

论文

卷烟烟气抽提物对细胞遗传毒性及茶多酚干预作用

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摘要:

目的 探讨卷烟烟气抽提物(CSE)对支气管上皮细胞(BEAS-2B)遗传毒性及茶多酚干预作用。**方法** 以高、中、低3个浓度对支气管上皮细胞进行染毒,同时设立茶多酚干预组和空白对照组;采用彗星实验及 γ -H₂AX蛋白表达检测DNA损伤,以微核实验检测染色体损伤,并检测HPRT基因突变率。**结果** 高剂量染毒组BEAS-2B细胞彗星细胞数(130.5±1.6)个、彗星尾长(134.33±3.56) μm 、尾部面积(7 798.43±43.45) μm^2 ,均明显高于空白对照组($P<0.05$),并呈剂量-效应关系;CSE低、中、高剂量染毒组BEAS-2B细胞中微核细胞分别为(22.4±3.2)、(38.6±1.8)、(79.6±2.4)个,均明显多于空白对照组的(6.2±1.5)个($P<0.05$);CSC中、高剂量染毒组BEAS-2B细胞HPRT基因突变率分别为(0.802±0.040)%、(1.058±0.002)%、均明显高于空白对照组的(0.330±0.002)%($P<0.05$)。茶多酚对CSE诱发的DNA链断裂及微核细胞增多有明显抑制作用,并可有效降低HPRT基因突变率。**结论** CSE具有细胞遗传毒性,茶多酚对其遗传毒性具有干预作用。

关键词: 卷烟烟气抽提物(CSE) 支气管上皮细胞(BEAS-2B) 彗星试验 茶多酚 微核 HPRT基因

Hereditary toxicity of cigarette smoke extraction and protection of tea polyphenols on the toxicity in BEAS-2B cells

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Abstract:

Objective To study the genetic toxicity in human bronchial epithelial cells (BEAS-2B) induced by cigarette smoke extraction (CSE) and protective effect of tea polyphenols (TPs) on the toxicity. **Methods** The BEAS-2B cells were exposed to high, moderate, and low concentration of CSE in culture medium and a tea polyphenols protection group and a control group were set up. Comet assay and H2AX phosphorylation were adopted to detect DNA damage and micronucleus assay was used to estimate chromosomal damage and hypoxanthine phosphoribosyl (HPRT) gene mutation. **Results** Compared to those of the control group, the number of comet cells (130.5 ± 1.6), tail length (134.33 ± 3.56 μm), the tail area (7 798.43 ± 43.45 μm^2) for BEAS-2B cells of high dose CSE exposure group increased significantly ($P<0.05$ for all) in a dose-effect manner. The number of cells with micronucleus in 1 000 BEAS-2B cells exposed to low, moderate, and high CSE were 22.4 ± 3.2, 38.6 ± 1.8, and 79.6 ± 2.4, respectively, and significantly higher than that of the control group (6.2 ± 1.5) ($P<0.05$ for all). The CSE significantly inhibit the increases of HPRT gene mutation rate, DNA chain break and number of cells with micronucleus induced by CSE exposure in BEAS-2B cells. **Conclusion** CSE has genotoxicity and tea polyphenols could inhibit the genetic toxicity of CSE.

Keywords: cigarette smoke extraction BEAS-2B cell comet test tea polyphenols micronucleus HPRT gene

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