Seizure activity is associated with a wide range of local biochemical changes affecting, among others, amino acid neurotransmitters. Several studies have shown local changes in transmitter amino acid levels after status epilepticus induced by systemic administration of several chemoconvulsants. Furthermore, local changes in amino acid levels have been demonstrated in the kindling model of epilepsy. We studied the local changes in transmitter amino acids in partial and secondarily generalized seizures after picrotoxin microperfusion in rat hippocampus.

We used a CMA/120 system for freely moving animals. Rat hippocampus was perfused with Ringer's solution through CMA/12 microdialysis probes at a flow rate of 2 μl/min for 3 h with continuous EEG and video recording. Dialysate samples were taken every 15 min. After 2 h, a picrotoxin solution (100–300 μM) was substituted for Ringer's solution for 5 min. Samples were analyzed by liquid chromatography with fluorescent precolumn labelling with o-phthalaldehyde and N-acetyl-L-cysteine. The same experimental protocol was repeated as many as four times in each rat, with 1-week intervals.

The effect of picrotoxin perfusion on γ-amino butyric acid (GABA), glycine, aspartate, glutamate, and taurine extracellular concentrations from consecutive dialysate samples were assessed by one-way analysis of variance. Amino acid level showed a significant decrease (p < 0.05) in aspartate, glutamate, and glycine. However, no alterations were noted in extracellular GABA and taurine levels. No significant differences between basal concentrations for each rat were evident after several probe introductions.

Effects of ACTH24 on GABA, Receptor Complex in Rat Brain.

Adrenocorticotropic hormone (ACTH) has clinical efficacy for some neurologic disorders, especially seizure disorders of childhood such as infantile spasms (IS). To analyze the anticonvulsant mechanism of ACTH, we investigated the effects of ACTH24 on γ-amino butyric acid (GABA)-stimulated MC1 receptor uptake, [3H]butylbicyclophosphorothionate (TBPS) binding, on [3H]GABA binding and on [3H]diazepam (DZP) binding in rat cerebrocortical membranes in vitro.

ACTH24 showed a dose-related inhibition of net uptake of γ-CrCl2. The maximal inhibition of ACTH24 was obtained at a concentration of 10 μM. ACTH24 had a dose-related enhanced effect on [3H]TBPS binding in the presence of 1 μM exogenous GABA. The enhanced effect of ACTH24 on [3H]TBPS binding was 42.3 ± 0.8% at a concentration of 100 μM. ACTH24 did not have a significant effect on [3H]GABA binding at concentrations of 0.1 and 1 μM. However, at concentrations of 10 and 100 μM, ACTH24 showed a statistically significant inhibitory effect on [3H]GABA binding: 15.0 ± 0.7% and 27.0 ± 2.1% inhibition as compared with control, respectively. ACTH24 also tended to have an inhibitory effect on [3H]DZP binding. Our results suggest an antagonistic effect of ACTH24 on GABA receptor, which may correlate with the potential proconvulsant activity.
sex hormones was investigated in a genetic model of generalized absence epilepsy.

Forty-eight WAG/Rij rats served as subjects: 24 males and 24 females. At age 3 months, 12 males and 12 females were gonadectomized under anesthesia; the other 24, 12 in each group, were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operated. At age 6 months, under anesthesia, all rats were sham operat...