



复合抗氧化剂对脂多糖诱导的大鼠肠道损伤的修复作用

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The Use Composite Antioxidants to Repair Intestinal Tract Injuries of Rats Induced by lipopolysaccharide

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摘要 本试验旨在通过脂多糖(LPS)诱导自由基建立大鼠肠道损伤模型,研究复合抗氧化剂对肠道损伤的修复作用。36只42日龄的SD大鼠随机分成3组,每组12只。对照组和诱导组饲喂基础饲料,修复组在基础饲料中添加复合抗氧化剂。诱导组和修复组大鼠在试验的第5、9、13和17天每千克体重腹腔注射0.8 mg LPS,对照组注射等量生理盐水。第22天时,每组选取6只大鼠,进行D-木糖灌胃试验,测定肠道吸收功能。结果表明:1)与对照组相比,诱导组大鼠的平均日增重降低,血清丙二醛(MDA)含量显著增加(P<0.05),肝脏超氧化物歧化酶(SOD)和谷胱甘肽过氧化物酶(GSH-Px)活性显著下降(P<0.05),肝脏系数下降11.13%(P<0.05),肠道D-木糖浓度下降72.72%(P<0.05),肠道麦芽糖酶活性下降65.74%(P<0.05)。2)与诱导组相比,修复组大鼠的MDA含量下降49.31%(P<0.05),肝脏SOD和GSH-Px活性分别上升40.96%和35.04%(P<0.05),肝脏系数升高(P<0.05),肠道D-木糖含量、麦芽糖酶活性和绒毛高度显著升高(P<0.05),隐窝深度显著降低(P<0.05)。由此可见,复合抗氧化剂对LPS造成的肠道损伤具有较好的修复作用。

关键词: 复合抗氧化剂; LPS; 肠道; 自由基代谢; 大鼠

Abstract: This experiment adopted rats as experimental animals to build a model of intestinal tract injuries induced by lipopolysaccharide (LPS) and to study the use of composite antioxidants on intestinal reparation. Thirty six SD rats at 42 days of age were randomly assigned to 3 groups with 12 rats in each group. The control and induction group were fed with the basal diet while the reparation group was fed with diet adding composite antioxidants in it. On day 5, 9, 13 and 17, rats in induction and reparation group were intraperitoneally injected 0.8 mg LPS per kg of body weight while rats in control group were injected the same amount of saline. On day 22 of experiment, 6 rats in each group were randomly selected and received D-xylose by gavage to determine the absorption of intestinal tract. The results showed as follows: 1) compared with the control group, in induction group, the average daily gain (ADG) of rats was decreased and the concentration of malondialdehyde (MDA) was increased significantly (P<0.05), the activities of superoxide dismutase (SOD) and glutathione peroxidase (GSH-Px) were decreased significantly (P<0.05), the liver coefficient was decreased by 11.13% (P<0.05), D-(+)-xylose concentration was decreased by 72.72% (P<0.05), and the activity of maltase was decreased by 65.74% (P<0.05) in induction group. 2) Compared with the induction group, the concentration of MDA was decreased by 49.31% (P<0.05), the activities of SOD and GSH-Px in liver were increased by 40.96% and 35.04% (P<0.05), the liver coefficient, D-(+)-xylose concentration and the activity of maltase were increased significantly (P<0.05), and the crypt depth was increased significantly (P<0.05) in reparation group. In conclusion, the composite antioxidants can repair the intestinal tract injuries induced by LPS and enhance the function of intestinal tract. [Chinese Journal of Animal Nutrition, 2011, 23 (4) : 670-676]

Keywords: composite antioxidants; LPS; intestinal tract; free radical metabolism; rats

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