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Modified Recording Chamber for Sustained Kainate-Induced Gamma Oscillations in Submerged Rat Hippocampal Slices

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Abstract

© 2016, Springer Science+Business Media New York. Fast neuronal network oscillations in an in vitro model are a challenging task. Here, we report that sustained gamma (31–35 Hz) oscillations can be induced by kainate (50 nM) in submerged rat hippocampal slices using modified Hájos's type recording chamber with a superfusion inlet positioned close to the CA3 pyramidal cell layer. The general features of these kainate-induced gamma oscillations were similar to those previously reported in the hippocampal slices using the interface-type chamber and superfused hippocampus in vivo. We suggest that close positioning of the superfusion inlet improves oxygen supply and temperature control of the oscillation-generating network and that this modification could be useful in studies of the gamma rhythmogenesis in the submerged slices.

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Keywords

Beta, Gamma, Hippocampus, In vitro, Kainate, Oscillations, Submerged

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