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PDF文档

谷氨酸对海马CA1区锥体细胞A-电流特性的影响

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利用全细胞膜片钳记录方法,在急性分离的大鼠海马CA1区锥体细胞上深入研究了谷氨酸对方波诱导的短暂性外向钾电流(IA)激活和失活特性的影响。结果发现:在谷氨酸灌流条件下, IA的激活时间常数没有明显改变(P>0.05);谷氨酸升高了A-通道稳态失活电压; 谷氨酸延长了A-电流失活时间, 并具有电压依赖性。实验结果说明了谷氨酸从不同的方面调控着A-通道, 对A-通道稳态失活电压依赖性的改变可能是其调控A-通道的主要途径。

EFFECTS OF GLUTAMATE ON THE PROPERTIES OF TRANSIENT OUTWARD POTASSIUM CHANNELS IN CA1 PYRAMIDAL CELLS OF RAT HIPPOCAMPUS

The effects of different glutamate concentrations on the properties of transient outward potassium channels (IA) were studied in acutely dissociated pyramidal neurons of the area CA1 in rat hippocampus at postnatal ages of day 7-14 with whole cell configuration of patch clamp technique. The results showed that there was no obvious difference in the activation time of IA between the control and glutamate group, while the steady state inactivated voltage of IA was increased and the decay time (τ) was lengthened after application of glutamate. In brief, there may exist a main way that glutamate does its excitoxicity in the central nervous system though the regulation of the steady state inactivated voltage and the decay time of IA.

关键词

谷氨酸(Glutamate); 海马神经元(Hippocampal neurons); A-电流(A-currents); 大鼠(Rat)