

Helps accelerate the healing process of suspensory damage and supports the integrity of healthy ligaments*

What is SuspensorySaver®?

SuspensorySaver® is a unique chondroprotective nutrient, antioxidant, and polypeptide maximum-strength formulation that contains 100% pure pharmaceutical-grade GlycoStretch?, a key component that may help restore equine suspensory "shock-absorbing" qualities.*

How does SuspensorySaver® protect and heal your horse?

SuspensorySaver® and its active ingredient, GlycoStretch?, naturally helps protect your horse against suspensory ligament damage, one of the most serious injuries of a horse's soft tissues and the hardest to heal.*

- SuspensorySaver® encourages elasticity, flexibility, and permeability in your horse's soft tissues, and restores and preserves the ability to stretch.*
- SuspensorySaver® enhances your horse's ability to prevent soft tissue calcification, ossification, and mineralization-"hardening" processes that can literally "break down" your horse.*
- SuspensorySaver® helps promote rapid healing of suspensory ligaments.*

What is the suspensory ligament made of?

Muscles, tendons, ligaments, and suspensory ligaments are soft tissues composed of connective tissue, which is made up of bundles of collagen as well as some elastic fibers. The connective tissue of the suspensory ligament is arranged in tightly bound parallel sheets.*

How do training and exercise affect the suspensory ligament and the onset of desmitis?

Normal Training: Most healthy suspensory ligaments can withstand the strain caused by heavier loads without incurring damage. Correct training and exercising prevents the horse from becoming sore and swollen. During a normal, step-by-step training program, the suspensory ligament may incur minor injuries that don't permanently injure your horse but instead cause the formation of larger, stronger suspensory ligaments. Slight, temporary injuries and the ensuing strengthening of the ligament are a normal part of a healthy training program and are seldom readily apparent.

Training Overload: If training proceeds too quickly, soreness and swelling may appear, danger signs that the training workload is too much. Ignoring these early symptoms of severe suspensory ligament damage can cause the eventual rupture of large masses of ligament-the horse may weaken significantly and be unable to support its own weight without pain, even when standing still. This painful condition is called desmitis.

What is desmitis?

Desmitis is inflammation of the suspensory ligament triggered by damage to the ligament. Extensive damage prevents the suspensory ligament from supporting the fetlock and causes the joint to sink toward the ground. Desmitis may be caused either by trauma or a serious condition called degenerative suspensory ligament desmitis (DSLDD).

What is degenerative suspensory ligament desmitis (DSLSD)?

DSLSD as a disease: In DSLSD, areas of the damaged suspensory ligament are replaced by cartilage or scar tissue. When these damaged areas cannot return to normal elasticity, or if they ossify and/or mineralize, DSLSD is considered a progressive, incurable disease. However, a series of interventions can lessen pain and weakness and even arrest progression of the DSLSD.

Common treatments include:

- Eggbar or extended heel shoes to help support the fetlock
- Support boots when working the horse
- Dietary supplements

Horses can recover from DSLSD. Some horses stabilize on their own, probably when the natural repair processes neutralize the degenerative forces.

DSLSD as a syndrome: DSLSD is considered a syndrome when it takes the form of an abnormal healing process of the suspensory ligaments:

- Horses with DSLSD syndrome suffer from an obscure lameness that develops slowly, over time. The horse will show pain and even grunt when the suspensories are palpated.
- As the syndrome progresses, it may affect the fetlock joints (windpuffs) and cause the fetlocks to drop, which is most noticeable when the horse moves.
- A gradual strengthening occurs in the stifle and hock in the hind legs.
- The pasterns may finally become horizontal, and a high ring bone develop, indicating arthritis of the pastern joints.
- Horses with DSLSD syndrome resist having their feet raised and shoeing becomes difficult.
- DSLSD syndrome is always bilateral, affecting both front legs and/or both rear legs. No other kind of injury to the suspensory ligament resembles this bilateral distribution, which helps distinguish DSLSD syndrome from other ailments but can also hide lameness until it becomes far advanced.

What distinguishes DSLSD from common desmitis and other ligament ailments?

