

Preparation of laminated and three-dimensional skin organoids derived from human iPS cells showing young and age-like properties

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It goes without saying that healthy skin is the most important foundation of cosmetics. Easily evaluate the benefits of new ingredients such as protective ingredients from external stimuli such as ultraviolet rays and dryness, and ingredients supplied from the dermis to the epidermis in order to maintain a higher degree of skin health against aging. That is important. On the contrary, it is also important to predict the negative effects on skin health by applying or drinking these new ingredients in order to prevent the occurrence of side reactions. Traditionally, these evaluations have been performed exclusively with animals. However, physiological difference between species that have hindered accurate screening has not been overcome, yet. Furthermore, in recent years, the spirit of animal protection and the development of laws and regulations have rapidly become widespread, and there is a social demand for the complete abolition of animal experiments, especially in the field of cosmetics. Under such circumstances, human iPS cells have few ethical problems in establishment and can be widely used in industry. Human iPS cells are theoretically infinitely self-renewable and can differentiate into any somatic cell, so the merit of utilizing them in the field of cosmetology is immeasurable. Therefore, we created a three-dimensional skin model using human iPS cells derived from a Japanese Werner Syndrome patient. Furthermore, we introduced a p16INK4A reporter that is activated in senescent cells into the above cell line to develop a system that can observe aging in real time. Using this system, we also found that the aging of them was accelerated by exposure to Doxorubicin.