

## Dietary intake of potassium modulates effect of the WNK1 gene on blood pressure determination and susceptibility of hypertension

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Essential hypertension is one of the most common diseases of the modern world. High blood pressure or hypertension contributes to morbidity and mortality from stroke, coronary heart disease, and end-stage renal disease. The determination of blood pressure is caused by complex interactions among many different genes, and strongly influenced by environmental factors.

Clinical and epidemiological studies have shown that dietary sodium intake was positively and potassium intake was inversely associated with blood pressure. The WNK1 gene, member of the WNK family of serine/threonin kinases, has been implicated as important modulator of salt homeostasis, regulating the balance between renal sodium reabsorption and potassium excretion.

We have investigated whether the common genomic variations of the WNK1 gene are potential contributors to individual variations in blood pressure and susceptibility to essential hypertension. Significant associations were observed between the WNK1 genotypes and individual variations in blood pressure as well as essential hypertension. In the next, to examine the interaction between the *WNK1* genotypes and potassium and sodium intake, we have classified the subjects into two groups, according to population median for the potassium/sodium intake ratio. The associations between the WNK1 genotypes and the BP levels were observed only in the group with low potassium/sodium intake ratio. This data shows that potassium and sodium intake modify the relationship between the *WNK1* genotypes and the BP levels.