中国公共卫生 2012, 28(1) 61-63 DOI: 10.11847/zgggws2012-28-01-25 ISSN: 1001-0580 CN: 21-1234/R

论文

海洋胶原肽对窒息仔鼠神经认知功能改善作用

徐琳琳, 董文红, 赵洁, 赵佳夕, 于永超, 许雅君, 李勇

北京大学公共卫生学院营养与食品卫生学系, 北京100191

摘要:

目的 探讨海洋胶原肽对窒息仔鼠近期及远期神经认知功能影响。方法 70只健康成年SD大鼠交配受孕,孕鼠于临产前1 d行延迟剖宫产术,建立新生仔鼠窒息模型;窒息仔鼠随机分为窒息组和海洋胶原肽低(0.225%)、中(0.45%)、高(1.35%)剂量组,正常分娩仔鼠为对照组;观察仔鼠出生后生理发育和神经反射达标情况,并在断乳时和3月龄分别进行Morris水迷宫实验。结果 窒息组和3个MCPs干预组生理和神经反射指标达标时间均长于对照组(P<0.05);Morris水迷宫实验结果显示,断乳时窒息组和3个MCPs干预组逃避潜伏期较对照组延长(P<0.05);对照组、窒息组、低、中、高MCPs组穿越平台次数分别为(7.00±1.706)、(3.92±1.505)、(4.33±1.497)、(4.50±1.931)、(4.67±1.371),差异有统计学意义(P<0.05);3月龄时,与窒息组比较,3个MCPs干预组大鼠逃避潜伏期明显缩短(P<0.01)、穿越平台次数明显增多(P<0.05)。结论 一定剂量的海洋胶原肽能够改善窒息仔鼠远期学习记忆能力。

关键词: 窒息 海洋胶原肽 神经发育 学习记忆

Effect of marine collagen peptides on neurocognitive function in asphyxial newborn rats

XU Lin-lin, DONG Wen-hong, ZHAO Jie

Department of Nutrition and Food Hygiene, School of Public Health, Peking University, Beijing 100191, China

Abstract:

Objective To investigate the effect of marine collagen peptides(MCPs)on short-term and long-term neurocognitive function in asphyxial newborn SD rats.Methods 70 healthy adult SD rats were selected and mated.Asphyxia model was established by "delayed cesarean section" within the last day of gestation.Then asphyxial newborn SD rats were randomly divided into a asphyxial group and the low (0.225%),moderate(0.45%),and high(1.35%)MCPs intervention groups.The normal labor newborn rats were used as the control group.The physiological and neural development index of the newborn rats were determined and Morris water maze test were performed for 21-day old and three-month old rats,respectively.Results The time to expected physiological and neural development index of the asphyxial group and three MCPs intervention groups were significantly longer than that of the control group(P<0.05).Morris water maze test indicated that,at the time of 21 day,compared with the control group,the asphyxial group and three MCPs intevention groups had longer escape latency(P<0.05).The number of platform crossing of the control group,the asphyxial group,the low,moderate and high MCPs groups were 7.00±1.706,3.92±1.505,4.33±1.497,4.50±1.931,and 4.67±1.371, with significant differences(P<0.05).At the time of three-month,the escape latency of the three MCPs intervention groups were significantly shorter than that of the asphyxial group(P<0.01)and the times of platform crossing were significantly more than that of the asphyxial group(P<0.05).Conclusion Certain amount of MCPs could improve the long-term learning and memory ability of asphyxial newborn rats.

Keywords: asphyxia marine collagen peptides neural development learning and memory

收稿日期 2011-03-29 修回日期 网络版发布日期

DOI: 10.11847/zgggws2012-28-01-25

基金项目:

通讯作者: 许雅君,E-mail:yajun_xucn@126.com

作者简介:

参考文献:

[1] Milsom I,Ladfors L,Thiringer K,et al.Influence of maternal,obstetric and fetal risk factors on the

prevalence of birth asphyxia at term in a Swedish urban population[J].Acta Obstet Gynecol Scand, 2002,81:909-917.
[2] 王军波,张召锋,裴新荣,等.海洋胶原肽对高胰岛素血症模型大鼠糖脂代谢的影响[J].卫生研究,2010,39(2):143-146.
[3] Xu Y,Han X,Li Y.Effect of marine collagen peptides on long bone development in growing rats[J].J Sci Food Agric,2010,90(9): 1485-1491.
[4] 梁锐,张召锋,赵明,等.海洋胶原肽对剖宫产大鼠伤口愈合促进作用[J].中国公共卫生,2010,26(9):1144-1145.
[5] Yang R,Zhang Z,Pei X,et al.Immunomodulatory effects of marine oligopeptide preparation from Chum Salmon(Oncorhynchus keta)in mice[J].Food Chem,2009,113(2):464-470.
[6] Bjelke B,Andersson K,Ogren SO,et al.Asphyctic lesion:proliferation of tyrosine hydroxylase-immunoreactive nerve cell bodies in the rat substantia nigra and functional changes in dopamine neurotransmission[J].Brain Res,1991,543(1):1-9.
[7] Strackx E,van den Hove DL,Steinbusch HP,et al.Fetal asphyxia leads to a decrease in dorsal raphe serotonergic neurons[J].Dev Neurosci,2008,30(5):358-366.
[8] Pei X,Yang R,Zhang Z,et al.Marine collagen peptide isolated from Chum Salmon(Oncorhynchus keta) skin facilitates learning and memory in aged C57BL/6J mice[J].Food Chem,2010,118(2): 333-340.

