

## 论文

### 双酚A对大鼠背根神经节神经元钙离子通道电流影响

王文娟, 王军, 钱文溢, 朱勤, 肖杭

南京医科大学公共卫生学院现代毒理教育部重点实验室, 江苏南京210009

#### 摘要:

目的 探讨双酚A对大鼠背根神经节(DRG)神经元钙离子通道影响。方法 SD大鼠,周龄4~6周,采用酶消化法急性分离大鼠背根神经节神经元,分别采用全细胞膜片钳技术和激光共聚焦技术记录钙电流和KCl激发钙瞬变的变化。结果 双酚A(0.1、1、10、100 $\mu$ mol/L)呈浓度依赖性抑制大鼠背根神经节神经元钙电流,对钙通道的半数最大抑制浓度(IC<sub>50</sub>)为11.41 $\mu$ mol/L;10 $\mu$ mol/L双酚A显著改变Ca<sup>2+</sup>通道的激活特性,电流激活曲线去极化方向移动( $P<0.05$ ),该浓度双酚A同样可以抑制50 mmol/L KCl激发瞬时胞内钙浓度增加。结论 双酚A对大鼠背根神经节神经元钙离子通道具有抑制作用。

关键词: 双酚A(BPA) 钙通道 膜片钳 激光共聚焦 钙瞬变

### Effects of bisphenol A on calcium channel currents in dorsal root ganglion neurons of rats

WANG Wen-juan, WANG Jun, QIAN Wen-yi

The Ministry of Education Key Lab of Modern Toxicology, School of Public Health, Nanjing Medical University, Nangjing 210029, China

#### Abstract:

Objective To explore the effects of bisphenol A(BPA)on calcium currents in dorsal root ganglion(DRG) neuron cells of rats. Methods Ca<sup>2+</sup> currents were obtained in DRG neurons by whole-cell patch clamp technique;calcium transients induced by 50 mmol/L KCl were also observed in the neurons with laser scanning confocal microscopy assay,and the effects of bisphenol A on calcium channels were observed. Results BPA at the concentrations of 0.1,1,10,and 100  $\mu$ mol/L significantly inhibited calcium current in DRG neurons cells,with an IC<sub>50</sub> of 11.41 $\mu$ mol/L.BPA shifted the activation curve of calcium currents toward a depolarizing direction and increased the slope factor of the curve.Additionally, 10 $\mu$ mol/L BPA inhibited the increment of intracellular Ca<sup>2+</sup> concentration([Ca<sup>2+</sup>]<sub>i</sub>)induced by 50 mmol/L KCl. Conclusion BPA has significant inhibitory effects on calcium current and calcium transient invoked by KCl in dorsal root ganglion neurons.

Keywords: bispheamol A calcium channel patch clamp laser scanning confocal microscopy calcium transient

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通讯作者: 肖杭,E-mail:hxiao@njmu.edu.cn

作者简介:

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