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Skin-derived epithelial stem cells for wound regeneration in horses

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Besides the presence of somatic stem cells in hair follicles and dermis, the epidermis also contains a subpopulation of stem cells, reflecting its high regenerative capacity. However, only limited information concerning epidermis-derived epithelial-like stem/progenitor cells (EpSCs) is available to date. After harvesting from equine skin, the purified cells were characterized as EpSCs by means of positive expression for CD29, CD44, CD49f, CD90, Casein Kinase 2b, p63, and Ki67, low expression for cytokeratin (CK)14 and negative expression for CD105, CK18, Wide CK, and Pan CK. Furthermore, their self-renewal capacity was assessed in adhesion as well as in suspension. Moreover, the isolated cells were differentiated towards keratinocytes and adipocytes. To assess the regenerative capacities of EpSCs, full-thickness skin wounds were made in the horse as experimental animal model. The dermis of EpSC-treated wounds was significantly thinner and exhibited more restricted granulation tissue than did the control wounds. In addition, the EpSC-treated wounds also exhibited increases in EpSCs, vascularization, elastin content, and follicle-like structures.

Biography

Sarah Y Broeckx, Veterinarian, graduated from the Faculty of Veterinary Medicine, Ghent University (Belgium) in 2010. Then, she worked at the Department of Obstetrics, Reproduction and Herd Health of the Faculty of Veterinary Medicine, Ghent University. In 2012, she became the quality manager and regulatory consultant of Global Stem Cell Technology, an organization that is specialized in regenerative therapies for horses. Thanks to her contribution to equine stem cell research, she is an author of several scientific publications.

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