006 called GAIT. This compared 4 groups: glucosamine alone with chondroitin alone with glucosamine and chondroitin in combination with Celebryx (popular prescription anti-inflammatory) and finally with placebo. 1,500 patients were enrolled over 6 months. Looking at various parameters of effectiveness of treating osteoarthritis of the knee, the authors concluded after 6 months that glucosamine either alone or in combination with chondroitin did not differ in a significant way from placebo. However, in a subgroup with people who had moderate to severe knee pain there did seem to be some help with pain when using glucosamine and chondroitin compared to placebo. A 2008 study looked at osteoarthritis of the hip and no difference was found from placebo.

I should state that most of the studies that had favorable outcomes – glucosamine SULFATE was used as opposed to glucosamine HYDROCHLORIDE. However, before you get too excited – the 2006 GAIT trial used the hydrochloride form and the 2008 osteoarthritis hip trial used the sulfate form and neither showed superiority over placebo.

Safety

Is this drug safe?? It appears that it is. There have been very few reports of allergies and even fewer reports of significant drug interactions. If someone has a severe shellfish allergy or takes the blood thinner warfarin (Coumadin) – caution should be exercised. When looking at the side effects, they were mostly GI in nature such as heartburn, diarrhea, abdominal pain and nausea that were infrequent and mild.



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Dosing

How do you take this drug?? Typically 500 milligrams (mg) 3 times daily is generally considered to be the standard therapeutic dose. Various brands recommend differently but most are around that dosing regimen.

Decision

So – should you try it or not?? The scientific evidence for effectiveness is lacking at present. Anecdotally, I have had a number of patients tell me that it helps. Enough so that it has caused me to look at this supplement as a possible option for treatment of osteoarthritis of the hip or knee. The fact the medicine is safe and has far less side effects than many standard arthritis medications has lead me to recommend this medication on a number of occasions. I will continue to do so as long as I see results and I know it is safe. There are yet still further trials underway that will help us understand better the role of glucosamine.

Final Thought

One final note. I get a number of questions in regards to glucosamine's role in osteoarthritis prevention. In other words if I were to take 1 or 2 pills a day could I delay or prevent the development of osteoarthritis in knee or hip? My standard answer is – no data. There is no way for me to know. The proposed mechanism of action suggests that glucosamine may do this however. As a result, when I discuss this with athletes it becomes an individualized decision.

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