



Investigating alternative medicine

Focus on some of the more-studied and widely accepted nutraceuticals, novel treatments, and complementary therapies

by Amy Gill, Ph.D.

ALTERNATIVE medicines and dietary supplements quickly are growing in popularity among those in the equine industry as a means of treating conditions and illnesses that affect horses. Some of these therapeutic agents have been researched intensively, while others have little or no scientific evidence to support their claims of efficacy. However, consistent, anecdotal reports on their use in treating musculoskeletal conditions, pain, and behavioral issues, as well as enhancing overall well-being and performance, cannot be ignored.

Nutraceuticals and alternative therapies can be extremely beneficial in the treatment of certain conditions, but it is important to understand what a product or modality is designed to do and how it works before deciding to use it for a specific situation. Additionally, it is important to remember that each of these treatments or supplements will complement—not provide an absolute alternative to—solid feeding and training programs, good management, and sound veterinary advice.

Glucosamine and chondroitin sulfate

Arthritis is a disease that affects joint integrity, causing pain, inflammation, and eventually limited movement of the affected joint. With progression of the disease, the articular (joint) cartilage that protects the ends of bones by providing a cushion within the joint begins to degrade. Osteoarthritis is characterized by cartilage deterioration and damage to the bone. Pain and inflammation experienced by the horse are the results of bone rubbing against bone as the protective cartilage breaks down.

Treatment of arthritis typically is centered on pain relief and preventing further deterioration of existing cartilage. Administration of nonsteroidal anti-inflammatory drugs (NSAIDs) and injections of steroids into the joint are used to relieve arthritic pain, but they do nothing to promote cartilage repair or slow degeneration.

Extended use of NSAIDs has been shown to weaken the horse's gut and increase the risk of developing gastric ulcers, increasing the permeability of the intestinal wall. The more permeable the gut wall, the more susceptible the horse is to toxins and other trigger factors that could lead to lamini-

tis. With this in mind, alternative treatments for joint deterioration should be taken into consideration because they may not only relieve pain but also may slow degeneration of the joint and avoid the potential intestinal damage caused by other treatments.

As an alternative or in addition to NSAIDs, glucosamine and chondroitin sulfate, substances found naturally in the body, are now commonly supplemented in the diets of horses suffering from arthritic conditions. Glucosamine is a form of amino sugar that is believed to play a role in the formation and repair of cartilage. Chondroitin sulfate is part of a large protein molecule (proteoglycan) that gives cartilage elasticity.

It once was thought that the large chondroitin sulfate molecule could be absorbed across the wall of the digestive tract, which potentially would make oral supplementation less than effective. That theory has since been disproved in several clinical studies.

Glucosamine and chondroitin sulfate, when given individually or in combination, can greatly reduce the pain experienced by the horse. Studies relating to the ability of these nutraceuticals to improve the condition of the cartilage have been conducted by Nutra-Max, resulting in strong support for its product Cosequin, which utilizes glucosamine and chondroitin sulfate. Studies have shown that not only are these elements biologically available and able to be absorbed by the horse, but when used together, overall effectiveness is much greater. When used in conjunction, glucosamine and chondroitin sulfate were better able to deter the inflammatory substances that cause damage within an arthritic joint, as well as encourage production of new cartilage.

This year, an eight-year clinical field study conducted by Martha Rodgers, V.M.D., formerly a clinician at Rood & Riddle Equine Hospital in Lexington, and published in the *Journal of Applied Research in Veterinary Medicine*, reconfirmed the usefulness of glucosamine and chondroitin sulfate in treating progressive clinical lameness from osteoarthritic conditions in the hock of competitive hunters and jumpers.

In a press release from GLC

Direct, the company that manufactures GLC 5500 (the product used in the study), Rodgers said: "Distal tarsitis is a progressive disease... It would be expected that with the increase in age and the demands of show-horse performance, all the horses would develop more pronounced pain... In light of this, the overall drop in the number of injections required and the decrease in injection frequency over the eight-year study period can be viewed as an even more convincing argument for the beneficial effects of long-term supplementation."

Hyaluronic acid

Hyaluronic acid (HA) is a stiff biopolymer that is found naturally in the fluid of the joint capsule. It serves to lubricate the joint and provides anti-inflammatory action by limiting the release of damaging enzymes. Initially, HA was administered by injection directly into the affected joints, but the potential for joint infection has led many veterinarians to switch to the intramuscular route, which has the added benefit of treating numerous joints at one time.

