
МАТЕРИАЛЫ КОНФЕРЕНЦИИ
И ШКОЛЫ

**CALCIUM-PERMEABLE AMPA RECEPTORS ARE ABSENT
IN THE EXCITATORY SYNAPSES OF PYRAMIDAL CELLS IN BRAIN TISSUE
OBTAINED FROM TEMPORAL LOBE EPILEPSY PATIENTS**

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The considerable effort of the researchers is currently directed at the studies of the mechanisms of seizure conditions and epileptogenesis. However, the main bulk of the data is obtained from the animal models, which inevitably raises the question of the translatability of the achieved results. For example, the presence of calcium-permeable (CP) AMPA receptors was previously demonstrated in the synapses of cortical and hippocampal pyramidal cells in different seizure models in rodents (Malkin et al. 2016; Amakhin et al. 2018; Rajasekaran et al. 2012). We investigated the presence of CP-AMPA receptors in the glutamatergic synapses of the cortical pyramidal cells of patients with refractory temporal lobe epilepsy (TLE). The experiments we conducted in acute slices of temporal cortex regions that were surgically removed from the epileptic foci of the patients. Excitatory

synaptic currents were elicited in the slices by electrostimulation and recorded using whole-cell patch-clamp at -80 mV. The contribution of CP AMPA receptors to the synaptic current was estimated using the bath application of their specific antagonist IEM-1460 ($100 \mu\text{M}$). We did not observe any significant effect of IEM-1460 on the amplitudes of excitatory synaptic responses in pyramidal cells in the human epileptic temporal cortex ($n = 4$). These results are in contrast with the data obtained in rodent models of TLE, such as the lithium-pilocarpine model, which indicates possible differences in the mechanisms of seizure generation and epileptogenesis in these two models.

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