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论文

明矾对大鼠脑组织中单胺氧化酶、乙酰胆碱酯酶和乙酰胆碱的影响

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摘要:

目的 探讨明矾对大鼠脑组织中单胺氧化酶(MAO)活力、乙酰胆碱酯酶(AChE)活力及乙酰胆碱(ACh)含量的影响。**方法** 32只Wistar大鼠,随机分为对照组、低、中、高剂量组4组,低、中、高组大鼠饲料中分别加入明矾1457、2914、4371mg/kg,染毒30d,测定大鼠脑组织中MAO活力、AChE活力及ACh含量。**结果** 随着饲喂明矾量的增加,各剂量组大鼠脑系数逐渐升高,中、高剂量组脑系数高于对照组($P<0.01$);高剂量组MAO活力高于对照组($P<0.05$),低、中剂量组与对照组比较差异无统计学意义($P>0.05$);各剂量组大鼠脑组织中AChE活力呈上升趋势,中、高剂量组高于对照组($P<0.01$);中、高剂量组ACh含量低于对照组($P<0.01$)。**结论** 明矾的摄入在一定程度上影响大鼠脑组织中MAO、AChE活力及ACh含量,损伤大鼠脑神经系统。

关键词: 明矾;单胺氧化酶;乙酰胆碱酯酶;乙酰胆碱;大鼠

Effects of alum on activities of monoamine oxidase and acetylcholinesterase and content of cholinesterase in the brain of rats

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Abstract:

Objective To study effects of alum on monoamine oxidase(MAO) and acetylcholinesterase(AChE) activities, and the acetylcholine(ACh) content in the rat brain. **Methods** Thirty-two Wistar rats were randomly divided into four groups: the control group, the low dose group, the moderate dose group and the high dose group, and the 3 treatment groups were administrated alum for 30d, the doses of alum in food were 1457, 2914 and 4371mg/kg, respectively. The brain coefficients were calculated. Activities of MAO and AChE, and content of Ach were detected. **Results** The brain coefficients were increased with the increase of alum in the treatment groups. Compared with the control group, the brain coefficients in the moderate and high dose groups were significantly higher ($P<0.01$); level of the MAO activity in the high dose group was significantly increased ($P<0.05$), while the low and moderate dose groups had no significant difference ($P>0.05$). There was an increasing trend in the AChE activity with increase of alum in the 3 treatment groups, and the AChE activity in the moderate and high dose groups were significantly higher than in the control group ($P<0.01$). Rats with moderate and high alum administration showed a significant decline in the brain ACh content compared with the control rats ($P<0.01$). **Conclusion** Alum can affect activities of MAO and AChE, and content of ACh, and cause damage to the central cholinergic system, which may be one mechanism of alum's neurotoxic effect on rats.

Keywords: Alum; Monoamine oxidase; Acetylcholinesterase; Acetylcholine; Rats

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