

## Glucosamine, Part III: Dosing, Safety and Side Effects

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Expert opinions vary on the length of time one should dose glucosamine, from one month<sup>1</sup> to six weeks<sup>2</sup> to eight weeks.<sup>3</sup> Recommendations on the amount of glucosamine generally center around 1,500 mg per day in divided doses, which is the amount utilized in the vast majority of studies on humans. When I prescribe glucosamine, my initial recommendation is for patients to try glucosamine for a minimum of six weeks taking 1,500 mg per day in divided doses. Depending on the response after three weeks, I may alter this regimen, decreasing the amount for hyperresponders and increasing or maintaining 1,500 mg for those patients who do not notice a change.

In my experience, the majority of patients with osteoarthritis have benefited from glucosamine sulfate, although there is considerable variation in the length of time, nature of response, and dose that works the best. Large or obese people over 200 pounds may need higher doses at levels up to 20 mg per pound of body weight.<sup>4,2</sup> Anecdotally, I have observed patients who are hyperresponders and feel a marked effect after a few days using only 500 mg per day. I have had other patients who have felt positive benefits from glucosamine sulfate taking all 1,500 mg at one time with breakfast. A few of my patients who are large weightlifters and body builders with chronic shoulder, knee, and spinal problems have successfully used glucosamine sulfate at levels of 3,000 mg a day for three to six months with no side effects other than an improvement in their condition.

In a recent article in *JMPT*, Gottlieb<sup>5</sup> states that many patients who have the recommendation of taking one 500 mg capsule three times a day will commonly skip the midday dose, resulting in an actual supplementation of 1,000 mg per day. Dr. Gottlieb's anecdotal observations seem to indicate that for many patients 1,000 mg a day may be sufficient.

Some companies are now selling glucosamine in a 750 mg capsule, which may make compliance easier. The important concept to remember is that most people need to be patient and realize that it will take time for glucosamine to work. Obviously, it will work better if those people do not continue to irritate injured areas, but instead receive appropriate therapy.

Once the initial four-to-eight-week trial is concluded, the clinician then has a choice to reduce glucosamine or discontinue. If a patient has taken glucosamine as recommended over a two month period with no response, I will discontinue supplementation entirely. For the majority of patients who do feel better, the patient and clinician now have a choice to continue supplementing at a lower level or discontinue until symptoms return. There are reports that many patients continue to benefit after stopping my practice, I have patients reduce their dose to a level that continues to give them benefit. This appears to have a range from 500 mg a day to 500 mg every two to three days. Again, there have been no formal studies in this area.

Finally, beware of "glucosamine fluff" products. These are marketed by less than ethical people who will sell their products based on the fact that they contain glucosamine, but conveniently omit

the fact that the amounts contained are far less than what has been successfully used in human clinical trials.

### Safety and Side Effects

Glucosamine appears to be quite safe. Murray<sup>1</sup> states that side effects may occur in around 12 percent of patients, most of which are gastrointestinal in nature: upset stomach, nausea, heartburn, and diarrhea. Dr. Murray goes on to state that if glucosamine is taken with food, the percentage of problems may be reduced. In my personal practice, I have found the percentage of patients with side effects from glucosamine more in the range of five percent, which is in line with two recent trials that compared glucosamine sulfate and ibuprofen. Combined, these trials involved 805 patients. The ibuprofen groups had adverse reaction rates of 35 percent and 37 percent, while the glucosamine sulfate groups had adverse reaction rates of six percent and seven percent respectively, the majority of which involved gastrointestinal complaints.<sup>6,7</sup>

As of this date, no adverse reactions have been reported with glucosamine interacting with other drugs or nutrients. There have also been no reports in the literature looking at glucosamine supplementation when pregnant. Therefore, consult with an OB/GYN before using during pregnancy.

- For those of you who want more information on glucosamine, I recommend the following:
- Murray MT. Glucosamine sulfate: effective osteoarthritis treatment. American Journal of Natural Medicine September 1994.
- Bucci LR. Nutrition applied to injury rehabilitation and sports medicine. CRC Press May 1997.
- Bucci LR. Pain-Free. Ft. Worth, Texas: The Summit Group, 1995.
- Theodosakis J. The Arthritis Cure. New York: St. Martin's Press, 1997.

### References

1. Nutrition Action Health Letter January/February 1998;25(1):4.
2. Theodosakis, Adderly, and Fox. The Arthritis Cure. New York: ´
3. Bucci LR. Pain-Free. Ft. Worth, Texas: The Summit Group, 1995.
4. Murray MT. Glucosamine sulfate: effective osteoarthritis treatment. American Journal of Natural Medicine September 1994;1(1).
5. Gottleib MS. Conservative management of spinal osteoarthritis, glucosamine sulfate, and chiropractic treatment. JMPT July/August 1997;10(6).
6. Muller-Fabender, et al. Glucosamine sulfate compared to ibuprofen in osteoarthritis of the knee. Osteoarthritis and Cartilage 1994;2(1).
7. Rovati. Clinical research in osteoarthritis: design and results of short and long-term trials with disease-modifying drugs. International Journal of Tissue Reactions 1992;14(5):243-251.

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