

Genetic polymorphisms of oxidative and antioxidant enzymes and arsenic-related hypertension. Journal of Toxicology and Environmen

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Abstract

The association of 4 genetic polymorphisms, NAD(P)H oxidase, manganese superoxide dismutase (MnSOD), catalase, and endothelial nitric oxide synthase (e-NOS), was assessed with arsenic-related hypertension risk among 79 hypertensive cases and 213 controls in an arseniasis-hyperendemic area of Taiwan. Overall, MnSOD polymorphism significantly increased the risk of hypertension regardless of arsenic exposure. NADPH oxidase and eNOS polymorphisms were significantly associated with hypertension risk in the high arsenic exposure group; however, catalase polymorphism was not associated with hypertension. Groups were further stratified by triglyceride levels to evaluate whether the cumulative arsenic exposure combined the three polymorphisms together. The adjusted odds ratios (ORs) of at least two risk factors of the cumulative arsenic exposure and MnSOD, NADPH oxidase, and eNOS three-polymorphism combination versus any one risk factor of them were 0.8 (95% CI 0.3-2.3) for individuals with low triglyceride levels (<110 mg/dl) and 2.5 (95% CI 1.0-6.01) for high-triglyceride groups (>110 mg/dl), respectively. These results suggested that the NADPH oxidase, MnSOD, and e-NOS polymorphisms, but not catalase, might play a role in the development of arsenic-related hypertension, especially in subjects with high triglyceride levels.