〈講　　演〉

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iPS 細胞などの各種幹細胞を用いた皮膚再生医療の現状と展望

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A Present State and Future Perspectives of Regenerative Medicine Utilizing Various Stem Cells Including iPS Cells

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Abstract

Recently, various kinds of stem cells（ES cells, iPS cells, MUSE cells, mesenchymal stem cells in bone marrow, *etc.*）have been reported to be useful for regenerative medicine in neurological, ophthalmologic or cardiac disorders. However, ES cells are not allowed to use due to ethical matter in our country. In addition, MUSE cells, mesenchymal stem cells in bone marrow are hard to obtain and to multiply. Moreover, there hasn't been any method to induce epidermal keratinocytes from iPS cells. Therefore, in this study, we investigated whether keratinocyte progenitor cells are present in the adipose derived stem cells（ASCs）population. ASCs isolated from subcutaneous adipose tissue were cultured and examined for the expression of the keratinocyte progenitor markers p63 and desmoglein 3（DSG3）by immunofluorescence microscopy and flow cytometry. In addition, p63 and DSG3 expression levels were assessed before and after differentiation of ASCs into adipocytes by real-time PCR and western blot analysis, as well as in subcutaneous adipose tissue by real-time reverse transcriptase polymerase chain reaction. Both markers were expressed in ASCs, but were downregulated after the differentiation of ASCs into adipocytes; p63-positive cells were also detected in subcutaneous adipose tissue. ASCs co-cultured with human fibroblasts and incubated with all-*trans* retinoic acid and bone morphologic protein 4 showed an upregulation in DSG3 level, which was also increased in the presence of type IV collagen. They also showed an upregulation in cytokeratin-5 level only in the presence of type IV collagen. These results provide the demonstration that keratinocyte progenitor cells reside in subcutaneous adipose tissue.

Key words:　adipose derived stem cells, keratinocyte, ES cells, iPS cells.