

## **A role of TRPV1 in obesity-induced hypertension**

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Transient receptor potential vanilloid 1 (TRPV1) is a non-selective cation channel and can be activated by a range of stimuli, such as capsaicin, heat (>43°C), protons (pH<6) and certain mediators. A role for TRPV1 has been suggested in cardiovascular diseases and type 2 diabetes. We have investigated the participation of TRPV1 in a mouse model of obesity-associated hypertension induced by high fat diet (HFD, 35% of fat from lard). In this study, 3-week old female (n= 8-13) and male (n=4) TRPV1 wild type (WT) and knockout (KO) mice (age and sex matched) were fed with either normal or HFD for 12 weeks. At the end of the study, both TRPV1 WT and KO mice became similarly obese after HFD feeding. Analysis of mesenteric vessel responsiveness by wire myography, showed no significant changes to a vascular constrictor (phenylephrine), a vasodilator (CGRP) and an endothelial dependent vasodilator (carbachol), irrespective of genotype and diet. However, a significant increase (p<0.01) in systolic blood pressure and mean arterial pressure was observed in the HFD-fed WT but not KO mice, when compared to the normal diet group. This difference was observed by both tail cuff and radiotelemetry techniques. Furthermore, significant increases in aortic medial wall width (p<0.01) and collagen wall width (p<0.001) were observed in HFD-fed WT compared to normal diet group. The same effect was not observed in TRPV1 KO mice. These findings reveal that TRPV1 is involved in the development of high blood pressure and vascular hypertrophy associated with obesity.