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论著

单次灌胃杂色曲霉素对小鼠大脑细胞的影响

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摘要 目的 探讨单次ig杂色曲霉素（ST）对小鼠大脑细胞的影响。方法 采用形态学观察和流式细胞术定量检测方法，研究ST对BALB/c小鼠大脑神经细胞的影响。结果 病理形态学观察可见，ig小剂量ST（3 μg•kg^{-1}）后12 h或大剂量ST(3 mg•kg^{-1})后6 h即可见小鼠大脑皮质、丘脑、海马CA2区神经元出现胞核固缩深染、胞浆嗜酸性变、空泡变性等病理变化，且随剂量增大和作用时间延长，病变神经元逐渐增多；光镜下对海马CA2区病变神经元进行计数分析，结果表明ST处理组发生病理变化的神经元比例均高于相应对照组，且呈剂量和时间依赖性增高；流式细胞术定量检测结果表明，ig ST 3，30，300和3000 μg•kg^{-1} 12 h后，小鼠脑细胞的凋亡率呈剂量依赖性增高；ig 3 mg•kg^{-1}的ST后6～48 h，随ST作用时间的延长，脑细胞凋亡率也明显增高。结论 经口给予ST可导致小鼠大脑皮质、丘脑、海马CA2区神经元发生退行性病变，诱导并促进小鼠大脑细胞凋亡。

关键词 杂色曲霉素 脑 凋亡 流式细胞术
分类号 R996.1

Effects of sterigmatocystin on cerebral cells in BALB/c mice after single intragastral administration

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Abstract

AIM To investigate the effects of sterigmatocystin(ST) on cerebral cells in BALB/c mice after single intragastral administration. **METHODS** The effect of ST, with different dosages and at different times after intragastral administration, on cerebral cells was studied with HE staining and flow cytometric (FCM) methods. **RESULTS** Pathologically, degenerated changes were observed in cortex, thalamus, hippocampus at 12 h in group with ST 3 μg•kg^{-1} ig and at 6 h in group with ST 3 mg•kg^{-1} ig. The nuclei in degenerated cells were shrunk in size with dark and condense chromatin staining, while the nuclear membrane and nucleoli structures were not clearly distinguished. The degenerated changes increased gradually along with the increases in ST dosage and treatment time period. The degenerated cells in the neurons of CA2 region of hippocampus was counted. The result showed that the percentage of degenerated neurons in the ST treatment group was significantly higher than that in control group. FCM analysis revealed that 12 h after ig 3, 30, 300 and 3000 μg•kg^{-1}, the apoptosis rates of cerebral cells in all ST treatment groups were significantly higher than that in control group in a dose effect correlation fashion. Apoptosis rates also increased with treatment time 6－48 h after ig ST 3 mg•kg^{-1}. **CONCLUSION** Oral ST exposure causes some degenerated changes in neurons in cortex, thalamus, CA2 of hippocampus, induces and promotes apoptosis of cerebral cells in mice.

Key words sterigmatocystin brain apoptosis flow cytometry

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