本刊中的类似文章

1. 王立民, 宋肖垚, 曹曦予, 吴艳萍, 李百祥.亚氯酸钠对大鼠中枢神经系统MBP、S100B蛋白影响[J]. 中国公共卫生, 2013,29(5): 707-709
2. 金连海, 李治伟, 赵行宇, 沈楠, 唐锐先, 陈进来, 李洁, 罗正里.大豆异黄酮对缺氧大鼠学习记忆能力影响[J]. 中国公共卫生, 2013,29(3): 373-375
3. 杨丽萍, 袁福宁, 李新民, 闫国立, 詹向红, 陈四清.恐伤母鼠对仔鼠空间学习及记忆能力影响[J]. 中国公共卫生, 2013,29(2): 214-216
4. 苏菁, 李宏杰, 周洪霞, 李明艳, 曹福源, 王茜, 刘楠, 郑国颖, 李清钊, 蒋守芳.氟、砷染毒对大鼠空间学习记忆影响及机制[J]. 中国公共卫生, 2013,(6): 837-840
5. 李亚, 陈亚静, 史建勋, 张冠雄.慢性应激对小鼠学习记忆功能影响及突触作用[J]. 中国公共卫生, 2012,28(12): 1602-1604
6. 陈默然, 高俊涛, 李妍, 李强, 赵行宇, 任旷, 沈楠, 潘文干.林蛙油冲剂对微波辐射大鼠学习记忆影响[J]. 中国公共卫生, 2011,27(12): 1591-1593
7. 王健, 张永泽, 康美玉, 潘丽兰, 史玉, 高玉梅, 李凤铭.同型半胱氨酸对大鼠学习记忆及海马APP代谢影响[J]. 中国公共卫生, 2012,28(7): 948-950
8. 史长华, 路国兵, 李玉红, 许倩, 张卓.电磁辐射对大鼠海马超微结构及凋亡因子影响[J]. 中国公共卫生, 2011,27(11): 1446-1448
9. 段蕾, 阎智伟, 刘莹, 聂继盛.慢性苯并[a]芘暴露对大鼠学习记忆及谷氨酸受体影响[J]. 中国公共卫生, 2013,29(7): 1004-1006
10. 刘莹, 宋静, 段蕾, 牛侨.NMDAR在亚慢性染铝致大鼠学习记忆损害中作用[J]. 中国公共卫生, 2013,29(7): 1007-1009
11. 王雯, 郑艳涛, 李宁, 贾金霞, 刘欣欣, 李文杰.铅对仔鼠学习记忆及海马中IL-1β表达影响[J]. 中国公共卫生, 2011,27(10): 1273-1274
12. 陈长香, 李建民, 李淑杏, 赵雅宁.睡眠剥夺对大鼠海马区c-fos和IL-1β表达影响[J]. 中国公共卫生, 2011,27(10): 1314-1315
13. 陈默然, 高俊涛, 李妍, 李强, 赵行宇, 任旷, 沈楠, 潘文干.林蛙油冲剂对微波辐射大鼠学习记忆影响[J]. 中国公共卫生, 2011,27(12): 1591-1593
14. 汤艳, 李华, 陈润, 彭长燕, 陈卉.十溴联苯醚对大鼠学习记忆及海马神经元影响[J]. 中国公共卫生, 2011,27(6): 743-745
15. 陈长香, 李建民, 李淑杏, 赵雅宁.睡眠剥夺对大鼠海马区c-fos和IL-1β表达影响[J]. 中国公共卫生, 2011,27(10): 1314-1315
16. 陈默然, 高俊涛, 李妍, 李强, 赵行宇, 任旷, 沈楠, 潘文干.林蛙油冲剂对微波辐射大鼠学习记忆影响[J]. 中国公共卫生, 2011,27(12): 1591-1593
17. 史长华, 路国兵, 李玉红, 许倩, 张卓.电磁辐射对大鼠海马超微结构及凋亡因子影响[J]. 中国公共卫生, 2011,27(11): 1446-1448
18. 王雯, 郑艳涛, 李宁, 贾金霞, 刘欣欣, 李文杰.铅对仔鼠学习记忆及海马中IL-1β表达影响[J]. 中国公共卫生, 2011,27(10): 1273-1274

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	9909