

Global Experts Meeting on
INFECTIOUS DISEASES, DIABETES AND ENDOCRINOLOGY
February 27-28, 2019 Tokyo, Japan

AdipoRon, adiponectin receptor agonist improves vascular function in the mesenteric arteries of type 2 diabetic mice

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Adiponectin is one of the most abundant adipokines secreted from adipose tissue. An orally active synthetic adiponectin receptor agonist, adipoRon has been suggested to ameliorate insulin resistance, myocardial apoptosis, and pancreatic tumor. It has been reported that adiponectin directly induces vascular relaxation however; the chronic effect of adipoRon in the vascular dysfunction in type 2 diabetes has not been studied yet. Thus, in this study, we examined whether adipoRon improves vascular function in type 2 diabetes and what mechanism is involved. Ten to 12-week old male type 2 diabetic (db-/db-) mice were treated with adiponectin receptor agonist (adipoRon, 10 mg/kg/everyday by oral gavage) for 2 weeks. Isolated mesenteric arteries were mounted in the arteriography and arterial diameter was measured. And western blot analysis was assessed. Pressure-induced myogenic response was significantly increased, whereas endothelium-dependent relaxation was significantly reduced in the mesenteric arteries from type 2 diabetic mice. Interestingly, treatment of adipoRon normalized potentiated myogenic response. However, endothelium-dependent relaxation was not affected by treatment of adipoRon. The expression levels of adiponectin receptor 1, 2 and APPL 1, 2 were increased in the mesenteric arteries from Type 2 diabetic mice and treatment of adipoRon did not affect them. Interestingly, adipoRon treatment increased the phosphorylation level of AMPK and decreased phosphorylation of MYPT1 in the type 2 diabetic mice while there was no change in the level of eNOS phosphorylation. The treatment of adipoRon improves vascular function in the mesenteric arteries from type 2 diabetic mice through endothelium-independent mechanism. It is suggested that MLCP activation through reduced phosphorylation of MYPT1 might be the dominant mechanism in the adipoRon-induced vascular effect.

Biography

Soo Kyoung Choi has pursued her PhD from Yonsei University and Postdoctoral studies from Tulane University. She is the Research Assistant Professor in Department of Physiology at Yonsei University. She has published more than 22 papers in reputed journals.

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