It can be difficult to identify true DSLSD, but a number of observable symptoms indicate its presence:

- Lameness that is gradual and progressive, regardless of activity level
- Pain on palpation of the suspensory ligaments, usually first evident over the suspensory branches
- A positive fetlock flexion test
- Bilateral involvement of front and/or hind legs
- Onset before the age of aid
- A hyperechoic (white) pattern in the suspensory ligament, rather than the hyperchoic (dark) pattern usually seen with traumatic injuries and thickening of the suspensory branches
- Disruptive fiber patterns in tissue tears
- In advanced stages, a suspensory ligament unable to support the fetlock, which will drop closer to the ground
- An increasingly sloping pastern angle, so the foot is pushed in front of its normal position, further weakening the support for the fetlock
- Increasingly straighter, more vertical angles to the hind-leg joints, especially the hock

- Appearance of ring bone involving the pastern joint. (The sesamoiden ligament descending from the base of the sesamoids is integral in supporting the bony column of the pastern. When the sesmoiden/fetlock drops, these ligaments loosen and the bone slips forward.)

What is the apparent cause of DSLD?

In all cases of DSLD, the ligament injury is improperly healed with cartilage instead of collagen. Dr. Roy Pool of UC Davis has studied many DSLD cases and hypothesizes that in predisposed horses a normal suspensory ligament becomes unable to handle the usual stresses of exercise. Healthy ligament tissue repairs day-to-day "micro-traumas" by using fibroblasts, collagen-producing cells that fix ligament damage before tearing and lameness can occur. In DSLD, the fibroblasts malfunction-instead of laying down new collagen fibers, the fibroblasts become chondrocytes, cartilage-producing cells. As cartilage is introduced, the ligaments fail to regain normal tissue strength or elasticity. The ligaments become unable to stretch and even normal weight-bearing causes excessive strain on the limbs-the ligaments lengthen and break down and the soft tissue may mineralize and calcify.

What are the underlying causes of DSLD?

DSLID was first recognized 25 years ago, but still remains a poorly understood syndrome. A number of theories attempt to explain why the suspensory ligament develops areas of damage and fails to repair them normally. Three prominent explanations are:

- Confirmation stresses or the structural weakness of the suspensory-those small bones and ligaments supporting a large body weight-constantly overload the ligament, which then cannot keep pace with the repair process.
- Nutritional deficiencies, including an insufficient supply of nutrients required for the repair, and/or insufficient antioxidants to keep the inflammatory process in check.
- A basic, as-yet-undiscovered metabolic effect resulting in the formation of defective suspensory ligament tissue.

How is DSLID currently treated?

To control inflammation, veterinarians often prescribe NSAIDs (non-steroidal anti-inflammatory drugs) such as phenylbutazone, flunixin, or aspirin. However, NSAIDs can interfere with connective tissue metabolism, and Figuerola Laboratories prefers icing to control the inflammatory response. Icing is labor intensive and if the horse cannot be attended and iced throughout the day, NSAIDs may be used for a week or as necessary.

In addition to NSAIDs, other drugs used for DSLID are corticosteroids, phenylbutazone (bute), and isoxsuprine, a vasodilator used to promote circulation to the inflamed ligaments. It should be noted that while anti-inflammatories can limit present damage, they do nothing to protect or restore damaged areas, and some drugs, especially phenylbutazone, can further damage your horse's health. At the sustained dosage needed to allow continued athletic performance, phenylbutazone has dangerous side effects that can result in gastrointestinal erosion, ulceration, and formation of kidney lesions. Recent studies have shown that corticosteroids and phenylbutazone can also cause further damage to the soft tissues (suspensory ligaments, tendons, and connective tissues).*

How are suspensory ligaments naturally repaired?

The way that the suspensory ligament heals determines how functional and strong the

restored ligament will be. Successful healing of the suspensory ligament requires that the new, replacement tissues are the same kind as the old, damaged tissues. Suspensory ligament injuries present a significant chance of forming scar tissue. Unfortunately, there is a thin line between inflammation that encourages normal, healthy repair, and inflammation that leads to scarring.

