Endocrinology-2013

OMICS Group Conferences
Accelerating Scientific Discovery

World Congress on
Endocrinology

August 26-28, 2013 Raleigh, North Carolina, USA

Effects of estrogen, thyroid hormones and endocrine disruptor ligands on the regulation of estrogen- and thyroid hormone receptor expression in the developing cerebellum

Attila Zsarnovszky
Szent Istvan University, Hungary

Abstract

Estrogen (E2) and thyroid hormones (THs) regulate cell migration, differentiation, proliferation and synaptogenesis during cerebellar development. These events involve the binding of hormone ligands to their cognate receptors to activate relevant genes for the adequate orchestration of developmental processes. Recent reports implicate a complex mechanism through which E2 and THs influence the expression levels of each other's receptors (ERs and TRs). In addition, an growing body of evidence suggests that endocrine disruptors (EDs) influence hormone-regulated physiological events. Here we examined the effects of the presence or absence of E2, THs and three EDs (bisphenol A, arsenic and zearalenone) on the expression levels of ER and TR receptor mRNAs and proteins in cerebellar granule cell cultures. Receptor expression levels were determined by quantitative PCR and Western blot techniques. Results were compared to non-treated controls and to samples obtained from age-matched *in situ* cerebella. Additionally, we determined the effects that glial cells might have on the regulation of ER-TR expression levels. Results show that: (i) ER and TR expression levels depend on the individual, as well as combined presence of E2 and THs; (ii) glial cells are important mediators in the hormonal regulation of neuronal ER-TR expression, and (iii) EDs have characteristic, nevertheless distinct effects on ER-TR expression levels. These observations suggest that both E2 and THs, in adequate amounts, are required for the precise orchestration of cerebellar development and that interactions between endogenous and exogenous hormon-like signals may influence cerebellar development in a manner more complex than previously thought.

Biography

Attila Zsarnovszky is a D.V.M. and has completed his Ph.D from Szent Istvan University Faculty of Veterinary Sciences (SzIU-FVS), Budapest, Hungary. He had completed his postdoctoral studies at Yale University School of Medicine (Dept of Obstetrics and Gynecology). He is associate professor at SzIU-FVS, Department of Physiology and Biochemistry, director of the Neuro-immuno-endocrinology Unit. He has published more than 25 papers in reputed journals and is serving as an editorial board member of Acta Veterinaria Hungarica.