Synopsis of Original Research Paper

Investigation on the Skin Change of the aging model mouse “klotho”.

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The klotho mouse is a novel presenile mouse strain developed by insertional mutagenesis. The homozygous mutant klotho mice ($KL^{-/-}$), which have a defect in klotho gene expression, present a short life span and a syndrome resembling human aging. Skin atrophy and hair loss are observed in $KL^{-/-}$, in addition to pulmonary emphysema, arteriosclerosis, osteoporosis, and ectopic calcifications.

The goal of the present study is to understand the pathogenesis of the skin changes observed in $KL^{-/-}$, and to develop a new strategy to prevent the skin change during aging. We have generated some experimental tools for the study: (1) Adenovirus has been generated, which expresses the mouse *klotho* cDNA, has been generated. (2) Two transgenic rat strains have been established, which overexpress the klotho gene. Regarding the function of the klotho gene, we have shown that apoptosis of the type II pneumocytes is much more frequently observed in the $KL^{-/-}$ lung when compared with that in the wild-type lung. Further study is now under progress to show the pathogenesis of the skin lesion in the klotho mutant mice, with special reference to the apoptosis of the epidermal cells.