Association of the *CYP1A1 Msp*I and TNFα-308 polymorphisms with chronic obstructive pulmonary disease in Inner Mongolia

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ABSTRACT. Chronic obstructive pulmonary disease (COPD) is a progressive lung disease characterized by persistent airflow limitation. Smoking, occupational exposures, air pollution, and genetics are all risk factors. In the present study, we detected the cytochrome P4501A1 gene (*CYP1A1*) MspI polymorphism and the tumor necrosis factor alpha (TNFα)-308 single nucleotide polymorphism in COPD patients, and investigated their associations with smoking and COPD susceptibility in Inner Mongolia. A total of 101 COPD patients and 80 controls were enrolled in the study. The polymorphisms were analyzed using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP). *CYP1A1 Msp*I allele frequencies were significantly different between COPD patients and controls (P = 0.033). COPD susceptibility was higher in subjects with the m2 allele compared to subjects with the m1 allele [odds ratio (OR) = 2.531, 95% confidence interval (CI) = 1.297-4.940, P = 0.006]. Significant differences were observed in the TNFα-308...
genotype and allele distributions between COPD patients and controls (P = 0.006 and P = 0.003, respectively). Compared to subjects with the GG genotype, subjects with GA+AA genotypes had higher COPD risk (OR = 3.639, 95%CI = 1.576-8.403, P = 0.002). The TNFα-308 polymorphism differed between smoking and non-smoking COPD patients and controls (P = 0.047 for genotype and P = 0.030 for allele). In conclusion, the CYP1A1 MspI and TNFα-308 polymorphisms were associated with COPD susceptibility. Furthermore, of the two polymorphisms, only TNFα-308 may exert an interaction with smoking.

Key words: CYP1A1; TNFα; Polymorphism; Chronic obstructive pulmonary disease