

论著

CYP1A1, GSTT1基因多态性与电子垃圾处理区居民双核淋巴细胞微核率的关系

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摘要 背景与目的: 探讨代谢酶CYP1A1 Msp I位点和GSTT1基因多态性与电子垃圾处理区居民外周血双核淋巴细胞微核率的关系。材料与方法: 在中国南方某地有10余年电子垃圾拆解史的地区选择54名居民为暴露组; 从距该暴露区50公里无明显工业污染的农业区选取73名居民为对照人群。采用胞质阻滞微核实验测定双核淋巴细胞微核率。采用限制性片段长度多态性PCR检测CYP1A1 Msp I位点多态性, 多重PCR方法检测GSTT1基因多态性。结果: 暴露组人群微核率为4.81%±4.14%, 是对照组微核率 1.15%±1.42%的近4倍, 差异具有统计学意义(P<0.01)。经校正年龄、性别、吸烟量和饮酒等因素后, 仅发现对照组人群中携带CYP1A1 Msp I位点变异纯合基因型(aa)个体的微核率为1.69%±1.28%, 高于携带杂合型或野生型基因型(AA/Aa)个体的微核率1.06%±1.44%, 差异具有统计学意义(P<0.01)。未见GSTT1基因型单独及其与CYP1A1基因型联合作用可增加微核率的危险性。结论: 本研究对照组人群外周血双核淋巴细胞微核率升高可能与电子垃圾拆解地环境污染物的暴露有关, 对照人群中CYP1A1 Msp I基因多态性可能与机体双核淋巴细胞微核发生有关。

关键词 [电子垃圾](#); [CYP1A1 Msp I](#); [GSTT1](#); [基因多态性](#); [双核淋巴细胞微核率](#)

Associations between Gene Polymorphisms of CYP1A1, GSTT1 and Frequencies of MNed Binucleated Cells in Residents from an E-waste Dismantling Site

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Abstract BACKGROUND AND AIM: Associations between genetic polymorphisms of CYP1A1 Msp I or GSTT1 among residents from an electronic waste (e-waste) recycling site in China, and the frequencies of micronucleated binucleated cells (MNed BNC) in peripheral blood lymphocytes were investigated. MATERIALS AND METHODS: We recruited 54 residents from a decade-long e-waste recycling site in southeast China (as exposed group), and another 73 farmers from one village located 50 km away from the e-waste site without other pollutions (as control group). The frequencies of MNed BNC were analyzed by cytokinesis-blocked micronucleus assay. CYP1A1 Msp I genotypes and GSTT1 genotypes were analyzed using polymerase chain reaction -based restriction fragment length polymorphism method and multiple polymerase chain reaction method, respectively. RESULTS: The mean MNed BNC frequency in the exposed group was 4.81%±4.14%, which was approximately four times the mean MNed BNC frequency of the control (1.15%±1.42%, P<0.01). After adjusted by age, gender, cigarettes per day and alcohol drinking, we found that the mean frequency of MNed BNC among subjects with homozygous rare allele (aa) genotype at CYP1A1 Msp I site was 1.69%±1.28%, which was significantly higher than those of subjects with either homozygous wild type or heterozygous genotypes (AA/Aa) (1.06%±1.44%, P<0.01) in the control. However, there was no association between the frequency of MNed BNC and GSTT1 genotypes alone or both

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GSTT1 genotypes and CYP1A1 genotypes. CONCLUSION: The findings suggest that polymorphism of CYP1A1 Msp I may be associated with the frequency of MNed BNC among the control subjects. Certain pollutants from the e-waste dismantling site surroundings may affect the health of the local residents.

Keywords [e-waste](#) [CYP1A1 Msp I](#) [GSTT1](#) [polymorphisms](#) [micronucleated binucleate cells](#)

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