Joint Supplements:
The Good, Bad, and the Useless!

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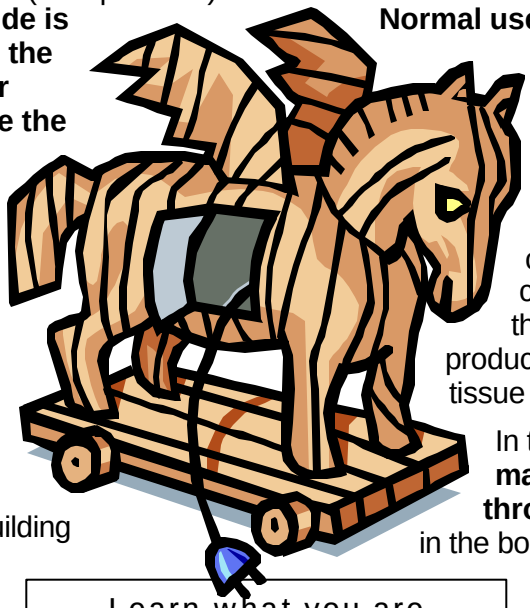
The number of products claiming to help joint pain is growing rapidly. You can't avoid the ads claiming that this product or that one will "help joint problems" or "cure arthritis." Although the following article is geared toward our equine friends, and their specific joint related problems, the principles of nutrition are true for people and pets as well!

When choosing a joint supplement ("flex product") **the first thing you have to decide is whether you just want to make the joints temporarily feel better or whether you want to help solve the problems that are causing the pain.** The ingredients most commonly added to joint supplements are added either to **mask or cover symptoms** (pain or inflammation) or **address the underlying problems** that are causing the pain. **Drugs (which include most "herbs")** can quiet pain very quickly and effectively. However, for a body to use the building blocks provided through good nutrition to rebuild tissues it usually takes 4-8 weeks for enough new fluid and tissue to be present for the pain to stop. We don't enjoy pain, and neither do our horses. **Pain serves a very important purpose- it lets the rest of the body know that something is wrong.**



Learn what you are plugging into the body!

When a joint hurts, the natural response is for the other joints to do more of the work and let the painful joint rest. On their own, joints heal very slowly. **If a damaged joint is not rested, it will certainly get worse.** In addition to not having the joint work as hard, the immune system supplies it with more blood than usual. This extra blood feeds the joint more nutrients so that it can repair faster. This natural healing process causes inflammation and swelling.

Trauma is not the only way joints get damaged. Normal use over time can lead to degeneration and breakdown. Running, jumping, pounding, carrying heavy loads, and normal daily movement all accelerate joint problems. Degenerative changes cause the normally smooth cartilage to become rough due to a loss of chondrocytes (the cells that make cartilage, fluid and connective tissues for the joint). When this happens, they do not produce normal synovial fluid or connective tissue and pain becomes a symptom.

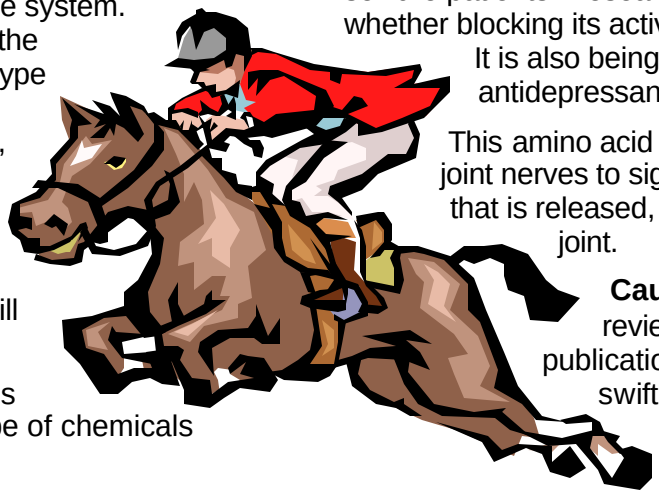
In traditional medicine, **immediate masking of pain is accomplished through the use of drugs** that are placed in the body either orally or by injection. These **drugs (including the herbal ingredients, which are plant drugs) change the way the body normally functions** so that pain is not recognized and/or the immune system stops the inflammatory response (and slows the healing process). The main types of drugs used are steroids (such as Cortisone or Prednisone), non steroidal anti-inflammatory drugs (NSAID's) (such as Banamine, Phenylbutazone, Ibuprofen, Ketofen, or Aspirin), or other drugs that alter the recognition of pain or interfere with the immune response.

Steroids and NSAID's may cause joints to deteriorate faster than if these drugs had not been used. These chemicals interfere with how tissues are made and how they heal. Since the pain is masked, they play a role in how the workload is divided among

joints, slowing the healing, and **increasing the risk of further injury.** Some of these drugs also decrease the joint's ability to use sulfur, which gives connective tissue its elastic strength.

Many of the "flex products" on the market contain herbs, which do not contribute nutrients (building blocks) to the joint tissues. Don't be fooled by the words "all natural" or "organic". Remember, there are many poisons found in nature.

