中国公共卫生 2013, 29(1) 79-81 DOI: 10.11847/zgggws2013-29-01-25 ISSN: 1001-0580 CN: 21-1234/R

论文

亚慢性镉暴露致五指山猪肾脏脂质过氧化损伤

吴小胜[1,2], 魏帅[2], 杨鸣琦[1], 魏益民[2], 郭波莉[2]

1. 西北农林科技大学动物医学院, 陕西 杨陵 712100;
2. 中国农业科学院农产品加工研究所 农业部农产品加工与质量控制重点开放实验室

摘要:

目的 研究亚慢性镉暴露对五指山猪肾脏脂质过氧化反应的影响,探讨长期低剂量镉暴露肾脏损伤的机制。方法 3月龄健康五指山猪随机分为对照组、低、中、高剂量组,分别饲喂含镉0、0.5、8.0、32.0 mg/kg的基础日粮,连续饲喂100 d后处死,测定猪体重、肾脏脏器系数、肾脏脂质过氧化指标。结果 在镉暴露20、40、60、80、100 d后低剂量组猪体重分别为(16.8±1.5)、(22.9±1.8)、(28.4±1.7)、(32.1±1.2)、(37.3±1.8)kg,与对照组(12.3±2.6)、(16.6±3.2)、(21.4±3.2)、(25.6±3.2)、(30.0±3.5)kg比较,差异均有统计学意义(P<0.05);镉暴露100 d后,低、中、高剂量组过氧化氢酶(CAT)活力分别为(14.1±3.2)、(17.1±1.3)、(14.5±1.1)U/(mg • prot),与对照组(10.8±1.8)U/(mg • prot)比较,差异均有统计学意义(P<0.05);总超氧化物歧化酶(SOD)、谷胱甘肽过氧化物酶(GSH-Px)活力及丙二醛(MDA)含量与对照组差异无统计学意义。结论 ≤32.0 mg/kg的亚慢性镉暴露不影响五指山猪的生长,且无肾脏脂质过氧化损伤作用。

关键词: 镉 五指山猪 脂质过氧化 肾脏

Subchronic cadmium exposure induces renal lipid peroxidation injuries in WZSP

WU Xiao-sheng, WEI Shuai, YANG Ming-qi, et al

Animal Medicine College, Northwest Agriculture and Forestry Science and Technology University, Yangling, Shaanxi Province 712100, China

Abstract:

Objective To study the effect of subchronic cadmium(Cd) exposure on renal lipid peroxidation reaction in Wuzhishan pig and to explore the mechanism of subchronic cadmium exposure on renal injury.Methods Sixteen healthy Wuzhishan pig of 3-month-old were fed with basal diet that contains 0 (control group),0.5(low dose group),8.0(midium dose group),and 32.0 mg/kg(high dose group) cadmium for 100 days.The kidneys of the pigs were collected at the end of the treatment to determine glutathione peroxidase(GSH-Px),total superoxide dismutase(SOD),catalase(CAT) activities,and malondialdehyde (MDA) contents,and the body weight and organ coefficient of the pigs were also determined.Results Compared with the control group,the body weight of low dose group(37.3±1.8 kg) increased significantly(P<0.05).CAT activities in low,moderate,and high Cd exposure group were 14.1±3.2,17.1±1.3,and 14.5±1.1 U/mg • prot,respectively,with significant increases compared with the control group (10.8±1.8 U/mg • prot,P<0.05).Total SOD,GSH-Px activity and MDA content showed no significant differences between different groups(P>0.05).ConclusionSubchronic cadmium exposure less than the concentration of 32.0 mg/kg does not induce renal lipid peroxidation injuries in WZSP.The antioxidant system of renal cortex may involved in mechanisms of cadmium nephrotoxicity.

Keywords: cadmium Wuzhishan pig lipid peroxidation kidney

收稿日期 2010-12-01 修回日期 网络版发布日期

DOI: 10.11847/zgggws2013-29-01-25

基金项目:

农业部"948"计划项目[2009-Z45(2)]

通讯作者: 魏益民,E-mail:weiyimin36@hotmail.com

作者简介:

参考文献：

[1] Satarug S,Baker JR,Urbenjapol S,et al.A global perspective on cadmium pollution and toxicity in non-occupationally exposed population
[J].Toxicol Lett,2003,137(1-2):65-83.

[2] Nordberg GF,Fowler BA,Nordberg M,et al.Handbook on the toxicology of metals
[M].Brussels:Academic Press,2007:446-486.

[3] 胡斌丽,王克跃,许洁,等.不同铁含量饲料对镉致大鼠肾毒性影响
[J].中国公共卫生,2010,26(10):1287-1288.

[4] 杨敬华,徐兆发,徐斌,等.镉致大鼠肾脏毒性机制研究
[J].中国公共卫生,2007,23(7):887-888.

[5] Liu J,Ou W,Kadiiska MB.Role of oxidative stress in cadmium toxicity and carcinogenesis
[J].Toxicology and Applied Pharmacology,2009,228(3):209-214.

[6] Bokori J,Fekete S,Glavits R,et al.Complex study of the physiological role of cadmium
[J].Acta Vet Hung,1996,44:57-74.

[7] 朱善良,陈龙,高伟,等.镉致大鼠睾丸脂质过氧及酶活性变化研究
[J].中国公共卫生,2003,19(6):707-709.

[8] 李君,潘家荣,魏益民.铅镉联合作用对大鼠肾脏脂质过氧化影响
[J].中国公共卫生,2007,23(8):957-958.

[9] Thijssen S,Maringwa J,Faes C,et al.Chronic exposure of mice to environmentally relevant,low doses of cadmium leads to early renal damage,not predicted by blood or urine cadmium levels
[J].Toxicology,2007,229(1-2):145-156.

本刊中的类似文章

1．徐孝娜, 李娅, 季爱玲, 刘寒强, 张磊, 邱雅, 侯祥红, 王枫.镉对MCF-7细胞生长和雌激素受体表达影响[J]. 中国公共卫生, 2013,29(5): 710-713
2．刘海柏, 周志衡, 雷毅雄.镉对16HBE细胞凋亡及Bal-2、Bax基因表达影响[J]. 中国公共卫生, 2013,29(3): 366-368
3．董丽娜, 王敏, 雷毅雄.正常细胞与镉转化细胞抑制消减cDNA文库构建[J]. 中国公共卫生, 2013,29(4): 512-514
4．孙亮, 赵亮, 张丽君, 石聪明, 朱绪文, 王克跃.赫章县土法炼锌致镉污染现状调查[J]. 中国公共卫生, 2013,29(4): 541-543

文章评论 (请注意:本站实行文责自负, 请不要发表与学术无关的内容!评论内容不代表本站观点.)

反馈人		邮箱地址	
反馈标题		验证码	1362