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Application of a Sea Urchin-Derived Collagen Skin Substitute for the Treatment of Full-Thickness Wounds

Skin wounds are a challenging problem in the medical field and an economic burden. Skin Substitutes (SS) are a promising alternative for wound healing since they mimic the skin architecture and support its regeneration. Here, we present a study about the production and application of a sea urchin-derived collagen-based SS for skin regeneration in a second-intention wound healing model.

The application of a sea urchin-derived SS in rats and sheep led to a faster re-epithelialization, a better development of skin appendages, and a proper maturation of granulation tissue. Overall, these preliminary findings suggest that collagen-based SS possesses beneficial properties for the treatment of full-thickness skin wounds.

Recent Publications

1. Melotti L, Carolo A, Boesso F, Da Dalt L, Gabai F, El Shlazly N, Perazzi A, Iacopetti I And Patrino* M. 2022 Case report: repeated intralesional injections of autologous mesenchymal stem cells combined with platelet-rich plasma for superficial digital flexor tendon healing in a show jumping horse. *Front Vet Sci.* 2022 Feb 18;9:843131. doi: 10.3389/fvets.2022.843131. eCollection 2022.PMID: 35252428
2. Eva Depuydt, Sarah Y Broeckx, Koen Chiers, Marco Patrino, Laura Da Dalt, Luc Duchateau, Jimmy Saunders, Frederik Pille, Ann Martens, Lore Van Hecke And Jan H. Spaas 2022. "Cellular and humoral immunogenicity investigation of single and repeated allogeneic tenogenic primed mesenchymal stem cell treatments in horses suffering from tendon injuries" *Front Vet Sci.* 2022 Feb 24;8:789293. doi: 10.3389/fvets.2021.789293. eCollection 2021.PMID: 35281431
3. Lore Van Hecke, Carmelo Magri, Luc Duchateau, Charlotte Beerts, Florian Geburek, Marc Suls, Laura Da Dalt, Marco Patrino, Sarah Y. Broeckx, Eva Depuydt, Jan H. Spaas. Repeated intra-articular administration of equine allogeneic peripheral blood-derived mesenchymal stem cells on cellular and humoral immune response. *Veterinary Immunology and Immunopathology.* 2021 Sep 23;110306. doi: 10.1016/j.vetimm.2021.110306

Biography

Marco Patrino is an Associate Professor at the Department of Comparative Biomedicine and Food Science, School of Agricultural Sciences and Veterinary Medicine, University of Padova, Italy. He teaches veterinary embryology, histology, anatomy and his research interests are related to regenerative processes, muscle development, and the potential of adult stem cells in the veterinary field. He is a Member of the Doctorate School in Veterinary School and Supervisor of Ph.D students (national and international). He has been a Member of EMA (European Medicine Agency) as an expert of stem cells in the veterinary field. He is a reviewer of projects for national and international agencies (ISF, ALW, Italian MIUR, and ANR, The French National Research Agency). During his scientific activity, he published more than 100 international publications of (H index = 31). Marco Patrino has been several times invited speaker and his funding is generally obtained from National competitive grants and private companies. He is an expert of tissue processing and embedding in wax and resin, sectioning of different tissue with microtome and ultramicrotome for TEM, cryostat for frozen sections; He can perform classical, immunochemical and immunofluorescence procedures with the confocal microscope and enzymatic staining. He is an expert of *in vitro* culture of suspension and adherent cells, differentiation, and identification of mesenchymal stem cells.

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