

CHONDR-STEM®



Advanced stem cell therapy

for horses

Osteoarthritis (OA)

A PRODUCT OF :



The product

Chondro-Stem® is a derived stem cell product from the horse's own adipose tissue that is used for degenerative horse OA. Chondro-Stem® is the first treatment that actually stops the progression of OA and stimulates regeneration and healing of the cartilage. Subchondral defects leading to bone cysts are nicely filled with this product as well.

Horse Osteoarthritis

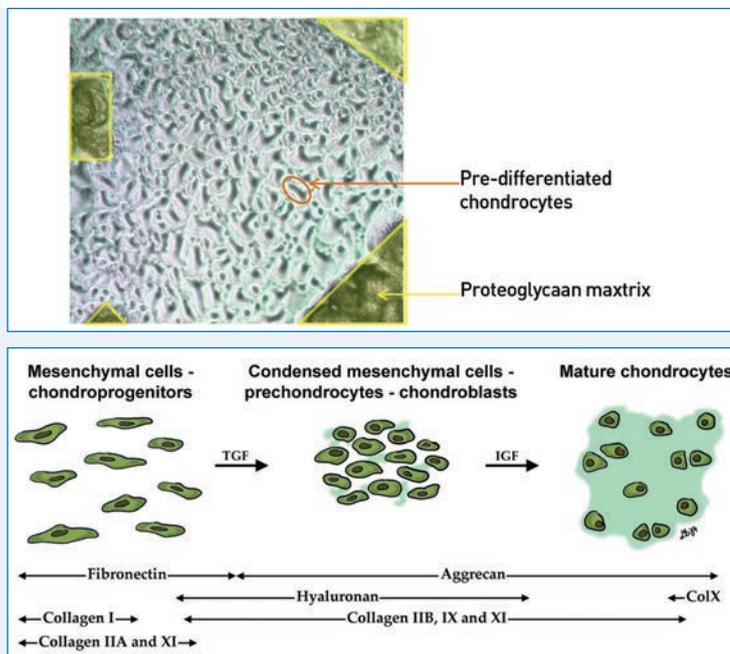
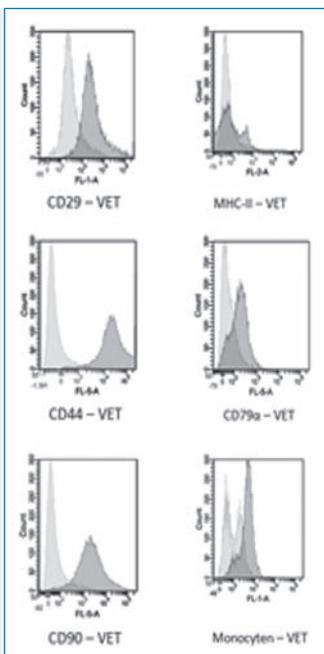
Articular cartilage normally has a smooth surface and is a critical component of joint stability and motion. Joint problems are responsible for more than 60% of lameness cases in (sport) horses. Over time, chronic joint disease leads to OA and bony changes will occur; a vicious cycle of progressive joint deterioration with increasing pain and immobility.

Anti-inflammatory drugs are needed to control the discomfort; and in more advanced cases OA is a potentially career-ending ailment of horses. The normal repair process in OA will result in fibro-cartilage, the joint's equivalent of scar tissue, which is less comfortable than the original hyaline cartilage. This is where Chondro-Stem® treatment makes the difference.

Mode of action

Chondro-Stem® product formulation contains pre-differentiated stem cells in an extracellular matrix (ECM) supplemented with autologous growth factors which stimulates cartilage formation and regeneration of the joint surface. In addition the stem cells will interrupt the inflammation cycle and joint pain. Chondro-Stem® is developed as a regenerative stem cell therapy product that directly manages pain, discomfort and inflammation associated with OA and which effectively heals subchondral defects in horses.

Treatment with Chondro-Stem® consists of a one-time injection leading to significant improvement within a few months. As Chondro-Stem® is derived from the patient's own tissue; there is no risk for adverse allergic reactions. No adverse events of this product have been reported after extensive use in horses in Europe.



Equine stem cells on the ECM promoted proliferation, differentiation and retained stem cell properties.

Mesenchymal stem cell markers (CD29+CD44+CD90+) as measured by flow cytometry (left).

Increased growth factor levels enhance levels of aggrecans and type II collagen in the ECM, stimulating chondrogenic differentiation and regeneration of cartilage surface in the joint (right down).

Pre-chondrocyt formation within the ECM after one week (right up).



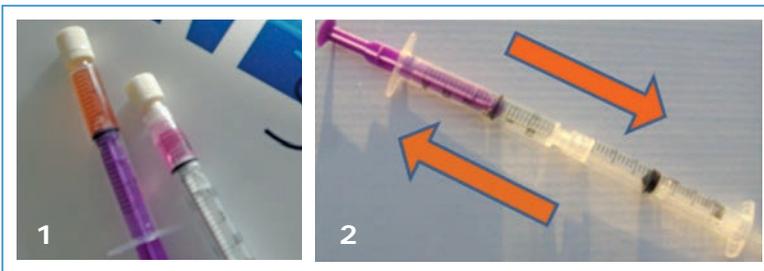
How to use

1. SAMPLING OF BIOLOGICAL MATERIAL

Fat-Stem provides a kit to collect the adipose tissue biopsy and blood. After processing the product is sent to the veterinary clinic for injection the same day.

2. INJECTION OF THE PRODUCT

The delivered product contains a dual set of syringes for one injection by mixing the content of two fitting syringes: one syringe contains the pre-differentiating stem cells in an appropriate matrix that is linked with a second syringe that allows polymerization in addition of growth factors and supplements resulting in a perfect viscous solution. The final mixed solution has a volume of 3 ml and will solidify and has to be injected within 7 minutes in sterile conditions.



Dual syringes for the use of Chondro-Stem® enables the vet to crosslink the solutions in a perfect closed system

3. AFTER CARE

After injection, we routinely bandage the joint if possible for a few days, and the horse should be kept on 3 days of strict stall rest, followed by 10 days of hand-walking (30-45 minutes). Once the course of injections and the final hand-walking period is completed, horses should receive one week of ridden walk exercise, followed by one week of ridden walk and trot, before returning gradually to regular training programs.

Results

Main results can be summarized as follows:

- * Reduced pain and increased mobility (measured by degree of lameness)
- * Decreased inflammation (measured by joint fluid levels)
- * Regeneration of cartilage & healing of subchondral lesions



Fig: Above: AP radiographs of the fetlock before (left) and 5 months after (right) intra-articular injection. Below: Stifle joint before (left) and after (right) treatment of subchondral lesion

Chondro-Stem® is rapidly becoming the treatment of choice for horses with osteoarthritis, especially in horses that are non-responsive to other therapies. Chondro-Stem® has been developed by Fat-Stem Laboratories and is marketed through its partners and is used in different EU countries.