E109 Effects of Taurine on Spontaneous Oscillatory Activity in The Rat Thalamocortical Slice.

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Taurine (2-aminosulfonic acid) is present in high concentrations in the central nervous system. Since taurine exerts inhibitory action on neuronal activity, the possibility has been raised that it reduces seizure activity. In this study, the effects of taurine were studied on seizure activity in the rat thalamocortical slices using field excitatory postsynaptic potential(fEPSP) recording. To induce spontaneous seizure, slices were incubated in Mg^{++}- free artificial cerebrospinal fluid (ACSF) for 20 - 40 mins at 30° C. When perfused with Mg++-free ACSF, thalamocortical slice exhibited spontaneous activity, which consisted of 2-6 second long bursts of activity every 15-30 seconds. Seizure activity was abolished in the presence of taurine in a dose dependent manner(1mM - 10mM). Bicuculline, $GABA_A$ receptor antagonist, blocked the inhibitory effect of taurine, while baclofen, $GABA_B$ receptor antagonist, did not. The inhibitory effect was mimicked by GABA at lower concentrations. However, taurine was different from GABA in that spontaneous activity was potentiated after washout of taurine, which prolonged for more than 1hr. The afterpotentiation was not blocked by either glutamate receptor antagonist or GABA receptor antagonist. These result suggests that taurine is not suitable for the use of anticonvulsant.

E110 Cross-specific Association of Intracelluar Transglutaminase with Plasma Fibronectin and Its Application for the Quantitation of Human Erythrocyte Transglutaminase

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Complex formation between human erythrocyte transglutaminase and plasma fibronectin has been reported previously. This Ca^{2+}-independent interaction does not involve any covalent cross-linking. Binding of intracelluar transglutaminase with fibronectin between different species has been investigated further by non-denaturing gel electrophoresis. Activity- and immuno-staining of these gels showed that chicken plasma fibronectin could associate with chicken, mouse, or human erythrocyte transglutaminase, respectively. Whereas, plasma fibronectin from human could form the complex with the erythrocyte transglutaminase from human or mouse but not with the one from chicken. Modified sandwich ELISA using the tight interaction between human erythrocyte transglutaminase and plasma fibronectin has been carried out for the quantitation of transglutaminase molecules. The result indicated that 1 μl of human erythrocyte lysate contained ca. 46 ng of transglutaminase. Since this amount of the enzyme (0.58 pmoles based on the molecular weight of 80 kDa for human erythrocyte transglutaminase) was derived from 1.39×10^7 cells, the copy number of transglutaminase could be calculated to be ca. 2.5×10^4 molecules per cell.