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Poster Sessions

Apelin intensifies vascular relaxation through activation of the endothelial nitric oxide production pathway in rats with metabolic syndrome

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Perivascular adipose tissue (PVAT) modulates the vascular tone. We previously demonstrated that mesenteric arterial PVAT enhances vasodilation in SHRSP.Z-Leprfa/IzmDmcr (SHRSP.ZF) rats. However, the factors involved in the vasodilation effect of PVAT have not been identified. Therefore, this study aimed to determine whether apelin, an adipokine, is involved in mediating the beneficial effects of PVAT. We pre-treated mesenteric arterial segments from SHRSP.ZF rats with apelin before observing the vascular activities. Compared to controls without PVAT, apelin significantly enlarged vasodilation in response to acetylcholine; the result was similar to the response observed when PVAT is present. In contrast, the same trend in vasodilation was not observed in response to sodium nitroprusside. Additionally, when apelin was cumulatively administered to segments without PVAT from Wistar-Kyoto rats, vasorelaxation was not induced. These results suggest that apelin acts as a vasodilative enhancer under the condition of endothelial nitric oxide (NO) synthesis. Apelin may, therefore, be involved in mediating the beneficial effect of PVAT via a possible increase in NO production in metabolic syndrome.