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SIRT1 and resistin as a therapeutic targets of resveratrol in aortic stenosis

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The main causes of aortic valve stenosis (AS) are extracellular matrix remodeling and inflammation. However, the molecular mechanisms contributing to these inflammatory processes are not well established. Finding the novel biomarkers and targeted therapy of inflammation are considered an attractive strategy in AS and atherosclerosis. The purpose of our study was to evaluate the level of resistin and modulatory role of sirtuin-1 (SIRT1) in patients with AS before and after the cardiac surgery and also evaluate the effects of resveratrol on the expressions of resistin and SIRT1. Twenty patients with AS which underwent an aortic valve replacement surgery were enrolled. Blood samples were collected before and 72hr after the operation. Isolated peripheral mononuclear cells (PBMC) from the blood samples were cultured and treated with resveratrol (50 μM) and eventually analyzed for the levels of resistin and sirt-1 activity and compared to the healthy subjects as a control. Resistin expression was higher in patients with AS compare to control ($p<0.05$) and its level augmented 72hr post operation in patients group ($p<0.05$). SIRT1 activity was negatively associated with resistin mRNA levels and its activity was lower in patients group compare to control group. Cardiac surgery caused to more decrease in SIRT1 activity. Treatment with resveratrol, significantly diminished resistin mRNA level ($p<0.05$), whereas increase the SIRT1 activity ($p<0.01$) in patients group. Our findings revealed that in patients with AS resistin levels were increased whereas activity of SIRT1 reduced and cardiac surgery could augment these alterations. The results also suggest that, resveratrol could improve the inflammatory state by increasing SIRT1 activity and reduction in resistin. These findings suggest that resveratrol could modify inflammation through the regulation of SIRT1 activity and resistin level and could be a novel approach to decrease inflammation either in patients with AS or post operation conditions.

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