in the reconstruction of living skin equivalents.

**P100**
Wound Healing Effect Adipose-derived Stem Cells: A Critical Role of Secretory Factors on Human Dermal Fibroblasts

1성균관대학교 의과대학 피부과학교실, 2프로스테믹스(주), 3리더스피부과
권용현, 김현석1, 성종혁2, 박병순2,3

Adipose-derived stem cells (ADSCs) can contribute to the regeneration of damaged skin but few studies have dealt with the interaction between ADSCs and skin fibroblasts, especially on the paracrine routes. In this study, we investigated the role of soluble factors derived from ADSCs on human dermal fibroblasts (HDFs) in wound healing process. In co-culture experiments, ADSCs promoted HDF proliferation and were superior to HDFs in promoting HDF proliferation. The mitogenic effect of ADSCs on HDFs was reproduced when ADSCs were cultured physically separated from HDFs, or replaced by ADSC-conditioned medium (ADSC-CM). ADSC-CM also promoted HDF migration and mRNA expression of extracellular matrix (ECM) proteins, while decreased expression of matrix metalloproteinase-1. In animal model, ADSCs significantly reduced the wound size and accelerated the re-epithelialization from the edge. Collectively, these data suggest that ADSC is constitutionally well suited for dermal wound healing and secretory factors derived from ADSCs promote wound healing via HDFs and ADSCs can be used for the treatment of photoaging and wound healing.

**P101**
Rat Mesenchymal Stem Cells Improve Wound Healing In A 3-Dimensional Collagen Gel Model

순천향대학교 의과대학 피부과학교실, 1중앙혈액내과
박 준, 권 혁, 이성열, 이종석, 조문근, 황규왕, 원종호, 문기찬, 고재경

Mesenchymal stem cells are self-renewing and potent in differentiating into adipogenic, osteogenic, chondrogenic lineage. There is progress on clinical application of stem cells. It has been reported that mesenchymal stem cells with skin-substitute had improved wound healing. However, we have yet to find feasible skin-substitute methods for this. The objective of our work was to investigate the effects of rat mesenchymal stem cells on wound healing. In the process, we used a 3D collagen gel in rat model. Three skin and tissue defects of 2x2 cm in size were excised on the backs of SD-rats and two different sites were replaced with male 2 million rat mesenchymal stem cells (rMSCs) with 3D collagen gel and 3D collagen gel. The other site was negative control. Result indicated that three different wound size from different rats show a significant size change in mesenchymal stem cells treated site. This data suggests that MSCs in a 3D collagen gel model accelerate wound healing and the 3D collagen gel model should be useful for future wound healing studies.

**P102**
The Cytotoxic Effect of Sphingosine-1-phosphate on Human Dermal Fibroblast

울산대학교 의과대학 피부과학교실
이덕우, 이우진, 이도영, 한승석, 장성은, 이미우, 문기찬, 고재경

The sphingolipid metabolites, ceramide, sphingosine and sphingosine-1-phosphate (S1P), are important regulators of cell growth, survival and death. S1P, produced by the phosphorylation of sphingosine, primarily activates cell proliferation, whereas ceramide and sphingosine induce apoptosis. However S1P has been shown to induce apoptosis in some types of cells. We observed that treatment with 10 μM S1P was cytotoxic to human dermal fibroblasts. Western blotting showed that extracellular signal regulated kinase (ERK) was activated after stimulation with S1P. The addition of PD98059, an inhibitor of the ERK pathway, inactivated the cytotoxic effect of S1P. We also found that an increase of matrix metalloproteinase-1 (MMP-1) is stimulated by high concentration of S1P on the dermal fibroblast. Our results indicate that a high concentration of S1P is cytotoxic to human dermal fibroblasts and that this cytotoxic effect may be associated with the ERK pathway. An increase of MMP-1 induced by SIP suggests a possible application of SIP in the treatment of keloid through cytotoxicity of dermal fibroblasts.