High Dietary Sodium Reduces Flow Mediated Dilation in Humans with Salt Sensitive & Salt Resistant BP.

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Human and animal studies have demonstrated that dietary sodium loading impairs endothelial function. Recent data suggests that this impairment may occur independent of a change in blood pressure (BP) (i.e., in those with 'salt resistant' BP). However, a sodium-induced increase in BP (i.e., 'salt sensitive' BP) may amplify the negative effects of sodium on the endothelium. **Purpose:** We tested the hypothesis that dietary sodium loading would impair flow mediated dilation (FMD) more in those with salt sensitive (SS) BP compared to those with salt-resistant (SR) BP. **Methods:** Five SS (2 men, 3 women; age 43±4 years) and 7 SR (3 men, 4 women; age 45±3 years) subjects were enrolled in a controlled feeding study where all food was provided. The diet consisted of a run-in period (3-7 days, 100mmol sodium/day) immediately followed by a two phase randomized crossover seven-day diet perturbation: low sodium (LS); 20 mmol/day and high sodium (HS); 300-350 mmol/day. FMD of the brachial artery was assessed on the last day of each diet condition. Mean arterial BP (MAP) was assessed using a 24-hr ambulatory monitor. SS BP was defined as a change in MAP of > 5 mmHg between the low and the high sodium diets. **Results:** By study design, MAP increased in the SS group during the HS condition (LS: 83.0 ± 1.5, HS 90.2 ± 1.7 mmHg, p <0.05), but not the SR group (LS: 83.6 ± 3.0, HS 83.1 ± 3.1 mmHg, p > 0.05). HS attenuated FMD in both the SS group (LS: 10.5 ± 2.1%, HS 6.9 ± 1.3%, p < 0.05) and SR group (LS: 12.8 ± 2.0%, HS 8.2 ± 1.2%, p < 0.05) with no difference between groups for the change in FMD (SS: Δ-3.6 ± 1.4%, SR: Δ-4.6 ± 1.0%, p > 0.05). **Conclusion:** These preliminary data indicate that a high sodium diet impairs FMD to a similar extent in SS and SR individuals, suggesting that the effects of dietary sodium on vascular endothelial function may be independent of BP.

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