

Skin rejuvenation and resurfacing with dermal multipotent cells

Motoko Naitoh

Department of Plastic and Reconstructive Surgery, Graduate School of Medicine, Kyoto University

Intrinsic aging and photodamage of the face result in dull and lax skin with clear and deep wrinkles at rest. The “aged face” is characterized by poorly organized dermal extracellular matrix, including collagens and elastic fibers. Many young peoples also have skin troubles, such as acne scar. Although ablative and nonablative therapies of skin resurfacing and rejuvenation are performed against these skin damages, these methods do not achieve complete remission. Recently, dermal multipotent cells (DMCs) were isolated from the mammalian dermis. These cells are able to differentiate into many cell types including osteocytes, chondrocytes, adipocytes and neuros, and are thus suggested to play important roles in wound healing process as an origin of reproduced dermal tissues. This research project aims to determine whether DMCs have a potency to contribute to skin resurfacing and rejuvenation by differentiating into dermal fibroblastic cells that synthesize de novo matrix. As a first step of the project, we determine the most effective method to obtain DMCs from adult aged human dermis and chek their proliferation and abilities to produce matrix proteins. Next, we examine whether DMCs grafted with keratinocytes can differentiate into dermal fibroblast at skin wound in nude-mice and stimulate wound healing process by reproduction of extracellular matrix. These experiments will contribute to the establishment of new complete therapy of damaged skin.