Shock absorption is crucial to joint maintenance, and the stiff nature of HA gives it the ability to cushion the joint well. Ultimately, this allows HA products to reduce arthritic pain and improve joint function.

HA can be extracted from several animal sources (rooster combs and bovine vitreous humor of the eye), but these sources also bring the risk of infection. As a result, bacterial fermentation, followed by purification to reduce the incidence of infection, have become popular ways to produce large quantities of HA.

Most commercially available HA products that are used to treat osteoarthritis are produced in this manner. This form of HA either is injected directly into a specific joint or is injected intravenously to treat multiple joints. HA also can be administered orally. Oral supplementation provides an effective alternative route for administering HA to arthritic joints. In this form, HA is circulated throughout the body, not only benefiting arthritic joints but also improving overall health as a result of its potent antioxidant effects.

MSM

Methylsulfonylmethane, or MSM, is an organic compound

derived from dimethyl sulfoxide (DMSO) when that compound is oxidized. DMSO is a solvent commonly used topically and systemically as a treatment in horses to decrease inflammation. MSM is a naturally occurring, sulfur-containing organic compound found primarily in fresh fruits and raw vegetables—including broccoli, peppers, Brussels sprouts, onions, asparagus, and cabbage—and in every cell of the mammalian body. The highest natural concentration of MSM is found in mammal's milk. In the body, MSM is found in significant amounts in nerve tissue, skin, hair, and joints.

MSM has been prescribed to treat a variety of illnesses in horses, including chronic muscle soreness, epiphysitis, acute laminitis, pleuritis, and recurring disorders of the digestive tract. Primarily, MSM is used to treat the pain and discomfort associated with osteoarthritis, but it has little effect on repairing damage in the joint. Also, its effects are exerted only while the supplement is being taken.

Research studies have shown that patients responded best and showed the most reduction in pain when supplemented with MSM and glucosamine in conjunction, rather than with either supplement alone.

Silicon

Another emerging food supplement for horses is biologically available silicon. Silicon is an abundant element and a normal part of the equine diet because it is found in minute amounts in grain and forage. Unfortunately, many natural sources of silicon are biologically unavailable to the horse, but a highly absorbable form, monosilicic acid, exists. Recent technology has made monosilicic acid available for supplementation to horses in the United States.

Silicon plays a key role in improving bone quality, and it improves the mineralization process in the bones. Silicon acts as a regulator for uptake of calcium and phosphorus, and it directly contributes to a healthy bone cortex and a well-calcified bone matrix. Silicon also plays an important role in the formation of connective tissue and collagen (bones, cartilages, ligaments, tendons, hair, skin, and hooves).

Recent field studies conducted by several veterinarians in Central Kentucky have

SILIFORCE HORSES®



NEW BIOLOGICALLY AVAILABLE LIQUID SILICON
(Bioavailable Silicic Acid)

Silicon plays a key role in increasing bone density and the strength of connective tissues. **Siliforce Horses** should be fed to pregnant mares and growing horses to help create stronger bone and connective tissues. In field studies, **Siliforce Horses** has been instrumental in rapid and quality healing of injuries such as pre-condylar fractures, pre-slab fractures and sesamoiditis.

Join us for an informational meeting about silicon on Sept. 12th, 2006 at 7:00pm at Four Points Sheraton on Newtown Pike in Lexington, KY —RSVP by Sept. 10th

(859)294-9365 or agill@prodigy.net

Price **\$128** plus S/H
*One bottle lasts 100 days for one horse
www.amyngillphd.com
for information/ordering

Now available from Woodford Feed Co., Inc.
Versailles, KY • 859-873-4811
Coldstream Pharmacy • Lexington, KY • 859-246-0112
Horse Cents • Versailles, KY • 859-873-4707

Homeopathy

HOMEOPATHY is based on the principle of treating symptoms with a dilution of a product that will cause similar symptoms. This principle of similarity, where likes are treated with likes, is intended to stimulate the body's ability to cure itself.

Those who practice homeopathic medicine view health and wellness much differently from those who practice conventional medicine. Conventional doctors attempt to relieve the body of symptoms, viewing them as signs of illness that need to be eliminated. The homeopath perceives symptoms as signs of the body's attempt to cure itself and believes that by further encouraging those natural reactions, the body will be able to rid itself of the illness instead of suppressing it.

