

Chondrogenesis of Mesenchymal Stem Cell Derived from Canine Adipose Tissue

Byung-Joo Lee, MD¹, Soo-Geun Wang, MD¹, Cheol-Ju Seo, MD¹,
Jin-Chun Lee, M.D¹, Jin-Sup Jung, MD² and Ryang-Hwa Lee, MD²

¹Department of Otolaryngology; and ²Department of Physiology, College of Medicine, Pusan National University,
Busan, Korea

Background and Objectives : Cartilage reconstruction is one of medical issue in otolaryngology. Tissue engineering is presently being utilized in part of cartilage repair. Sources of cells for tissue engineering are chondrocyte from mature cartilage and bone marrow mesenchymal stem cells that are able to differentiate into chondrocyte. Recent studies have shown that adipose tissue have mesenchymal stem cells which can differentiate into adipogenic, chondrogenic myogenic, osteogenic cells and neural cell in vitro. In this study, we have examined chondrogenic potential of the canine adipose tissue-derived mesenchymal stem cell (ATSC).

Materials and Methods : We harvested canine adipose tissue from inguinal area. ATSCs were enzymatically released from canine adipose tissue. Under appropriate culture conditions, ATSCs were induced to differentiate into the chondrocyte lineages using micromass culture technique. We used immunostain to type II collagen and toluidine blue stain to confirm chondrogenic differentiation of ATSCs.

Results : We could isolate ATSCs from canine adipose tissue. ATSCs expressed CD29 and CD44 which are specific surface markers of mesenchymal stem cell. ATSCs differentiated into micromass that has positive response to immunostain of type II collagen and toluidine blue stain.

Conclusion : *In vitro*, ATSCs differentiated into cells that have characteristic cartilage matrix molecules in the presence of lineage-specific induction factors. Adipose tissue may represent an alternative source to bone marrow-derived MSCs.

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