

Differentiation of UC-*MSC* into ligament-like cell *in vitro* by mechanical tension and various media

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The presence of such umbilical cord stem cells has been considered extremely promising for application in regenerative medicine. Flexercell System (Flexcell International Co., PA, USA) and various basal media such as DMEM, Advanced D-MEM/F-12 (GIBCO□ Invitrogen Co), MegaCell™ DMEM (Sigma Co) were used in this work(For differentiation of supplement with 10% FBS, 2mM I-Glutamine, 50µm Asc-2p, 0.1mM NEAA, 1ng/ml bFGF, 5ng/ml TGF-β, 5ng/ml IGF-II, 5µg/ml Insulin, 1ng/ml EGF). Control cells were cultured on the same plates without cyclic strain. Almost, ECM production in the Megacell DMEM group was significantly higher than that of the other groups. In addition, RT-PCR revealed that mechanical stimulation led to increased collagen-III, α-SMA and tenascin-C was highly expression. These reports showed that Megacell DMEM of the cell or matrix was recognized by specific interactions between ECM molecules and membrane proteins higher than that of the other groups. Also, mechanical stimulation could promote UC-*MSCs* to differentiation, there by induced expression and synthesis of matrix protein and ligament-like cell differentiation of UC-*MSCs*.