Gene expression profiles of primary retinal pigment epithelial cells from apolipoprotein E knockout and human apolipoprotein E2 transgenic mice

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ABSTRACT. Age-related macular degeneration (AMD) causes visual impairment in the elderly. In non-neovascular AMD, studies involving human subjects have suggested potential involvement of aberrant lipid metabolism. However, there have been no reports on gene expression patterns in animal models of non-neovascular AMD
with abnormal lipid metabolism such as apolipoprotein E knockout and human apolipoprotein E2 transgenic mice. Transcriptome analysis was performed using retinal pigment epithelium cells of apoE knockout and apolipoprotein E2 mice using microarray analysis. C57BL/6, Rxrb, Pparbp, Vldlr, and Edf1, which are primarily related to lipid metabolism, were upregulated, while Tgfb1 and Pdgfb, which are related to pathologic angiogenesis in AMD, were downregulated in both types of mice. Apolipoprotein E knockout and apolipoprotein E2 mice showed characteristic gene expression patterns in the transcriptome analysis of primary retinal pigment epithelium cells. These results suggest that specific genes associated with lipid metabolism and angiogenesis are involved in the pathogenesis and progression of AMD.

**Key words:** Age-related macular degeneration; Apolipoprotein E; Lipid metabolism; Retinal pigment epithelium