What are the stages of natural ligament repair?

- In an injury's first stages, inflammation is necessary for removing damaged tissues and encouraging adequate blood flow for delivery of nutrients for repair. Compared to other tissues, suspensory ligaments have a poor blood supply-fluids can build up in the spaces between the sheets of connective tissue, causing pressure on the blood vessels and preventing efficient removal of damaged tissues and inflammatory enzymes.
- The new connective tissue (formed up to 10 to 14 days after an injury) is immature and unspecialized and cannot withstand the forces of specialized, well-established tissues. Indeed, the body has to strike a delicate balance in maintaining adequate circulation for fluid removal without damaging this new tissue.
- The next important phase of healing involves the laying down of functional ligament tissues and avoiding the production of unspecialized scar tissue. The immature, undifferentiated tissue is stimulated to become functional ligament by the loading it experiences. Tissue fibers align themselves according to the forces that are placed on them. At this state of healing, the immature tissues and the damaged ligament remain weak, and re-injury is a real danger.

How can you best aid your horse during the healing process?

- Controlled exercise should be continued throughout the recovery process.*
- High-tech therapy, especially ultrasound (alpha-sonic) and laser therapy, can be beneficial.*
- Optimum nutrition is always important for healing. Adequate amounts of key nutrients are needed for ligament repair. Sufficient high-quality protein should be generously supplied to maintain the correct balance between inflammation and repair.*

Why is SuspensorySaver® the right formula for protecting your horse's suspensory ligaments?

SuspensorySaver® is the one and only therapeutic formula available that contains the right portions of nutrients responsible for restoring existent fibroblasts and encouraging the production of new fibroblasts in the suspensory ligaments.*

How does SuspensorySaver® help build healthy suspensory ligaments?

- SuspensorySaver® provides nutrients that help induce the production of collagen through the action of fibroblasts (cells that produce collagen). Collagen is vital in maintaining normal, free movement and in repairing damage before the ligament can tear and cause lameness.*
- SuspensorySaver® provides nutrients that affect the structure and function of the soft tissue, including suspensory ligaments, tendons, and connective tissues.* Nutrition-stimulated healing may occur gradually. Most horses show improvement in eight weeks, while some horse make require up to 12 weeks to exhibit noticeable change.*
- SuspensorySaver® contains ingredients essential for the synthesis of the nucleic acids, collagen, and protein that are found in every cell of the body and that promote elasticity of the suspensory ligaments, tendons, joints, and connective tissues.*

- SuspensorySaver®'s key ingredients are often deficient in horses with DSLD, suggesting that SuspensorySaver® helps preserve the ability to stretch, preventing lengthening and breakdown of the suspensory ligaments and their eventual calcification and mineralization.*
 - SuspensorySaver® offers essential nutrients that enhance horses' mobility.*
- SuspensorySaver® has been used worldwide for diseases of the joints and the soft tissue of the skeletal system with remarkable therapeutic success and with the absence of side effects.*
- SuspensorySaver® provides a pool of amino acids within your horse's body, improving nutrition to the soft tissues and reducing soft tissue damage or decomposition and stimulating the regeneration of normal, soft-tissue strength by restoring elasticity, flexibility, and permeability (the ability to stretch) and preventing mineralization and calcification.*
 - SuspensorySaver® supports an important structural component of healthy bones, joints, ligaments, and synovial fluid by stimulating the secretion of glycosaminoglycans (GAGs) in both hard and soft tissues.*

How does SuspensorySaver® speed healing and restore damaged tissues?

