Advanced regeneration for Spontaneous chronic cornea epithelial defects (SCCED)

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Abstract

Conventional therapies for SCCED as corneal erosion or corneal ulcers are the use of antibiotics, ointments, simple debridement or sewing of the eyelids together to protect the eye surface. The conventional treatments for SCCED unfortunately are not always very successful. Innovative methods of treatment are developed and in this study the potential of regenerative corneal therapy is investigated.

Evidence has accumulated that growth factors such as epidermal growth factor (EGF), fibroblast growth factor (FGF), transforming growth factor (TGF) and insulin-like growth factor (IGF) play a key role in corneal healing. These growth factors promote the proliferation and induce the migration of corneal cells. Inflammatory cytokines such as interleukin IL-1, IL-6 and tumor necrosis factor-alpha (TNF-α) are also involved in corneal regeneration and improve corneal transparency.

This study was conducted in collaboration with Ghent University to prove the effectiveness of Eyedrops® (Fat-Stem Laboratories, Belgium) by treating 5 dogs of different races (golden retrievers, French bulldog, Canis vulgaris, Jack Russell) with SCCED. The dogs went initially through conservative and/or chirurgical treatments for a period of 3-4 months and showed poor clinical improvement and finally relapse.
Eyedrops® is a newly formulated product with growth factors originated from stem cells and has the ability to rehydrate dry eyes and promote rapid healing of the corneal structure.
After previous conservative treatments, Eyedrops® were applied (4-6 drops/day during 10 days after which application was gradually phased out). All 5 dogs showed removal of clinical symptoms or complete healing after minimum 2 months compared to little or no improvements after surgical treatment combined with classical drugs. Adverse effects were not reported.

This case study reveals that this innovative regenerative treatment can be an indication for use in most SCCEDs as conjunctivitis and KCS, trauma (eye edge), keratitis, cornea degeneration, ulcerations and other necrotic eye injuries.

Images



Figure 1: Before and after 1 month of treatment with Eyedrops®

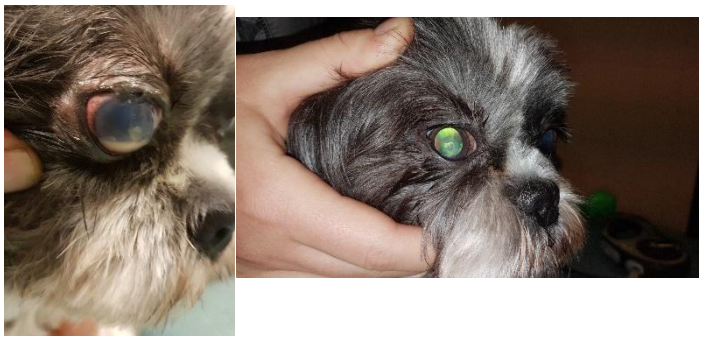


Figure 2: Before and after 1 month of treatment with Eyedrops®



Figure 3: Eyedrops® are provided in sterile vials of 3 ml (with droplet counter).

Recent publications

1. Wei, X., Yang, X., Han, Z., Qu, F., Shao, L., Shi, Y., 2013. Mesenchymal stem cells: a new trend for cell therapy. Acta Pharmacologica Sinica 34, 747-754.

2. Zhang, L., Coulson-Thomas, V.J., Ferreira, T.G., Kao, W.W.Y., 2015. Mesenchymal stem cells for treating ocular surface diseases. BMC Ophthalmology 15, 55-65.

3. Yao, L., Bai, H., 2013. Review: mesenchymal stem cells and corneal reconstruction. Molecular vision 19, 2237-43.

4. Sotozono, C., 2000. Second injury in the cornea: The role of inflammatory cytokines in corneal damage and repair, in: Cornea 19, 155-159.

Biography

Dr. Guy Wouters, bio-engineer (KULeuven) and veterinary scientist (RUGent), worked since long in biotech for health care at different universities and companies. As expert in cellular therapies, he organized a state of the art production unit, conforming to GMP requirements for quality and hygiene. He is the director of Fat-Stem Laboratories, one of the few companies that conducts research in the therapeutic use of adipose-derived mesenchymal stem cells (ASC) and was the first biotech company in the European Union to offer commercial ASC based therapy for horses with ligament and tendon injuries, as well as for joint disease in horses.

Dr. Wouters has published more than 50 papers in reputed journals and has been serving as a board member of different biotech companies.

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