



## Interaction of six candidate genes in essential hypertension

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**ABSTRACT.** We explored the interaction of 6 candidate genetic mutations in essential hypertension (EH). The mutations AGT M235T, ACE I/D, eNOS Glu298Asp, ET-2 A985G, ANP T2238C, and NPRC A-55C were detected using a genechip microarray in 100 patients with EH and 97 controls from the Han population living in the Yunnan Province of China. Risks of EH were evaluated with respect to a combination of these genotypes. Interactions were analyzed using multifactor dimensionality reduction (MDR). P values were corrected using Bonferroni's adjustment. Results showed that CC genotype frequencies for NPRC A-55C (0.540) in EH were significantly higher than those in controls (0.237,  $P < 0.01$ ; odds ratio (OR) = 3.777; 95% confidence interval (CI) = 2.050-6.960). The OR for NPRC A-55C CC combined with ET-2 A985G GG increased to 4.673 and to 5.529 when the MT genotype of AGT M235T, the EE genotype of eNOS Glu298Asp, the GG genotype of ET-2 A985G, and the CC genotype of NPRC A-55C were combined. MDR showed that ET-2/NPRC is the best model (OR = 4.002; 95%CI = 2.1597-7.4159). The CC genotype for NPRC A-55C and the G allele for ET-2 A985G were associated with susceptibility to EH. Although the contributions of the candidate genes

differ, they may have cooperative effects on conferring risk for EH. Moreover, potential gene-gene interactions were found between ET-2 A985G and NPRC A-55C in EH.

**Key words:** Essential hypertension; Gene polymorphism; Genechip microarray; Gene-gene interaction