

## Oral Communication Abstract

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### Protective Effect of SIRT-1 Activator on Endothelial Dysfunction and Renal Injury in Aging Mice Kidney

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**Objectives:** SIRT-1 is an intracellular regulatory protein that plays an important role in cellular metabolism. Inhibition of SIRT-1 is known to contribute to the aging process by enhancing chronic inflammation. In this study, we investigated the protective effect of SIRT-1 activator against endothelial dysfunction and progressive renal injury in aging mice kidney.

**Methods:** Male C57/BL6 mice were used for aging mice model. 2 and 24-months-old mice were assigned to control group (Each group consisted of 7 mice). Seven 19-month-old mice were treated with Resveratrol (0.04%) for 6 months, and were euthanized at age 24 months.

We compared histological change, oxidative stress, and aging-related pro-inflammatory cytokines expression in the kidneys between Resveratrol treated old-mice group (RSV) and control group.

**Results:** In the RSV group, significantly decreased albuminuria and serum creatinine were observed compared to old age group. In histological evaluation, the increased mesangial area and tubulointerstitial fibrosis in the old age group also showed a decreasing pattern in the RSV group.

Western blot analysis revealed that TNF- $\alpha$ , NF- $\kappa$ B and heparanase were significantly increased in old age group. Pro-inflammatory cytokines like MMP-2, MMP-9, IL-6, and IL-1 $\beta$  and syndecan-4 (member of glycocalyx-forming proteoglycan family) were also increased in old age group. It was observed that the expression of SIRT-1 in the RSV group was significantly increased compared to the old age group. And, all of the inflammation markers such as TNF- $\alpha$ , NF- $\kappa$ B, heparanase, MMP-2, MMP-9, IL-6, and IL-1 $\beta$  increased in the old age group were significantly ameliorated in the RSV group.

**Conclusions:** In aging mice model, resveratrol, a SIRT-1 activator, induces inhibition of TNF- $\alpha$  and NF- $\kappa$ B, which reduces the activity of Syndecan-4 and heparanase by regulating the expression of pro-inflammatory cytokines such as MMP-2, MMP-9, IL-6, and IL-1 $\beta$ . As a result, SIRT-1 activator showed a protective effect on endothelial dysfunction and renal injury.

Figure 1. Renal function and Histologic assessment

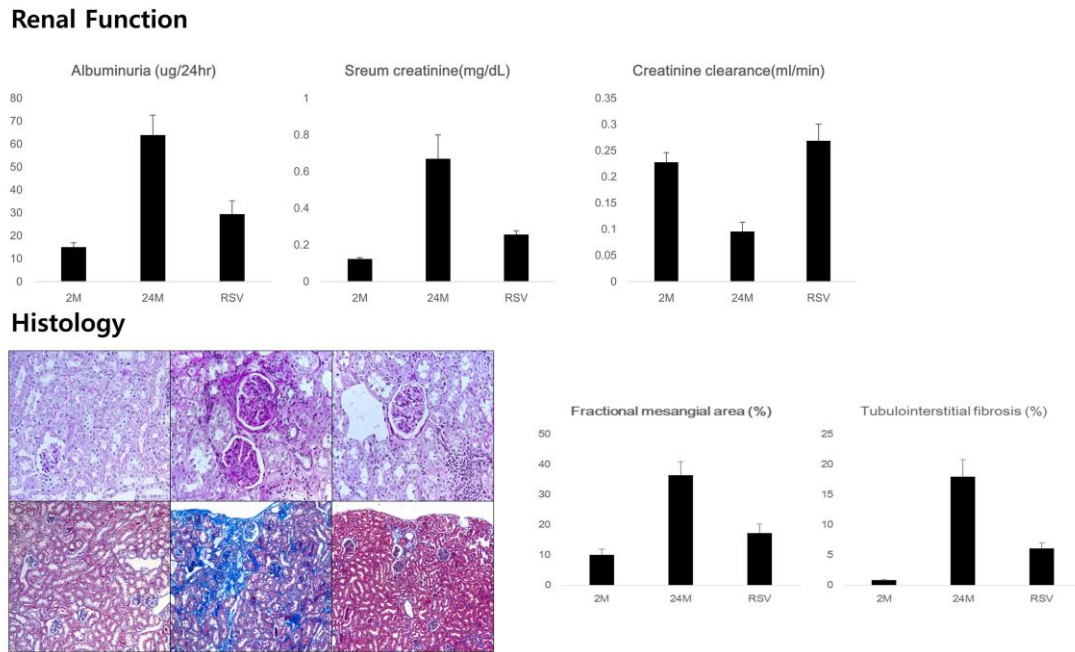


Figure 2. Effect of Resveratrol on inflammatory mediators

