

基础研究

新型多酸化合物NCW-6的毒理学安全性评价

原野|李金华|王娟|张士尧|鞠文|齐燕飞|李娟|徐坤

(吉林大学公共卫生学院卫生检验教研室|吉林 长春130021)

摘要:

目的: 评价具有抗病毒活性的多酸化合物NCW-6的安全性, 阐明NCW-6的毒性及潜在的危险。 方法: 依据新药临床前毒理学评价方法进行NCW-6经口急性毒性实验和致畸敏感期实验。急性毒性实验中, 将健康的昆明小鼠随机分为7组, 每组10只, 雌雄各半; 给药剂量最低为4 000.00 mg·kg⁻¹、最高为 6 000.00 mg·kg⁻¹, 组距为400.00 mg·kg⁻¹; 经口灌胃1次给药, 观察给药后14 d小鼠的中毒表现, 记录死亡数, 用Bliss法计算半数致死剂量(LD₅₀); 致畸敏感期实验中, 孕鼠随机分为5组, 每组至少20只; 给药组剂量分别为91.7、366.8和1 467.5 mg·kg⁻¹; 阴性对照组给予5 mL·kg⁻¹ 蒸馏水, 于受孕后第6~15天连续给药, 每天灌胃1次; 阳性对照组于妊娠第10天一次灌胃给予130 mg·kg⁻¹ 的维甲酸; 各组孕鼠于孕期第 20天 颈椎脱臼处死, 检查受孕情况, 记录黄体数、活胎数、死胎数和吸收胎数等, 做胎鼠一般外观检查(体质量、身长、尾长和外观有无异常), 取胎鼠雌雄各半行内脏形态检查和骨骼形态检查。结果: 急性毒性实验, NCW-6的LD₅₀ 为5 869.9 mg·kg⁻¹, 属于无毒化合物。致畸敏感期实验, 3 个给药组孕鼠的体质量和增重与阴性对照组比较差异无统计学意义(P>0.05), 各给药组胎鼠的平均体质量、身长、尾长以及平均胎质量、窝质量与阴性对照组比较差异无统计学意义(P>0.05), 各给药组胎鼠外观、内脏畸形率、骨骼畸形率与阴性对照组比较差异无统计学意义(P>0.05)。结论: NCW-6属于无毒化合物, 且对大鼠无致畸作用, 具有深入研究开发的价值。

关键词: 金属氧酸盐; 急性毒性; 致畸敏感期; 毒理学

Evaluation on toxicological security of new polyoxometalates NCW-6

YUAN Ye|LI Jin-hua|WANG Juan|ZHANG Shi-yao|JU Wen|QI Yan-fei|LI Juan|XU Kun

(Department of Health Laboratory|School of Public Health|Jilin University|Changchun 130021| China)

Abstract:

Abstract: Objective To evaluate the safety of a polyoxometalates NCW-6 and clarify the toxicity and potential hazard of NCW-6. Methods Orally acute toxicity test and teratogenic sensitivity test of NCW-6 were performed according to the pre-clinical toxicological evaluation for new drugs. In acute toxicity test, the healthy Kunming mice were randomly divided into 7 groups(n=10) with half of male and female, the maximum dose was 6 000.00 mg·kg⁻¹ and the minimum dose was 4 000.00 mg·kg⁻¹ with 400.00 mg·kg⁻¹ class interval. The representation of mice was observed 14 d after administered by oral gavage once and the death number was recorded and the LD₅₀ was calculated. In teratogenic sensitivity test, the pregnant rats were randomly divided into 5 groups and there were 20 rats in each group at least. The NCW-6 doses were 91.7, 366.8 and 1 467.5 mg·kg⁻¹ in three treatment groups. 5 mL·kg⁻¹ distilled water was administered in negative control group, continuously by oral gavage 5-16 d after pregnancy, once a day; 130 mg·kg⁻¹ retinoic acid was administered by oral gavage on the 10th day after pregnancy. The pregnant rats were killed by cervical dislocation on the 20th day, the number of corpus luteum, implantation, live fetuses, resorption fetuses and dead fetuses were recorded. The weight, body length, tail length and appearance of fetal rats were observed. The osteological features examination and organ features examination were performed in fetal rats with half of male and female. Results In acute toxicity test, the LD₅₀ of NCW-6 was 5 869.9 mg·kg⁻¹. The results of teratogenic sensitivity test showed that the body weight and weight gain of pregnant rats in three treatment groups had no significant differences compared with negative control group (P> 0.05); the average fetal weight, body length, tail length and the average birth weight, litter weight of fetal rats in treatment groups had no significant differences compared with negative control group (P> 0.05); and the appearance, visceral deformity rate and bone malformation rate of fetal rats in treatment groups had no significant differences compared with negative control group (P> 0.05). Conclusion NCW-6 has no toxicity and no teratogenic effects on rats, which deserves further research.

Keywords: polyoxometalates; acute toxicity; teratogenic sensitive period; toxicology

收稿日期 2011-04-20 修回日期 网络版发布日期 2012-01-28

扩展功能

本文信息

- ▶ Supporting info
- ▶ PDF(2554KB)
- ▶ [HTML全文]
- ▶ 参考文献[PDF]
- ▶ 参考文献

服务与反馈

- ▶ 把本文推荐给朋友
- ▶ 加入我的书架
- ▶ 加入引用管理器
- ▶ 引用本文
- ▶ Email Alert
- ▶ 文章反馈
- ▶ 浏览反馈信息

本文关键词相关文章

- ▶ 金属氧酸盐; 急性毒性; 致畸敏感期; 毒理学

本文作者相关文章

PubMed

DOI:

基金项目:

通讯作者: 李娟

作者简介: 原野 (1986-) |男|吉林省长春市人|在读医学硕士|主要从事多酸化合物活性及毒性研究。

作者Email: (Tel: 0431-85619419, E-mail: li_juan@jluedu.cn)

参考文献:

本刊中的类似文章

文章评论

反馈人	<input type="text"/>	邮箱地址	<input type="text"/>
反馈标题	<input type="text"/>	验证码	<input type="text"/> 0778

Copyright by 吉林大学学报(医学版)