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Corticosterone Induces Rapid Increase in the Amplitude of Inhibitory Response in Hippocampal Synapses with Asynchronous GABA Release

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Abstract

© 2016, Springer Science+Business Media New York. Experiments were performed on cultured slices of rat ventral hippocampus. Using extracellular stimulation and patch clamp recording from pyramidal neurons in the hippocampal CA1 area, we studied characteristics of GABAergic synapse formed on these neurons by cholecystokinin-expressing interneurons. This synapse was characterized by asynchronous release of GABA and depolarization-induced suppression of inhibitory response. It was observed that administration of corticosterone increased the amplitude of evoked inhibitory postsynaptic currents in 5 minutes, but the paired ratio did not significantly change. Obtained data reflect that corticosterone can induce rapid genome-independent effects on inhibitory neurotransmission in one of hippocampal synapses.

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Keywords

asynchronous release, corticosterone, GABA, hippocampus, interneuron