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Treatment of oral ulcers in dogs using adipose tissue-derived mesenchyme stem cells

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Background: Adipose Derived Mesenchymal Stem cells (AMSCs) represents a promising tool for new clinical concepts in supporting cellular therapy. The goal of our study was to investigate the effects of AMSCs transplantation on oral ulcer healing in dogs.

Methods: Mesenchymal stem cells were isolated from adipose tissues of dogs obtained by suction-assisted lipectomy (liposuction) by dish adherence and expanded in culture. Oral ulcers were induced by topical application of formocresol in the oral cavity of 18 dogs. The dogs were classified into 3 groups. Either autologous AMSCs, corticosteriod (Dexamethasone) or vehicle (saline) was injected. The healing process of the ulcer was monitored histopathologically. Gene expression of vascular endothelial growth factor (VEGF) platelets derived growth factor (PDGF), epidermal growth factor (EGF) and collagen were detected in biopsies from all ulcers as healing markers by reverse transcription-polymerase chain reaction.

Results: Adipose Derived Mesenchymal Stem cells (AMSCs) group showed significantly accelerated oral ulcer healing compared with Dexamethasone and control groups. There was increased expression of VEGF, PDGF, EGF and collagen genes in AMSCs-treated ulcers compared with Dexamethasone and controls.

Conclusion: Adipose Derived Mesenchymal Stem cells (AMSCs) transplantation may help accelerate oral ulcer healing, possibly through the induction of angiogenesis by VEGF together with increased of both VEGF, PDGF, EGF and collagen genes expression.

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