

Effects of quercetin against inflammation and endothelial dysfunction in the aortas from aneurysm model mice.

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Loading of angiotensin II (Ang II) and β -aminopropionitrile (BAPN) to mice is known to cause hypertension and degeneration of elastic lamina, resulting to the onset of aortic aneurysm (AA). As one of the pathogenesis, inflammation at the aortic wall and endothelial cell injury are observed in these mice. Quercetin, which is abundant in onion, is reported to improve vascular function. In this study, we investigated the effects of quercetin on vascular injury such as inflammation and endothelial dysfunction. In C57BL/6J male mice, Ang II and BAPN were administered via osmotic mini pumps. Quercetin was administered from 2 weeks prior to the start of Ang II and BAPN loading. Isolated aorta was subjected to the analysis protein and mRNA expressions. Quercetin treatment reduced the expressions of VCAM-1 and F4/80, a marker of macrophages in aortas as well as the incidence of AA in mice. For *in vitro* study, cultured human umbilical vein endothelial cells (HUVECs) were used. Quercetin also inhibited VCAM-1 expression increased by TNF-alpha in HUVECs. Moreover, quercetin activated ERK5, which is known as an endothelial cell protective molecule in HUVECs. In the present study, quercetin shows anti-inflammatory and endothelial cell protective effects in both aortas and HUVECs and may prevent the AA onset.