Glucosamine

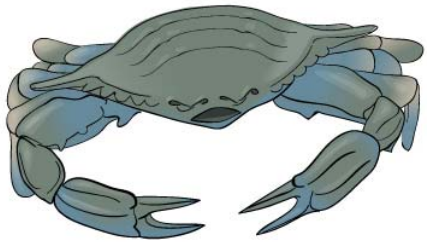
What is glucosamine?

Glucosamine is arguably the most commonly used nutraceutical in the world. Medical and veterinary practitioners who avoid alternative medicine in general will still frequently prescribe glucosamine, usually as treatment for osteoarthritis and degenerative joint disease.

Glucosamine is composed of an amino acid (glutamine) and a sugar (glucose), and is an essential building block of joint cartilage. Ordinarily, the body produces its own glucosamine, but during periods of attempted cartilage repair, it is believed there may be a shortage of glucosamine. Various supplements are now on the market that are used to ostensibly relieve the glucosamine shortage in arthritic dogs and cats. Some studies have also suggested glucosamine may act as a cyclo-oxygenase inhibitor, in the same manner as aspirin and other non-steroidal anti-inflammatory drugs. In placebo-controlled studies, glucosamine has compared favorably to Ibuprofen in the long term reduction of pain associated with arthritis in humans, while causing fewer side effects.

Glucosamine is produced naturally in the body. Supplements are synthetic, however, and are often made from chitin, a substance found in the shells of crustaceans. While it is uncertain how much of glucosamine is absorbed when given orally, some studies have indicated it is as much as 87 percent. Injectable preparations appear to have a significant benefit in reducing the manifestation of canine hip dysplasia in susceptible dogs when given early in development. Glucosamine is also a component of gelatin, and is likely to be ingested in quantity by animals consuming ground bones in frozen ground meat-based diets.

Glucosamine is supplied in one of three forms: glucosamine sulfate, glucosamine hydrochloride (a salt of D-glucosamine, which is eventually converted by the body into glucosamine sulfate) or N-acetylglucosamine. Studies show that while all 3 forms of glucosamine are effective, glucosamine hydrochloride (which is a salt of D-glucosamine) and glucosamine sulfate were more effective than N-acetylglucosamine. Results typically may take 4-8 weeks to develop, but may last for several weeks after glucosamine supplements are discontinued. Other patients experience a more rapid improvement and some none at all.



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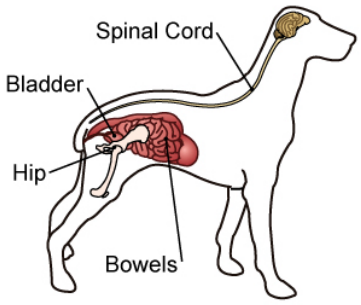
Many glucosamine supplements also contain chondroitin sulphate. Glucosamine is a precursor to chondroitin, which is typically more expensive and slightly less well-absorbed. Like glucosamine, chondroitin is also a glycosaminoglycan aimed at stimulating cartilage repair and reducing inflammation.

Why recommend administration of glucosamine to my pet?

Pets with lameness, bowel, or bladder disease may benefit from treatment with glucosamine.

What species of animals are being treated regularly with glucosamine?
Horses, dogs, and cats are routinely treated with glucosamine.

How can my pet benefit from glucosamine?
Pets with lameness may show significant improvement when treated with glucosamine. Other emerging potential indications for glucosamine include the treatment of intervertebral disk disease, recurrent cystitis, and severe inflammatory bowel disease. Disk disease is associated with abnormal compressive forces on disks, necessitating their re-modelling and repair. Glucosamine has been suggested as a potential source of the proteoglycan molecules needed during these processes.



Glucosamine is indicated in the treatment of inflammation of the bladder, bowels and in disk disease and lameness from degenerative joint diseases.

Glycosaminoglycans (GAGs) such as glucosamine are not just needed for joint remodelling, but are used as a mechanical and electrostatic defense against penetration of infective agents, toxins, and antigenic protein moieties through the mucosal lining of the bladder and intestinal tract. This GAG layer also prevents the leakage of normal body fluids through these same linings. A degraded GAG layer has been proposed as the start of the disease process for ulcerative colitis, Crohn's disease, and interstitial cystitis in humans, and may be a factor in the development of similar conditions in animals. Efficacy of glucosamine supplementation in the management of such conditions is not yet known, but should probably be attempted given the potential for benefit and low risk of harm.

How successful is glucosamine?
Despite its widespread use, success using glucosamine for the treatment of lameness is variable. Some animals respond exceptionally well, while others experience no improvement. Given that glucosamine is extremely safe and easily available, it should probably be a component of the first line of treatment for all arthritic conditions in small animals. Animals that don't respond should receive more thorough evaluation.

How safe is glucosamine?
Glucosamine is very safe. While there have been concerns about the possibility of glucosamine raising blood sugar levels in diabetic pets, current research shows that glucosamine is safe to use in pets. However, it is still prudent to monitor blood sugar levels in diabetic pets (especially if higher doses of glucosamine are used) as alterations in insulin levels might rarely be needed.

Where do I obtain glucosamine and do I need a prescription?
Your veterinarian may have preferred supplements that he or she may recommend. Pet owners are cautioned that, particularly with glucosamine, substantial differences in quality may exist between manufacturers. Advice from your veterinarian is recommended, but a prescription is not needed for glucosamine.

This client information sheet is based on material written by Steve Marsden, DVM ND MSOM LAc DiplCH AHG, Shawn Messonnier, DVM and Cheryl Yuill, DVM, MSc, CVH.
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