For example, both aconite and belladonna are considered poisonous herbs that will affect heart rate by weakening or making the pulse irregular. As a result, these two substances are diluted into

a remedy that is used to treat laminitis or shock, in which regulation of the circulatory system is key to recovery. In cases of tissue damage, including those that result in lameness, arnica Montana and calendula are significantly more appropriate treatments. The substances in high doses will cause inflammation; therefore, dilutions are used to treat situations in which inflammation is present.

Arnica Montana may actually cause irritation to the skin if a topical form is repeatedly applied. Calendula is beneficial in encouraging a more rapid rate of recovery by accelerating the growth and repair of epithelial tissue. A study published by the Bulgarian Academy of Science reports that rats with skin wounds showed a noticeable improvement when treated with calendula.

Homeopathic remedies are highly diluted natural substances that, in a healthy individual, will induce some response that is often seen

as a symptom experienced when ill.

Dilutions are made as either one part tincture to nine parts water (X potency), one part tincture to 99 parts water (C potency), or one part tincture to 999 parts water (M potency). Succussion (forceful shaking) is performed with each dilution.

The number in front of the letter on the label indicates how many times a dilution/succussion has occurred. Remedies beyond 24X or 12C dilution no longer contain any atoms or molecules of the original substance and have more of an effect in the body. The majority of homeopathic remedies are a dilution of 30C, including those that are marketed for horses. It is believed that these dilutions cause a vibrating resonance in the body, which stimulates healing. These dilutions are often tested in healthy subjects to determine their exact effect and, ultimately, their most appropriate use.—Amy Gill, Ph.D.

shown excellent results radiographically when silicon is fed at a therapeutic dose for conditions such as pre-condylar fractures, sesamoiditis, decomposition of the bone (lysis) in regions of the carpal bones, and soft-tissue injuries.

Many growing horses will benefit from a maintenance dose with the expectations of producing better quality bone/cartilage growth and density.

Phytotherapy

Phytotherapy is the crucial constituent of folk medicine. It has a long history and broad experience. The utilization of plants in the treatment of illness and injury is a practice that formed the base of early medicine. Hippocrates, whom we often call "the father of medicine," used more than 200 herbs and other natural supplements for treating different diseases. Not only herbalists, but even ordinary people, knew about the curative properties of many herbs and used them for keeping and restoring normal body functions to improve health, to feel better, and to live longer.

Phytotherapy is currently gaining popularity because it offers the chance of alternative treatment for those who are not satisfied with the efficacy of modern synthetic medications or who cannot use them for some reason (about 10% of patients do not respond properly and adequately to the modern medications). Moreover, one of the most appealing qualities and advantages of phytotherapy and Chinese herbs

is the low risk of adverse reaction or side effects, especially in comparison to pharmaceutical drugs.

Several synthetic medicines used to treat conditions in horses have been derived from medicinal herbs—digoxin, aspirin, reserpine, and ephedrine are some commonly used medicines derived from plants—and their mode of action and efficacy have been proven repeatedly in clinical studies.

Traditional beliefs, coupled with clinical observation, have provided the foundation for herbal prescriptions by indicating which substances will produce a certain effect. Yucca (*yucca schidigera*) and devil's claw (*harpagophytum procumbens*) are two herbs that commonly are marketed to the equine community. Proponents claim both herbs reduce inflammation, or more specifically, inflammation resulting from arthritic conditions.

Yucca is a plant that is native to the hot, dry areas of North and Central America, most commonly Mexico. Polyphenols contained in the plant, particularly resveratrol, are the components that generate yucca's anti-inflammatory action. These polyphenols also allow this plant to act as an antioxidant, clearing the body of free radicals. Antioxidant activity is important because the cells of the joints that produce cartilage (chondrocytes) also produce nitric oxide, a source of free radicals, as a result of the degenerative arthritic process.

Steroidal saponins may add to anti-arthritic properties of

yucca because of their anti-protozoal activity and antifungal activity. It is possible that yucca could serve well as an adjunct therapy to horses suffering from equine protozoal myeloencephalitis (EPM), a degenerative neurological condition caused by protozoa in the central nervous system.

The roots of devil's claw, a plant native to South Africa, often are used to treat the pain, fever, and inflammation of arthritis. This herb commonly is utilized as a stimulant for the digestive tract, as well. The main active ingredients in devil's claw are harpogoside and beta-sitosterol, which are purported to possess anti-inflammatory properties and create support for joint, ligament, and tendon problems.

