

A study in rat brain cortex synaptic vesicles of endogenous ligands for n-methyl-d-aspartate receptors

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The presence of endogenous ligands for the N-methyl-d-aspartate receptor was looked for in highly purified rat brain cortex synaptic vesicles, the contents of which were extracted and fractionated by gel filtration on Sephadex G-10, or by three different high-voltage electrophoresis procedures. The presence of endogenous ligands was detected by their ability to compete with 50 nM L-[3H]glutamate for binding to whole rat brain N-methyl-d-aspartate receptors. The receptor preparations used were those present in purified postsynaptic densities, in which the quisqualate receptors were blocked by 10 μ M quisqualate. Synaptic vesicles had a high content of N-methyl-d-aspartate receptor ligands, which on fractionation always coincided with glutamate or aspartate. A variable and very small amount of a highly acidic endogenous ligand was also found. The latter substance did not coincide in the electrophoresis with homocysteic, cysteic, quinolinic, cysteine sulphonic or homocysteine sulphonic aci