Since plants can't fight off insects or animals that want to eat them, they contain chemicals that cause changes in the way the predator's body works. These chemicals do many different things. Some act like the animal's own hormones (like steroids) and many actually attack the body's immune system. Depending on the specific plant, the amount eaten, and the size and type of animal, ingestion of herbs and their chemicals can cause death, abortions, seizures, or an altered activity of the nervous system. Herbs can also be used as antibiotics and anti-fungals, because they can also kill bacteria and fungus.



Some of the most common herbs used in joint products and the type of chemicals they contain are:

Yucca contains steroid saponins. These chemicals are related to the steroids. In the animal's body they decrease pain and inflammation. They also decrease the immune response and **steroids have been shown to slow the production of glycosaminoglycans (GAG's)**, which are a major component of joint tissues. The main use of Yucca in animal feeds has been to promote feed efficiency and growth and to lower the amount of ammonia in the manure (so that it won't smell as bad).

Boswellia, **white willow's bark**, and **snake root** are all herbs containing chemicals that act as NSAID's. These drugs decrease pain and inflammation, and **are known to cause severe gastrointestinal (GI) problems such as ulcers**. These drugs should not be used in people or animals with GI problems. Remember that gastric ulcers in horses are very common.

Devil's claw contains several chemicals, which are reported to decrease pain. They do not decrease inflammation and are similar in structure to steroids. This herb should not be used with any female (human or animal), as it has been reported that Devil's claw **can cause abortions**, by stimulating uterine contractions.

Bromelain is an enzyme found in pineapples. It has been shown to reduce the amount of swelling present in some experimental animals. However, Bromelain can enter the body intact, **because it eats away the outer lining of the GI tract.** In cancer patients, it has been shown to stimulate the body's own immune system **to kill the body's own cells.** Since it is a protein, it can cause allergic reactions. People who handle bromelain have become allergic to it.

While **glutamic acid (glutamate)** is not an herb, it should be mentioned because of its role as an excitatory amino acid (EAA). **When this amino acid is added to a brain it causes seizures.** Higher than normal concentrations are present in the brain of seizure patients. Research is being done to see whether blocking its activity will help control seizures. It is also being considered as an antidepressant drug.

This amino acid is also naturally released by joint nerves to signal pain. The more glutamate that is released, the more pain that is felt in a joint.

Caution is given here because a review of this product in a popular publication discusses its dramatic and swift change in horses' attitudes. Research is currently being done to determine its role in seizures and the signaling of pain. What will prolonged use do? At what levels does this ingredient become dangerous? How addicting is it? These are only some of the questions not clearly answered by science.

Oral Glucosamine Sulphate has been shown to return horses suffering from Spavin, and even Navicular disease, to normal function.

In contrast to drugs, either synthetic or "natural", **nutrition is the science of providing an animal the basic building blocks it needs to function properly and to build its different tissues.**

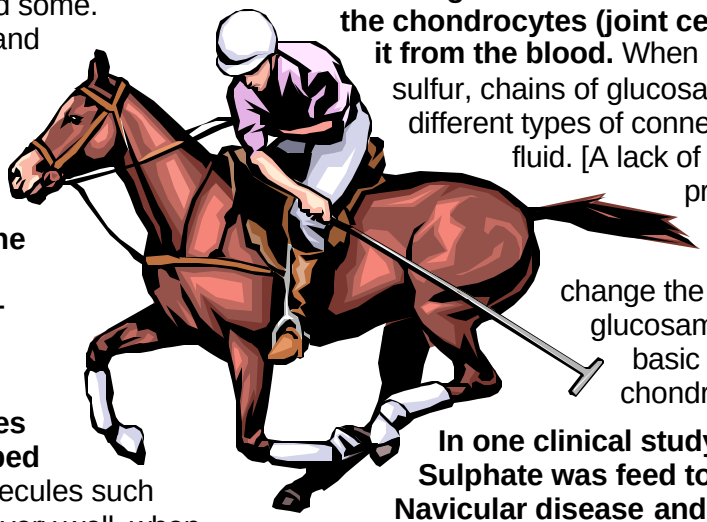
The majority of equine (and human) joint problems can be addressed through nutritional support. Surgery is needed only when a piece of the cartilage (the tissue that covers the ends of the bones in a joint) is loose and needs to be removed or when the support structures are physically separated and need to be repaired.

Nutritional supplements can help connective tissues grow and heal. The joints of young, fast-growing horses can benefit from the right extra

nutrients. Horses of all ages that are regularly being worked, trained or used in competition and are putting great stress on their joints and can **use the additional support.** Most owners take great care to protect the outside of a horse (especially when traveling) to avoid injuries, the same **care should be taken inside the joints.** If joint injury does occur, proper nutritional supplementation is definitely appropriate**. As bodies age, joints naturally wear out faster than they are repaired.**

Nutritional supplements can help the body fight back and heal itself by increasing the production of new tissues.

