中国公共卫生 2013, 29(2) 230-232 DOI: 10.11847/zgggws2013-29-02-24 ISSN: 1001-0580 CN: 21-1234/R

论文

重组人乳铁蛋白小鼠喂养毒理学评价

刘珊, 王小丹, 冯晓莲, 李晨汐, 汪会玲, 徐海滨

中国疾病预防控制中心营养与食品安全所, 北京 100021

摘要:

目的 探讨牛乳腺生物反应器表达的人乳铁蛋白对小鼠亚急性毒性。方法 断乳昆明小鼠48只,雌雄各半,随机分为2组,对照组给予AIN-93啮齿类实验动物纯合饲料,人乳铁蛋白组饲料用重组人乳铁蛋白替代AIN-93中的酪蛋白制成,进行小鼠28 d喂养试验,每周记录体重和进食量,实验结束时分析血液、取脏器称重并进行病理组织学检查。结果 人乳铁蛋白组雄性小鼠终体重为(38.3±3.1)g,高于对照组的(34.9±4.3)g;人乳铁蛋白组雌性小鼠终体重为(31.2±2.4)g,对照组终体重为(31.2±1.9)g,2组差异无统计学意义;与对照组比较,人乳铁蛋白组小鼠食物利用率、血常规、血生化、脏器重量、脏体比和病理组织学检查结果未见明显改变。结论 牛乳腺生物反应器表达的重组人乳铁蛋白对小鼠未见亚急性毒性作用。

关键词: 人乳铁蛋白 转基因 牛乳腺生物反应器 28 d喂养试验

Twenty-eight days feeding study on human lactoferrin expressed by cattle mammary bioreactor in mice

LIU Shan, WANG Xiao-dan, FENG Xiao-lian, et al

Institute for Nutrition and Food Safety, China Center for Disease Control and Prevention, Beijing 100021, China

Abstract:

Objective To investigate sub-acute toxicity of recombinant human lactoferrin(rhLf) from cattle mammary bioreactor in mice.Methods Groups of 12 male and 12 female weaning Kuming mice were fed with AIN-93 purified diets for laboratory rodents(control group) or rhLf modified diets(treated group),in which 20 g casein/100 g AIN-93 diet was substituted for 20 g rhLf/100 g diet,for a consecutive 28-day period.Body weight and food intake were recorded weekly.At the end of the study,blood was collected for routine and biochemical blood examination and organs were dissected and weighted;histopathological examination was accomplished simutaneously.Results The final mean body weight of rhLf-treated male mice was 38.3 g?3.1 g,higher than that of the control (34.9 g?4.3 g) significantly,but there was no significant difference between two female groups(31.2 g?2.4 g in the treated and 31.2 g?1.9 g in the control).Food utilization rate,routine blood examination and biochemistry,absolute and relative weight of organs,and histopathology of organs of treated male and female mice were similar to those of the controls.Conclusion No evidence of sub toxicity was observed in the mice administered with recombinant human lactoferrin for 28 days.

Keywords: human lactoferrin transgene cattle mammary bioreactor 28-days feeding study

收稿日期 2012-01-21 修回日期 网络版发布日期

DOI: 10.11847/zgggws2013-29-02-24

基金项目:

国家863计划项目(2007AA100506);转基因生物新品种培育科技重大专项(2008ZX08011-005)

通讯作者: 徐海滨,E-mail:hbxu1231602@vip.sina.com

作者简介:

参考文献:

[1] Makiko Y,Masaya I,Yoshihiko I,et al.A 12-month feeding study of reproduction/development in rats fed meat/milk powder supplemented diets derived from the progeny of cloned cattle produced by

somatic cell nuclear transfer[J].J Reprod Dev,2008,54(5):321-334.
[2] Center for Veterinary Medicine,US Food and Drug Administration.Animal cloning:a risk assessment [EB/OL].(2008-01-14).[2011-07-21].http://www.fda.gov/AnimalVeterinary/SafetyHealth/AnimalCloning/ucm055489.htm.
[3] European Food Safety Authority.Update on the state of play of animal cloning[J].EFSA Journal,2010,8(9):1784.
[4] 朱小甫,渠敬峰,吴旭锦,等.转基因动物乳腺生物反应器研究进展[J].畜牧兽医杂志,2007,26(3):50-52.
[5] 张艳杰.乳铁蛋白的功能特性及其在婴儿配方奶粉中的应用[J].中国乳品工业,2005,33(2):33-36.
[6] Atsushi I,Syoko U,Hirohisa S,et al.Human trial of liposomal lactoferrin supplementation for periodontal disease[J].Biol Pharm Bull,2010,33(10):1758-1762.
[7] Jochen W,Andreas V.Antimicrobial peptides:the ancient aim of the human immune system [J].Virulence,2010,1(5):440-464.
[8] Haversen L,Kondori N,Baltzer L,et al.Structure-microbicidal activity relationship of synthetic fragments derived from the antibacterial α-helix of human lactoferrin[J].Antimicrob Agents Chemother,2010,54(1):418-425.
[9] Paolo M,Matteo R,Silvia C,et al.Bovine lactoferrin supplementation for prevention of late-onset sepsis in very low-birth-weight neonates[J].JAMA,2009,302(13):1421-1428.
[10] Shinichi S,Yoshiharu T,Koko M,et al.Lactoferrin promotes hyaluronan synthesis in human dermal fibroblasts[J].Biotechnol Lett,2011,33:33-39.
[11] 施向东,卢洁.转基因食品安全与发展[J].中国公共卫生,2007,23(8):1014-1016.
[12] 刘珊,冯晓莲,李晨汐,等.重组人乳铁蛋白的遗传毒性研究[J].癌变 畸变 突变,2011,23(5):384-387.

本刊中的类似文章

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	7393