



Interaction of the *CYP1A1* gene polymorphism and smoking in non-small cell lung cancer susceptibility

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ABSTRACT. Many studies have shown that genetic factors, environmental factors, and bad living habits, especially smoking, are risk factors for lung cancer. However, not all smokers develop lung cancer, which may be related to different genetic backgrounds. Currently, most research has investigated the *GSTM1*, *XRCC1*, *XRCC3*, *CYP2D6*, and *C188T* genes. Little research has been done on the cytochrome P450 (*CYP*) *1A1* gene, and results have varied. In addition, no results have been reported on the interactive effects of smoking and the *CYP1A1* gene on lung cancer development. We used polymerase chain reaction restriction fragment length polymorphism to detect the *CYP1A1* genotype, and investigate the effects of the *CYP1A1* gene deletion and smoking alone, and in combination, on non-small cell lung cancer susceptibility. We enrolled 150 non-small cell lung cancer patients and 150 healthy control subjects. Subjects' smoking habits and *CYP1A1* gene polymorphism were analyzed to investigate their role in the occurrence of lung cancer. The *CYP1A1* gene deletion was found in 73.3% of non-small cell lung cancer patients and 20.0% of healthy subjects. The OR value was 2.28 ($P < 0.05$). Among smoking subjects,

77.8% exhibited non-small cell lung cancer, significantly higher than the 27.3% in non-smokers ($P < 0.05$). The OR value for the interaction of smoking and *CYP1A1* gene deletion was 5.60, larger than the product of their individual OR values. The *CYP1A1* gene deletion is a lung cancer risk factor, and interacts with smoking in non-small cell lung cancer development.

Key words: CYP1 A1; Gene Polymorphism; Smoking; Non-small cell lung cancer