It was found over 50 years ago, that over time, eating ground up connective tissues could help relieve problems associated with arthritis. People began to consume gelatin and cartilage (shark, chicken, bovine, or Perna muscle) and these helped some. Scientists studied these products and found that the most helpful substances in them were chondroitin sulfates. **About 30 years ago the research began focusing in on a much smaller, more efficient, nutrient that is the most basic building block of connective tissues and fluids — Glucosamine Sulphate.**



Whole cartilage and its large components (chondroitin sulfates and collagen) can not be absorbed well by the body. While large molecules such as these can be injected and work very well, when taken orally more than half usually ends up in the manure. Chondroitin sulfates have a large range in size. Some are 50 times larger than others. Only 8-10% of the smallest ones have been shown to get from the gut into the blood intact. What is fed must be digested into smaller pieces by the gut and the pieces that do get into the blood must be broken down further to get into the joints.

Another concern with these large sized, mixed, animal byproducts is that they can cause allergic responses. **Allergic responses to many types of collagen have been documented.**

The other extreme found in some supplements is the promotion simple amino acids (AA's). Yes, amino acids are the basic building blocks of proteins. And, it is very important that the right amount of protein, from the proper sources, is provided in the feed.

Providing extra of a particular AA does not mean that more connective tissue will be made.

For example, let's say you ordered some boards to put a wall on a barn and, instead of boards, the lumber company delivered a load of acorns. When asked about the acorns, the deliveryman uses the reasoning that oak is the best type of wood for your job and that someday the acorns will grow into trees and can then be used for the lumber you need. Obviously, the acorns will not get your job done. Unfortunately, this logic has been applied to some joint supplements with the same lack of results. Quick "results" that maybe seen are "drug" (herb) related, which are actually masking the symptoms and not a solution to the problem.

<u>Glucosamine Sulphate</u> is the basic building block of connective tissues and fluids. Studies have shown that when Glucosamine Sulphate is given orally, within 30 minutes 87-97% is actively taken from the gut into the blood. Further, within 4 hours the chondrocytes (joint cells) have actively taken it from the blood. When linked together with sulfur, chains of glucosamines become several different types of connective tissues and joint fluid. [A lack of sulfur will cause the production of connective tissues to stop.] Also an enzyme can slightly change the shape of the glucosamine so that it is also the basic building block of the chondroitin sulfates.

- **In one clinical study, where Glucosamine Sulphate was feed to horses, 77% of Navicular disease and 100% of Spavin cases returned to normal function.**

There are several types of glucosamine used in supplements. They are all different from each other.

<u>N-acetyl-glucosamine</u> has been proven to not have active uptake from the gut.

There are no studies that show if <u>Glucosamine HCl</u> is actively taken in from the gut, or how much of it actually gets into the body or the joints. Whatever portion does make it into the joints must be undergo changes before it can be used in connective tissues. The HCl must be removed and a sulphate added.

Furthermore, **Glucosamine HCl is not stable in liquids.** Published experiments have shown that over half of the Glucosamine HCl added to a liquid solution will breakdown within 27 hours. Within 4 days, these new and different "breakdown products" form completely different molecules that were 20 times larger than what was originally in the solution.

There are several injectable products that work on the sound principles discussed above (Adequan, Legend, Hyaluronic Acid - - not steroids). **These provide basic building blocks to joints in high concentration** (whether injected in the muscle, veins, or in the joints) and they do not just mask the pain. However, just like the whole body, **joints need to be feed every day**, not just every 4 - 6 weeks. The fastest, most effective and economical way to address serious joint and connective tissue problems is to start a high quality oral supplement at the time of first injection. This will **decrease the frequency of, and hopefully eliminate, the need for further injections.**

To share the information with a friend, send them to www.equinearthritis.com or call **1-800-628-0997**

Product checklist ...

- **Nutritional support can most definitely help maintain and heal joint tissues.**
- **Be an educated consumer.**
- **Ingredient quality is extremely important.**
- **Be sure that you are buying the proper building blocks in the supplements you purchase.**
- **Be sure that when you use a daily supplement, you are providing nutrition, not drugs.**
- **Is the product formulated by professionals to address structural problems or is designed to cover pain.**
- **Structural changes through nutritional supplementation take weeks, not days, to be seen.**
- **The amount of nutrients needed by an individual is based on weight, age, and severity of the problem or deficiency.**
- **Beware of "one size fits all" doses.**

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As a veterinarian and certified nutritional specialist (CNS) through the American College of Nutrition, he has devoted much of his time and studies to informing and educating people about the benefits of nutrition, dangers of herbs, and the fallacy of "quick cures". He believes in solutions through proper nutrition. He has spent many years in graduate coursework and research learning how to apply cutting-edge nutrition to clinical and preventive health care programs for both people and animals.

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Section Chief, Large Animal Surgery for The University of Tennessee College of Veterinary Medicine. As an equine practitioner, surgeon, researcher, and instructor, he understands the critical importance of connective tissue health as it relates to the overall health and longevity of horses.

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Graduated as a Pharmacist from Purdue before obtaining both a PhD in Pharmacology and Biochemistry and a MD from Vanderbilt. He is a clinical instructor, a published surgeon and frequent speaker at scientific meetings. Over the past several years, Dr. Bishop has turned much of his attention to preventive health.