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GENETIC POLYMORPHISMS AND CHROMOSOMAL INSTABILITY TO LUNG CANCER IN THE KOREAN POPULATIONS

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Although the incidence rates of gastric cancer and liver cancer, the most common cancers in Korea, are tending decrease, lung cancer is on the increase every year as cause of cancer death as well as incidence rate in Korea. And cigarette smoke is believed to be responsible for 90% of lung cancer. Many investigators have reported an association between genetic polymorphism of cytochromes P-450 (CYPs) or glutathione *S*-transferase (GSTs) and susceptibility to lung cancer. In Korea, however, few studies have been conducted, so we have elucidated the role of genetic polymorphisms of the CYP1A1, CYP2E1, GSTM1, GSTT1, and mEH in development of lung cancer. We have analyzed genotypes of DNA from 37 patients and 21 controls. The GSTM1 null genotype was present in 32% (12/37) of the lung cancer patients compared to 10% (2/21) of the controls. The GSTT1 null genotype was present in 27% (10/37) of patients compared to 5% (1/21) of the controls. And there are significant relationships between GSTM1 and/or GSTT1 null genotype and the development of lung cancer. The distribution of the CYP2E1 *Pst I* variant allele in the patients (49%) was present higher than that in the controls (7%), and the difference between them was significant. 22% (8/37) and 32% (12/37) of the lung cancer patients and 48% (10/21) and 35% (7/20) of the controls carried the CYP1A1 and mEH wild type, respectively. These 2 genes was not significant to the development of lung cancer. Despite the emphasis on elucidating the association between inheritance of susceptibility genes and lung cancer, biomarker studies to link the functional activities of these polymorphic genes are

amenable to predict the risk for lung cancer. Therefore, we have investigated the chromosomal instability of individuals as chromosome aberration, sister chromatid exchange, and cytokinesis-blocked micronuclei assay. We found that the formation of micronuclei was significantly increased in the patients compared to the controls. These results suggest that cytokinesis-blocked micronuclei can be used as biomarker for determining the risk of development of lung cancer.