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论著

心房钠尿肽对肺泡Ⅱ型上皮细胞的保护作用

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摘要 目的：探讨心房钠尿肽(ANP)对脂多糖（LPS）引起肺泡Ⅱ型上皮细胞(AT-Ⅱ)损伤的治疗作用。方法：分离培养AT-Ⅱ，以LPS复制大鼠AT-Ⅱ损伤模型，分别给予10-6、10-7、10-8 mol/L等不同剂量的ANP进行治疗，通过观察4 h、12 h、24 h等时点细胞培养上清液中LDH、MDA、AKP、总磷脂(TPL)水平及细胞培养上清液的表面张力(ST)变化，研究ANP对LPS引起的AT-Ⅱ损伤的治疗作用。结果：在不同剂量、不同时点条件下，各ANP组细胞培养上清液LDH、AKP活性及MDA含量均明显低于LPS组，呈明显的剂量依赖性和时间依赖性，以高剂量组(10-6)和12 h时点疗效最佳。以12 h时点为例，细胞培养上清液中AKP活性为：control (43.5±10.4) U/L,LPS (98.1±16.4) U/L,LPS+ANP(10-6) (46.4±10.5) U/L，LPS+ANP(10-7) (60.7±9.5) U/L，LPS+ANP(10-8) (91.3±13.9) U/L。LPS组细胞培养上清液中TPL含量明显低于对照组、ST水平明显高于对照组，不同剂量、不同时点的各ANP组细胞培养上清液中TPL含量均不同程度地高于对应的LPS组，各ANP组细胞培养上清液中的ST水平均低于对应的LPS组。结论：ANP可显著减轻LPS引起的AT-Ⅱ损伤，促进肺表面活性物质(PS)的合成、分泌，且该作用有明显的剂量依赖性和时间依赖性。

关键词 心钠素 呼吸窘迫综合征 肺泡
分类号 R563.1

Protective effect of atrial natriuretic peptide on alveolar type II cells

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Abstract

<FONT face=Verdana>AIM: To study the protective effect of atrial natriuretic peptide (ANP) on alveolar type II cells (AT-Ⅱ) damaged by lipopolysaccharide (LPS).
METHODS: AT-Ⅱ were placed in a 6 well cell culture cluster (0.5×106 cells/cm2) and divided into 3 groups: (1) control group (n=6), the medium consisted of RPMI-1640 without FBS. (2) LPS group (n=6), the medium consisted of RPMI-1640 without FBS supplemented with LPS (1 mg/L). (3) ANP group (n=6), the medium consisted of RPMI-1640 without FBS supplemented with LPS (1 mg/L) and ANP (10-8, 10-7, 10-6 mol/L). After 4, 12 and 24 h, the cell culture mediums of control group, LPS group and ANP (10-7 mol/L) group were collected, and those of the ANP (10-6, 10-8 mol/L) group were collected after 12 h. Alkaline phosphatase (AKP), lactate dehydrogenase(LDH), malondialdehyde(MDA), total phospholipids (TPL) and surface tension (ST) in the medium of every group were examined.
RESULTS: AT-Ⅱ were characterized by AKP staining. The contents of LDH, AKP and MDA in the medium of every ANP group were lower than those in the corresponding LPS group. The TPL content in the medium of every ANP group was higher than that in the corresponding LPS group, and the change of ST of the medium was opposite to that of TPL. The effect at 12 h was the most significant, for example, at 12 h, the activities of AKP in the mediums were: control (43.5±10.4) U/L, LPS (98.1±16.4) U/L, LPS+ANP (10-6) (46.4±10.5) U/L, LPS+ANP(10-7) (60.7±9.5) U/L, LPS+ANP(10-8) (91.3±13.9) U/L.
CONCLUSION: ANP protects the AT-Ⅱ from being damaged by LPS and promotes the secretion of pulmonary surfactants.</FONT>

Key words Atrial natriuretic factor Respiratory distress syndrome Pulmonary alveoli

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