Clinical Case Series
Adipose Derived Stem and Regenerative Cells
for the Treatment of
Equine Tendon and Ligament Injuries

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Abstract: Injuries to tendons, ligaments and the structures associated with joint movement are common and frustrating problems encountered in equine clinical practice. Conventional therapies often do not yield consistently satisfactory results in halting the inevitable breakdown of the affected region, leading either to a decreased level of performance or even euthanasia. The pluripotent capabilities of adipose-derived stromal cells (ADAS) offer an innovative approach in the treatment of equine ligamentous injuries. Commercially available, ADAS cells have been used successfully in the treatment of equine tendonitis, suspensory ligament desmitis, sub-chondral bone cysts, and osteoarthritis. The purpose of this paper is to review individual clinical case studies and techniques for utilizing adipose derived stem and regenerative cells as a therapeutic modality in the treatment of equine ligament injuries and diseases.

Introduction: Traumatic injuries to the supporting structures of joints happen frequently as these are the regions under the greatest stress during the intense activity of the equine athlete. Whether tendons and ligaments are strained repetitively or are severely injured in one single event, the outcome is unfortunately often the same. The healing of tendon or ligament typically involves inflammation followed by the deposition of collagenous scar tissue rather than return of adequately functioning tendinous or ligamentous tissue. Although the continuity of the tendon or ligament has been restored, fibrous connective tissue does not have the same strength or elasticity as that possessed by a normal tendon or ligament. This together with the formation of constricting adhesions predisposes a horse to reinjury and reduces its functional career longevity.

Stem cells in veterinary clinical practice have been utilized in the treatment of tendonitis with the initial source of cells derived from autologous bone marrow.1 Recently, adipose tissue has been described in academic literature as a rich source of Mesenchymal Stem Cells (MSCs).2 An innovative approach aimed at reducing the risk of scarring, optimizing the strength of damaged tendons and ligaments, and allowing equine athletes to return to a high level of performance has been the application of Vet-Stem Regenerative Cell Therapy. Capable of differentiating into multiple cell lines, adipose derived stromal cells (ADAS) have been demonstrated to differentiate into bone, cartilage, tendon, and ligament in both in vitro and in vivo models.3,4,5

Commercial use of equine VSRC’s has been available since 2003. Based on patented technology, Vet-Stem, Inc. (Poway, CA) recovers a cell population of adiposed derived pleuripotent stem cells, endothelial progenitor cells, pericytes, and associated growth factors from fresh submitted lipectomy samples and returns those cell populations to the practitioner within 48 hours of tissue collection. The purpose of this paper is to review individual clinical case studies and techniques for utilizing adipose derived Vet-Stem Regenerative Cells (VSRC’s) as a therapeutic modality in the treatment of equine suspensory ligament injury and disease.
References:


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