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论著

多氯联苯126与苯并(a)芘联合作用致代谢酶改变对HepG2细胞遗传毒性的影响

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摘要 背景与目的： 探讨多氯联苯126(PCB126)对苯并(a)芘[B(a)P]遗传毒性的影响。 材料与方法： 设PCB126三个剂量(0.01、0.10、1.00 nmol/L)，B(a)P一个剂量(50 μmol/L)组，设三甲基胆蒽(3_MC)为阳性对照，二甲基亚砜(DMSO)为溶剂对照，以各PCB126浓度染毒HepG2细胞48 h后，再与B(a)P联合染毒24 h。通过荧光分光光度法测定各组细胞CYP1A1酶活性(EROD)；并采用胞质分裂阻滞法微核实验(CBMNT)分析各组细胞的微核率(M N ‰) 并计算核分裂指数(NDI)。 结果： 与溶剂对照相比，PCB126各浓度组和 50 μmol/L的B(a)P单独作用及联合作用均可诱导CYP1A1酶活性显著增加，其差异均具有统计学意义(P<0.05,P<0.01)。微核率显著升高仅见于50 μmol/L的B(a)P单独作用组，与溶剂对照组相比差异有统计学意义(P<0.01)。0.10、1.00 nmol/L的PCB126和 50 μmol/L的B(a)P联合作用时，与B(a)P单独作用相比，CYP1A1酶活性和微核率均显著升高，差异有统计学意义(P<0.05, P<0.01)。 结论： PCB126在本试验条件下未显示出遗传毒性作用，但对B(a)P的遗传毒性作用具有一定的增强效应。

关键词 多氯联苯126； 苯并(a)芘； 联合作用； 微核； CYP1A1

Combined Effects of PCB126 and B(a)P on Genotoxicity of HepG2 Cells by Its Metabolic Enzyme Changes

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Abstract BACKGROUND & AIM: To study effects of polychlorinated biphenyl PCB126 on B(a)P_induced genotoxicity. MATERIALS AND METHODS: HepG2 cells were treated either with different concentrations of PCB126 (0.01, 0.10,1.00 nmol/L) alone,or with different concentrations of PCB126 for 48 h then with B(a)P (50 μmol/L) and PCB126 together for another 24 h. DMSO and 3_MC were used as solvent control and positive control, respectively. EROD activity and micronuclei(MN) formation were analyzed through fluorescence spectrophotometry and a cytokinesis_block micronucleus(CBMN) assay, respectively. The frequencies of MN(‰) and nuclei division index (NDI) were calculated. RESULTS: Comparin to solvent control, EROD levels increased markedly in HepG2 cells treated with PCB126 (0.01, 0.10, 1.00 nmol/L) and B(a)P (50 μmol/L) alone or together, and MN frequencies increased significantly only in HepG2 cells treated with B(a)P alone(P<0.05,P<0.01). Comparing to B(a)P treatment alone, the EROD levels and MN frequencies increased significantly in HepG2 cells treated with B(a)P and PCB126 (0.10,1.00 nmol/L) together(P<0.05,P<0.01). CONCLUSION: PCB126 at certain concentrations showed no genotoxic effect in HepG2 cells, but it might enhance the genotoxic properties of B(a)P.

Keywords PCB126 B(a)P combined effect micronuclei CYP1A1

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