Fructose-induced Hypertension is Attenuated in Mice That Lack the Apical Cl^-/HCO_3^- Exchanger Slc26a6

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Increased dietary fructose intake in rat and mouse recapitulates many aspects of metabolic syndrome by causing hypertension, insulin resistance and dyslipidemia. The pathogenesis of hypertension in this syndrome remains speculative. Our laboratory recently showed that fructose can increase salt absorption in the intestine and kidney by activating the apical chloride- absorbing transporter Slc26a6 (Pat1). We further showed that increased dietary fructose intake increases the expression of Slc26a6 and Glut5, the major fructose absorbing transporter in the small intestine. We hypothesize that the increase in blood pressure in fructose-induced hypertension is due to increase salt absorption mediated by Pat1. To evaluate this hypothesis Slc26a6+/+ (wild type) and Slc26a6-/- (knockout) mice were fed high fructose diet (60% fructose) and compared to control diet (60% starch) for 12 weeks. Wild type mice on the high fructose diet showed a significant increase in blood pressure (9 mmHg) compared to wild type mice on the control diet, while Pat-1 KO's showed no increase in blood pressure compared to Pat-1 KO's on the control diet. These results strongly suggest that the chloride-absorbing transporter Slc26a6 (Pat1) plays an important role in the pathogenesis of fructose-induced hypertension seen in murine models.