

P009 Inhibitory action of DCG-IV on mossy fiber-evoked zinc transients

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At the mossy fiber synapses from CA3 hippocampal area, characterized by large concentrations of vesicular zinc, the activation of type 2 mGluRs, existing in preterminal areas, inhibits transmission and presynaptic calcium entry. In this work we addressed the question if the calcium-dependent mossy fiber zinc release was also inhibited by those receptors. The studies were made using the selective agonist of group II mGluRs (2S,2'R,3'R)-2-(2',3'-dicarboxycyclopropyl)glycine (DCG-IV), which specifically depresses responses from mossy fibers synapses. The work was performed in rat hippocampal slices, in area CA3, using the permeant zinc indicator N-(6-methoxy-8-quinolyl)-para-toluenesulfonamide (TSQ). We have also measured presynaptic calcium signals, using the calcium indicator Fura-2/AM, and monitored transmission by recording extracellular field potentials. The responses were induced by single electrical stimulation applied at the mossy fiber tract. We have observed, in the presence of DCG-IV (1 μ M), a large depression of the mossy fiber zinc changes and field potentials and a small reduction of the corresponding calcium transients, to 13 ± 8 % (n = 5), 19 ± 5 % (n = 7) and 62 ± 8 % (n=3) of control, respectively, being the effects reversible. The results are in agreement with the idea that zinc and glutamate are co-released since they show a correspondence between the inhibitory effect of DCG-IV on the zinc signals and on synaptic transmission. (Supported by plurianual of CNC).