- SuspensorySaver® provides your horse with the best antioxidant protection available, eliminating toxins from the body that can slow healing.*
- SuspensorySaver® prevents the formation of free radicals that cause further damage to cells, and increases tissue oxygenation to aid in the repair of the suspensory ligaments, tendons, and connective tissues.*
 - As an antioxidant, SuspensorySaver® potently quenches that most destructive of free radicals, the hydroxyl radical, as well as superoxide, singlet oxygen, and the peroxy radical.*
 - Surprisingly, SuspensorySaver®'s key ingredient has been identified as the only antioxidant to significantly protect chromosomes from oxidative damage due to 90% oxygen exposure.*
- SuspensorySaver® provides a cellular ingredient that works as a renewal agent, triggering natural cell regeneration while protecting cells with its antioxidant action.*
- SuspensorySaver®'s ability to rejuvenate connective tissue cells may explain its beneficial effects on wound healing and healing of the suspensory ligament.* In addition, ligament aging is connected to protein modification. Damaged proteins accumulate and cross-link in the cells, causing weakness and loss of elasticity, permeability, and flexibility and the suspensory ligaments' ability to stretch.
- SuspensorySaver® is designed in awareness of the biochemical paradox that the substances necessary for life-e.g., oxygen, glucose, lipids, protein, trace metals-can also be destructive. SuspensorySaver® protects against the toxic aspects of these necessary substances through its potent antioxidant, anti-glycating, aldehyde-quenching, and metal-chelating actions (Quinn PJ et al., 1992; Hipkiss AR, Preston JE et al., 1998).*

How does SuspensorySaver® lessen pain and inflammation?

SuspensorySaver® requires several days to produce noticeable improvement, because SuspensorySaver® treats the source of pain.* Chemical anti-inflammatories like bute relieve pain immediately by masking the underlying cause of pain-relief is only temporary and is accompanied by further damage to the suspensory ligaments and connective tissues.*

In several effective ways, SuspensorySaver® helps combat the pain and inflammation caused by stiff or damaged suspensory ligaments:

- SuspensorySaver® helps alleviate pain by normalizing the soft tissue's production of fibroblasts. Enhanced fibroblast formation restores flexibility, permeability, and elasticity to the suspensory ligaments.*

- SuspensorySaver® inhibits the inflammatory process by restoring blood supply to inflamed tissues and is especially effective in shrinking inflamed tissues present in horses with DSLD.*
- SuspensorySaver® provides protective function for both soft tissues (tendons, ligaments, etc) and hard tissues (cartilage, joints, and the connective tissue), a function which decreases the release of mechanical and enzymatic irritation factors, as well as inflammation mediators.*
- SuspensorySaver® boosts the immune system to help prevent further damage to suspensory ligaments and connective tissue.*
- SuspensorySaver® works as a coenzyme to break down and use protein, a process vital for the formation of red blood cells that provide oxygen to ailing soft and hard tissues.*

Are there any side effects with SuspensorySaver®?

SuspensorySaver® is a complete nutritional dietary supplement formula and has absolutely no side effects, even if in the case of overdose.

Can SuspensorySaver® be supplemented with a natural, nutritional anti-inflammatory for extra relief?

Yes. InflammoSaver? from Figuerola Laboratories enhances the body's ability to reduce inflammation of the suspensory ligament, to help repair injured tissues, and to prevent further damage.* InflammoSaver? enhances blood flow to inflamed ligaments and the connective tissues.* InflammoSaver? works without jeopardizing your horse's health and is a natural alternative to phenylbutazone (bute), which has been implicated in stomach ulcers, kidney damage, loss of appetite, changes in blood chemistry, bone marrow depression, etc. (Further information on InflammoSaver? is available upon request-see below.)

SuspensorySaver® checklist for good suspensory ligament health

- Watch your horse closely for any signs of abnormal stiffness.
- Remember that the elasticity, flexibility, and permeability of your horse's ligaments begin to decline at age 5-that is why it is so important to supply maintenance levels of SuspensorySaver® early, to prevent damage.*

Remember that suspensory ligament damage is often cumulative.

If suspensory damage has already occurred, you should seriously consider Figuerola Laboratories' therapeutic products

- SuspensorySaver® is the best therapeutic product specifically designed for suspensory ligament damage and should be used to accelerate healing and therapy.*
- Consider administering InflammoSaver? to help control the pain and inflammation of desmitis.*
- Ensure optimal nutrition for healing and protection with EquineSaver?.*

Consider trying NitroSaver? to promote blood circulation to inflamed tissues and the internal sheets of the suspensory ligaments.*