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Effect of pentoxifylline on pericyte in aging mice kidney

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Objectives: In aging kidney, hypoxia, oxidative stress and inflammation lead to a decrease in renal function. Recent studies related to the aging process of the kidneys have shown that pericyte is a progenitor cell of myofibroblast, and the relationship between renal fibrosis and pericyte has been reported. Pentoxifylline, a methylxanthine derivative, has been reported in experimental models to prevent renal disease progression. In this study, we investigated the effect of pentoxifylline on pericyte.

Methods: 2, 12, and 24-months-old mice were assigned to control group. (Each group consisted of 7 mice) Seven 18-month-old mice were treated with pentoxifylline for 6 months, and kidney tissues were obtained at 24 months.
Pericyte was confirmed by PDGFR-beta and NG2 double stain, and CD31 stain, an endothelial marker, was used to confirm whether it maintained contact with endothelial cells.

Results: Abundant microvascular density was detected with CD31 stain in kidney of 2 and 12-months-old young mice. In 24-months-old mice kidney, CD31 stain decreased and collagen I stain increased which means progression of renal fibrosis. In the Pentoxifylline group, the collagen I stain was significantly decreased and the microvascular density was increased compared to the 24 months group, suggesting the renoprotective effect of pentoxifylline. In the 24-months group, the pericyte marker was significantly decreased and the endothelial contact was disappeared. However, the pericyte marker was not decreased in the pentoxifylline group and their perivascular location was confirmed by CD31 co-staining.

Conclusions: Pentoxifylline showed a renoprotective effect in the kidneys of aging mice, and it is possible that pericyte is involved in the process in which the pentoxifylline exhibits an antifibrotic action.

Fig1

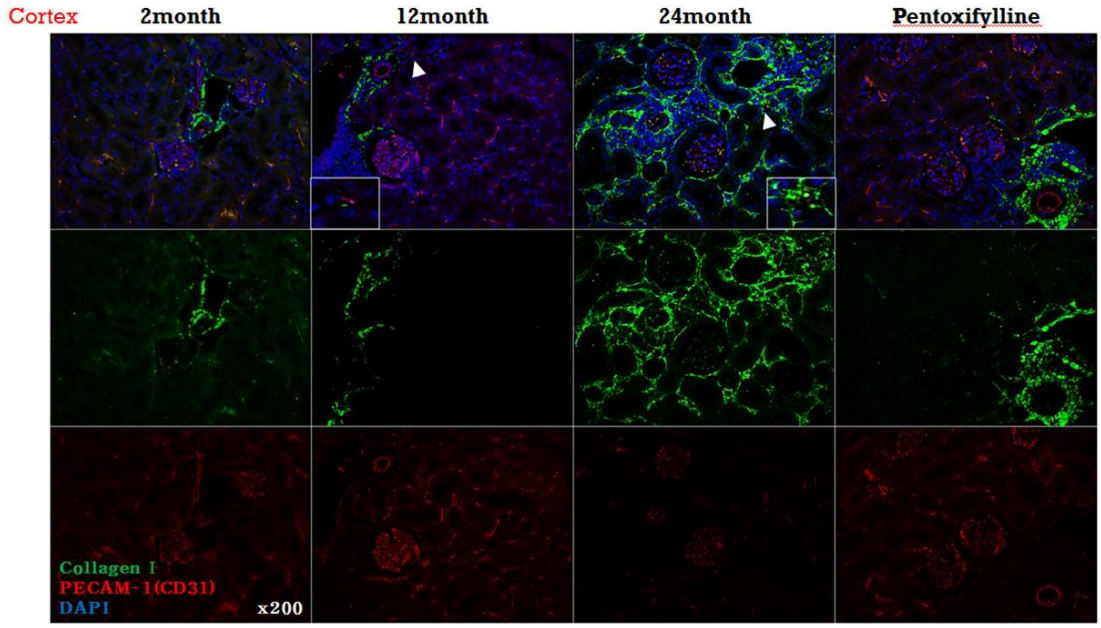
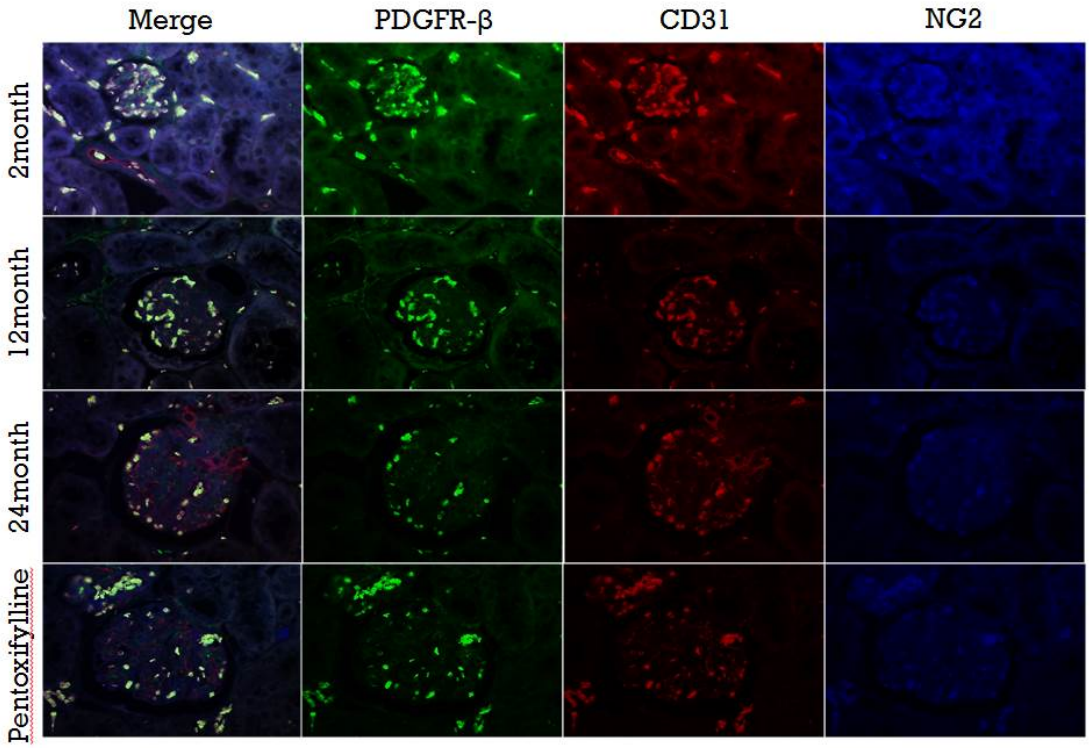

Cortex
2month
12month
24month
Pentoxifylline
Collagen I
PECAM-1(CD31)
DAPI
x200

Fig2


Merge
PDGFR-β
CD31
NG2
2month
12month
24month
Pentoxifylline