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# 博落回提取物对脂多糖诱导猪应激细胞应激参数及免疫球蛋白G和超氧化物歧化酶mRNA表达的影响

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# *Macleaya cordata* Extracts: Effects on Stress Parameters and mRNA Expressions of Immunoglobulin G and Superoxide Dismutase of Cells Challenged by Lipopolysacchar in Pigs

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摘要 本文旨在研究博落回提取物对脂多糖(LPS)诱导猪应激细胞应激参数及免疫球蛋白G(*IgG*)和超氧化物歧化酶(*SOD*)mRNA表达的影响。试验选用猪胚胎背部成纤维细胞,分别用正常细胞和以LPS刺激细胞建立的应激模型进行试验,对照组采用基础培养液,土霉素组在基础培养液中添加土霉素50 μg/mL(阳性对照),博落回组在基础培养液中分别添加50、100、150 ng/mL的博落回提取物。检测IgG、溶菌酶(LSZ)、一氧化氮(NO)含量,一氧化氮合酶(NOS)、乳酸脱氢酶(LDH)活性以及*IgG*和*SOD* mRNA表达量。结果表明:1)博落回组IgG、NO和LSZ含量及NOS活性均极显著高于对照组(*P*<0.01),土霉素组IgG和LSZ含量极显著高于对照组(*P*<0.01)。2)对应激细胞和正常细胞而言,博落回组*IgG* mRNA表达量均极显著高于对照组和土霉素组(*P*<0.01),50和100 ng/mL博落回组均极显著高于150 ng/mL博落回组(*P*<0.01)。土霉素组*IgG* mRNA表达量极显著高于对照组(*P*<0.01)。100 ng/mL博落回组应激细胞*IgG* mRNA表达量极显著高于正常细胞(*P*<0.01)。3)对应激细胞和正常细胞而言,与对照组相比,添加博落回提取物50、100、150 ng/mL均极显著提高*SOD* mRNA表达量(*P*<0.01)。土霉素组*SOD* mRNA表达量极显著高于对照组和博落回组(*P*<0.01)。各组应激细胞*SOD* mRNA表达量均显著或极显著高于正常细胞(*P*<0.01)。综合各项指标,博落回提取物可提高LPS应激细胞IgG、NO和LSZ的含量及NOS活性,提高应激细胞和正常细胞*IgG*和*SOD* mRNA的表达量,总体效果优于土霉素,较好的添加浓度为50~100 ng/mL。

关键词: 博落回提取物 细胞培养 应激参数 免疫球蛋白G 超氧化物歧化酶

Abstract: This experiment was conducted to investigate the effects of *Macleaya cordata* (MC) extracts on stress parameters and mRNA expressions of immunoglobulin G (*IgG*) and superoxide dismutase (*SOD*) of cells challenged by lipopolysaccharide (LPS) in pigs. Embryo fibroblasts cells on the back of pigs were selected as the experimental material. The experiment was carried on normal cells and the stress model challenged by LPS. A basal culture medium was used in the control group, the basal culture medium supplemented with 50 μg/mL oxytetracycline was used in oxytetracycline group (negative control), and the basal culture medium supplemented with 50, 100 and 150 ng/mL MC extracts were used in MC groups, respectively. Contents of IgG, lysozyme (LSZ), nitric oxide (NO) and nitric oxide synthase (NOS), lactate dehydrogenase (LDH) activity, as while as mRNA expression levels of *IgG* and *SOD* were determined. The results showed as follows: 1) contents of IgG, NO, NOS and LSZ in MC group were all significantly higher than those in the control group (*P*<0.01), and contents of IgG and LSZ in oxytetracycline group were significantly higher than those in the control group (*P*<0.01). 2) For stressed and normal cells, *IgG* mRNA expression level in MC groups was significantly higher than that in the control group and oxytetracycline group (*P*<0.01), and 50 and 150 ng/mL MC groups were significantly higher than 150 ng/mL MC group (*P*<0.01). *IgG* mRNA expression level in oxytetracycline group was significantly higher than that in the control group (*P*<0.01). *IgG* mRNA expression level of stressed cells was significantly higher than that of normal cells in 100 ng/mL MC group (*P*<0.01). 3) For stressed and normal cells, compared with the control group, supplementation of 50, 100 and 150 ng/mL MC extracts significantly increased *SOD* mRNA expression level (*P*<0.01). SOD expression level in oxytetracycline group was significantly higher than that in the control group and MC group (*P*<0.01). *SOD* mRNA expression level of stressed cells was significantly higher that of normal cells (*P*<0.01). In conclusion, MC extracts can increase contents of IgG, NO, NOS and LSZ of stressed cells, as well as *IgG* and *SOD* mRNA expression levels both in

stressed and normal cells. The effects of MC are better than those of oxytetracycline, and the optimal level is 50 to 100 ng/mL.

Keywords: *Macleaya cordata* extracts, cell culture, stress parameters, immunoglobulin G, superoxide dismutase

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