Development of in vitro evaluation system for telogen-anagen transition in female hair cycle

Tokuro Iwabuchi

Faculty of Bioscience and Biotechnology, Tokyo University of Technology

Development of in vitro evaluation system for telogen-anagen transition was attempted. The respiration activity of mixed monolayer-culture of human dermal papilla cells (hDP) and human outer root sheath cells was significantly increased in 10 days, however, that of sphere-formed hDP and human outer root sheath cells was significantly decreased. The results on respiration activity of sphere indicated that characteristics of the sphere-formed hDP was similar to the hair bulb in telogen phase. Gene expression profile of hair cycle regulating-factors in sphere suggested that the profile of sphere-formed hDP was similar to hDP in telogen phase. When cyclosporin A which is a powerful hair growth inducer was added to sphere-formed hDP, gene expression profile for hair cycle regulating-factors was similar to hDP in anagen phase. The results suggested that sphere-formed hDP might be used as an in vitro system to evaluate for new hair induction. This system would be useful for screening of hair regrowth reagent for female hair loss.