Title: Excitatory and inhibitory amino-acidergic determinants of the pressure - induced neuronal hyperexcitability in rat hippocampal slices

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Abstract: In a previous study we found that the intrinsic excitability of the hippocampal CA1 pyramidal cells increased under helium pressure (80 bar). We presently show that drugs inhibiting gamma-aminobutyric acid (GABA) uptake or facilitating GABA binding partially reversed the pressure-induced hyperexcitability of the CA1 pyramidal cells. When these drugs were simultaneously applied with 2-D,L-aminophosphonovaleric acid, a specific antagonist of N-methyl-D-aspartate (NMDA) receptors, the effect of pressure on the neuronal excitability was nearly abolished. These results suggested that the observed pressure-induced hyperexcitability of pyramidal cells resulted from reduced efficiency of GABA transmission and facilitated excitation mediated by NMDA receptors.

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