

Effect of corticosterone on cell cultures of chick embryo retina.

Gremo, F., Porru, S. and Vernadakis, A.

Depts. of Psychiatry and Pharmacology, University of Colorado School of Medicine, Denver, Colorado 80262 USA.

We have shown that *in ovo* treatment with corticosterone results in the appearance of a subpopulation of cholinergic muscarinic receptors which differ significantly from the controls. These data suggest that the hormone could affect cell surface as well. Retinal cultures were prepared from 8-day-old chick embryos, and at day 5 the medium (DMEM - Dulbecco's Modified Eagle Medium) was replaced with DMEM + concentrations of corticosterone from 10^{-9} to 10^{-7} M. Controls received either DMEM + 10% fetal calf serum (FCS) or DMEM only (serum-free). After 24 hr all cultures received fresh DMEM + 10% FCS. Hormone-treated cultures showed a marked decrease in process development and a change in shape of neuronal aggregates. "Flat cells" showed increased proliferation and morphological change. However, cells in serum-free cultures showed an increase in process sprouting during the period of serum deprivation. Within an hour after addition of serum, the processes were retracted. Thus, hormone-treated cultures differed significantly from both control and serum-free cultures. These preliminary data support the hypothesis that the hormone directly affects cell surface, as well as causing intracellular effects. (Supported by NATO grant no. 148.80. Dr. Gremo was a Visiting Scientist and Mr. Porru a Visiting Medical Student from the University of Cagliari School of Medicine, Cagliari, Italy.)

"An SEM examination of granule cell migration in the mouse cerebellum"

Grovas, A.C.; O'Shea, K.S.

Univ. of Michigan, Dept. of Anatomy and Cell Biology, Ann Arbor, Mi., USA

In the current investigation, the inward migration of external granule cells (EGC) from the pial surface of the developing cerebellum to form the (internal) granule cell layer was examined using SEM. Cerebella from male, Swiss-Webster mice at various ages (1-20 days) were removed from the calvaria, fixed and prepared for SEM.

EGC were initially rounded, unspecialized cells forming 2-3 layers at the pial surface. With increasing development (days 5-7) EGC layers increased to 6-8 as EGC in the deeper regions elongated and a prominent gap formed between superficial and deep (pre-migratory cells) strata. During active migration (days 8-12), nests of 4-6 EGC were associated with Bergmann glial fibers (BF) of the Golgi epithelial cells which crossed molecular and EGC layers to terminate as spiny endfeet near the pial surface. Fibrils of extracellular material (ECM) often linked both EGC located laterally with the nearest BF, as well as the EGC leading edge with the underlying BF. As active migration slowed (days 13-20) and granule cells reached their destination below the Purkinje cell layer, they lost their polarity, and became embedded in a dense deposition of ECM.

Current investigations are in progress to examine the possible role of the ECM in granule cell migration.

Influx of amino acids into cultured neuroblastoma and glioma cells

Hannuniemi, R.; Pajari, M.

University of Tampere, Department of Biomedical Sciences, Tampere, Finland

The influx of tritium-labeled L-leucine, L-lysine, L-aspartic acid and glycine into cultured neuroblastoma and glioma cells was studied at amino acid concentrations from 2 to 2000 $\mu\text{mol/l}$ in 5 min incubations. Amino acid transport was saturable at the lowest amino acid concentrations studied, the nonsaturable transport dominated in the millimolar concentration range. Leucine penetrated into both cell types faster than the other amino acids. The influx into glioma cells decreased in the following order: leucine > aspartic acid > glycine > lysine. Into neuroblastoma cells the influx was about the same by leucine, glycine and lysine but the uptake of aspartic acid was significantly lower.