

# 下丘脑神经元电压依赖性钾电流活动在大鼠出生后发育过程中的变化

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采用膜片钳细胞贴附式技术, 比较研究SD大鼠下丘脑神经元电压依赖性钾通道(voltage-dependent potassium channel, Kv)单通道电流活动的动力学特性, 在出生后发育过程中的变化。出生不同天数的大鼠, 其下丘脑神经元上Kv通道的电流强度和电导无显著差别( $P>0.05$ ), 通道电导接近120 pS; 单位时间内封接膜片上N个通道的开放概率的总和升高, 由第1天的 $0.19\pm 0.08$  ( $n=10$ ) 上升到第9天的 $0.30\pm 0.09$  ( $n=10$ ,  $P<0.05$ ), 单通道活动密度增加, 由 $0.14$  channel/ $\mu\text{m}^2$ 升高至 $0.26$  channel/ $\mu\text{m}^2$ 。上述结果提示大鼠下丘脑神经元在出生发育过程中, Kv单通道活动的动力学发生显著变化。

## Study on the developmental changes of Kv currents in neurons isolated from newborn rat hypothalamus

The developmental changes in Kv currents in SD rat hypothalamus neurons were studied using cell-attached mode of patch-clamp technique, which showed the current amplitude and conductance were of no significant difference ( $P>0.05$ ). Moreover, their conductance was near to 120 pS, NPo increased from  $0.19\pm 0.08$  ( $n=10$ ) at birth to  $0.30\pm 0.09$  ( $n=10$ ,  $p<0.05$ ) 9 days after birth and meanwhile the density of open Kv channels raised from 0.14 to 0.26 channel/ $\mu\text{m}^2$ . The results suggest that the kinetic property of Kv channel in SD rat hypothalamic neuron development changed significantly.

### 关键词

钾通道(potassium channel); 发育(development); 下丘脑(hypothalamus)