Nada Tanamai 2013: Comparative Study of Cloning Efficiency of Canine Mononuclear Cells Isolated from Bone Marrow of Femoral Head and Subcutaneous Adipose Tissue. Master of Science (Agricultural Biotechnology), Major Field: Agricultural Biotechnology, Interdisciplinary Graduate Program. Thesis Advisor: Assistant Professor Monchanok Vijarnsorn, Ph.D. 69 pages.

Stem cell therapy is expected to be used for orthopedic purposes. Mesenchymal stem cells (MSCs) are increasingly being interested for therapeutic purposes and have been identified in various tissues from many species. Like those in other species, canine MSCs show a great capacity to generate into various cell types under appropriate *in vitro* conditions. Because of ease to access and being a common by-product of surgical procedure, subcutaneous adipose tissue became an alternative source for MSCs apart from bone marrow. In this study, we compared clonal formation ability of mononuclear cells (MNCs) isolated from adipose tissue and bone marrow sources using the standard protocol of counting colony forming unit-fibroblast (CFU-F). MNCs from both sources showed fibroblast-like morphology and formed colonies termed as CFU-F after culturing in plastic surface for 10 days. The colony numbers per MNCs and the colony numbers per adherent cells derived from adipose tissue were significantly higher than those derived from bone marrow. Our study suggested that adipose tissue not only is a suitable source to harvest and also has a higher performance of cloning efficiency of MNCs than bone marrow. Thus subcutaneous adipose tissue might be an appropriated source for stem cells therapy in canine.

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