

## 论著

### 神经生长因子通过诱导IRF-1核内转运增强PC-12细胞钠电流的表达

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摘要:

目的:初步探讨神经生长因子(nerve growth factor, NGF)和干扰素调节因子-1(interferon regulatory factor-1, IRF-1)对类感觉神经元细胞株大鼠嗜铬细胞(rat pheochromocytoma cell, PC-12)中的Na<sup>+</sup>电流变化的影响。方法:用不同浓度的NGF(0~200 ng/mL)刺激PC-12细胞,采用Real-time PCR检测 *IRF-1* mRNA表达变化,Western印迹检测IRF-1的活化。然后用全细胞膜片钳技术观察IRF-1干扰PC-12细胞对钠电流的影响。结果:低剂量NGF短时间刺激,就可以增加钠电流密度,同时这种钠电流的增加具有NGF浓度依赖性。此外,高剂量NGF刺激PC-12细胞后,细胞内的 *IRF-1* mRNA的表达明显增加,而较低剂量NGF刺激细胞后可以导致IRF-1蛋白向细胞核内转运,同时并不影响其基因水平表达。此外,当IRF-1被干扰后,NGF刺激则不会再出现钠电流升高。结论:NGF可以呈剂量依赖性地增加PC-12细胞的钠电流强度,同时这种增强受到了IRF-1的调控。

关键词: 干扰素调节因子-1 神经生长因子 PC-12细胞 钠电流密度

### Nerve growth factor increases sodium current via interferon regulatory factor-1 pathway in rat pheochromocytoma cells

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Abstract:

Objective To explore the effect of nerve growth factor(NGF) and interferon regulatory factor-1(IRF-1) on sodium current change of sensory neuron in rat pheochromocytoma cells.Methods Sensory neuron rat pheochromocytoma cells were stimulated by different concentrations of NGF( 0- 200 ng/mL), the *IRF-1* mRNA levels were examined by real-time PCR, and the activation of IRF-1 was examined by Western blot. The sodium current change was recorded by patch clamp.Results Low concentration of NGF improved the sodium current, which was concentration dependent. When exposed to high concentration of NGF, the expression of *IRF-1* mRNA in PC-12 was improved. Low concentration of NGF resulted in IRF-1 intronuclear transporting, and the expression was not affected. Sodium current did not occur in PC-12 cells when IRF-1 was blocked.Conclusion NGF can improve the sodium current in PC-12 cells concentration-dependently, and the improvement is regulated by IRF-1.

Keywords: interferon regulatory factor-1 nerve growth factor rat pheochromocytoma cell sodium current density

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