Some studies suggest devil's claw may be just as effective as many conventional medications but possibly safer. In a randomized, double-blind, parallel group study conducted in France, patients received either capsules containing devil's claw or a pharmaceutical drug. Assessment of pain of all patients indicated that those taking the herb and the drug experienced similar benefits. Both medications were shown to ease arthritic pain, but devil's claw was shown to have a much less negative effect on the digestive tract than NSAIDs, including diacerhein, the drug used in the French study. Devil's claw is contraindicated for use in pregnant mares because it can stimulate uterine contractions via the secretion of oxytocin from the pituitary gland.

Bovine colostrum and laminitis

All mammals produce milk for their young, but the first milk, consumed within the first few hours of birth, is extremely important to the newborn's health. The first milk, or colostrum, contains a variety of immune-building agents necessary to initial immune strength in addition to other factors that encourage growth and overall health.

Use of bovine colostrum during the developmental phase of laminitis may help prevent the passage of bacteria (*Streptococcus bovis*) from the digestive tract into the bloodstream by improving the integrity of the contact between epithelial cells in the intestinal wall. These bacteria are thought to trigger the cascade of events that leads to the destruction of the laminae in the hoof during the onset of this devastating disease.

Colostrum has been used therapeutically to treat several disorders. Without knowing the exact mode of action of colostrums in stimulating immune response, it has been used as an adjunct therapy in both ill humans and animals, often with positive results.

Bovine colostrum is nutritionally well-balanced to provide all the needed elements to protect its young. Unlike the colostrum of other species, bovine colostrum can serve as a substitute for all other mammals and can be easily collected. Colostrum may be intended for young animals, but its components can be utilized to the benefit of animals at any age.

While the specific contents and levels of certain components in bovine colostrum may vary, they tend to provide high levels of growth factors and immune-strengthening factors, along with protein, amino acids, vitamins, and minerals.

Factors acting to increase immune strength are abundant in bovine colostrum and include immunoglobulins, proline-rich polypeptides, lactoferrin, lymphokines, cytokines, trypsin inhibitors, lysozyme, leucocytes, and lactalbumins.

- Immunoglobulins are antibodies that are passively transferred through the colostrum to the newborn and are crucial to their survival. Bovine colostrum primarily contains Immunoglobulin G (IgG) and lower levels of Immunoglobulin A (IgA) and Immunoglobulin M (IgM). These antibodies present in colostrum offer protection against specific infectious agents, but they also have been shown to provide a general boost to the immune systems of humans and animals by counteracting toxins present

in the body. They also appear to have various antibacterial and antiviral properties;

- Proline-rich polypeptides, along with cytokines and lymphokines, act as regulators for the immune system, stimulating deficient systems while slowing down those that are unnecessarily overactive;

- Lactoferrin is a protein responsible for the binding of iron and slows the growth of both bacteria and viruses;

- Trypsin inhibitors are of extreme importance for the functioning of other immune factors within the gastrointestinal tract. They prevent the breakdown of these factors in the gut and allow them to exert their maximum effect; and

- Lysozyme and leucocytes assist with the strengthening of the immune system by slowing viral reproduction.

Growth factors, both insulin-like growth factors (IGF-I and IGF-II) and transforming growth factors, may be found in colostrum. IGF plays a significant role in the growth of muscle, and it has been suggested that this factor may act similarly to human growth hormone. More studies are needed to provide support for this theory, but preliminary observations indicate this may be the case. Transforming growth factors, on the other hand, are utilized by the gastrointestinal tract for growth and repair of any damaged tissues. They also act as an inhibitor of acid secretion, which allows colostrum not only to repair ulceration of gastrointestinal epithelium but also to prevent further ulceration.

Emphasis on complementary

When treating horses for illness, disorders, or simply for better well-being, all forms of supplementation, therapy, and treatments should be considered. Often, it is a combination of these procedures and products that is the basis of a well-rounded, comprehensive program. In most cases, combining the beneficial effects of each component has stronger positive effect than using one modality alone.

It is important to note that none of the supplements discussed here should be considered a cure-all for any particular disease or disorder. In order to maintain a horse's bones and joints correctly or properly deal with an arthritic situation, all aspects of the horse's management should be considered. The appropriate exercise program along with balanced nutrition and the advice and guidance of a veterinarian will provide the comprehensive program required for excellent joint health. ☺