

论著

# 胚胎早期低剂量甲基汞暴露对大鼠的行为致畸效应

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**摘要** 目的:探讨胚胎早期甲基汞低剂量暴露对大鼠仔代的行为致畸效应。方法:Wistar 大鼠雌性80只、雄性20只以3:1 交配,大鼠随机分为4组,于妊娠6~9 d 用氯化甲基汞0.00 mg/(kg·bw·d)、0.01 mg/(kg·bw·d)、0.05 mg/(kg·bw·d)、2.00 mg/(kg·bw·d) 灌胃染毒。进行胚胎毒性研究;记录201 只仔鼠出生后早期生理发育和神经行为发育指标;10 周龄的仔鼠32 只进行操作行为测试;24 只进行脑组织形态学检查和单胺类神经递质(去甲肾上腺素、多巴胺、52羟色胺)测定(荧光分光光度法)。结果:胚胎早期低剂量甲基汞对胎仔体重及尾长发育有抑制作用( $P < 0.01$ ),暴露组仔鼠的体重增长、早期生理发育及神经行为发育滞后于对照组( $P < 0.05$  或  $P < 0.01$ );操作行为成绩均比对照组降低( $P < 0.05$  或  $P < 0.01$ );3 个暴露组仔鼠均未观察到脑组织形态学改变,但单胺类神经递质含量均比对照组显著增高( $P < 0.05$  或  $P < 0.01$ )。所有结果呈现出剂量2反应关系。结论 胚胎早期低剂量甲基汞暴露有一定的胚胎毒性,可影响仔鼠神经系统的发育,导致行为改变。

**关键词** [行为致畸](#) [仔代](#) [甲基汞](#) [大鼠](#)

## NEUROBEHAVIORAL TERATOGENIC EFFECT ON RAT OFFSPRING AFTER EARLY PREGNANT EXPOSURE TO METHYLMERCURY AT LOW DOSE

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**Abstract** Purpose : To detect the neurobehavioral teratogenic effect of methylmercury exposure at early embryonic stage on off spring. Methods : Methylmercury chloride was force2fed to the Wistar rat s during the 6th~9th day after conception at doses of 0.00 mg/(kg·bw·d), 0.01 mg/(kg·bw·d), 0.05 mg/(kg·bw·d) and 2.00mg/(kg·bw·d) . The toxicity in the embryos , developmental landmarks of 201 off spring and operant behavior test of 32 off spring were measured. The brain morphology and the levels of monamine neurot ransmitters (NA ,DA , 52HT) were tested in 24 off spring at 10 weeks old. Double blind was used in whole experiment . Results :In 3 exposure groups , the body weight and tail development of embryos were slower (  $P < 0.01$  ) , the early developmental landmarks and neurobehavioral development of off spring were delayed (  $P < 0.05$  ) , and their performances in operant behavior were worse than those of the cont rol group (  $P < 0.05$  ) . No histomorphological alteration in the off spring brains was observed in all groups. The levels of monamine neurot ransmitters in brains of 3 exposure groups were increased (  $P < 0.05$  ) . Some result s showed a dose2effect relationship. Conclusion : Early pregnant exposure to methylmercury at a low dose showed some embryotoxicity and adverse effect s on the developing nervous system of the rat off spring and also resulted in neurobehavioral changes.

**Keywords** [methylmercury](#) [behavioral teratogenicity](#) [off spring](#) [Wistar rat](#)

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