Universität Basel

Publication

Adenohypophyseal and hypothalamic GABA B receptor subunits are down-regulated by estradiol in adult female rats

JournalArticle (Originalarbeit in einer wissenschaftlichen Zeitschrift)

ID 171608
Author(s) Rey-Roldán, Estela B; Bianchi, María S; Bettler, Bernhard; Becu-Villalobos, Damasia; Lux-Lantos, Victoria A; Libertun, Carlos
Author(s) at UniBasel Bettler, Bernhard ;
Year 2006
Title Adenohypophyseal and hypothalamic GABA B receptor subunits are downregulated by estradiol in adult female rats
Journal Life sciences
Volume 79
Number 4
Pages / **Article-Number** 342-50
Keywords GABA(B) receptors, pituitary, hypothalamus, estradiol, [Ca-2]i oscillations, female rats
Gamma-aminobutyric acid (GABA) participates in neuroendocrine regulation. Since steroid hormones have been shown to modulate the GABAergic system, here we evaluated the effect of chronic in vivo estradiol administration on GABA B receptor (GABA(B)R) expression. GABA(B1) and GABA(B2) subunits were analyzed by Western Blot and RT-PCR, in hypothalami and anterior pituitaries of adult female rats: a) treated for 1 week with estradiol-valerate (a single dose of 100 mug /kg: E1), b) implanted with a 10 mg pellet of estradiol-benzoate for 5 weeks (E5) or c) on proestrous (P), d) ovariectomized (OVX). Pituitary GABA(B)R levels were correlated to a biological effect: baclofen, a GABA(B)R agonist, action on intracellular calcium titers ([Ca(2+)](i)) in pituitary cells. E5 pituitaries showed a significant decrease in the expression of GABA(B1) and GABA(B2) mRNAs compared to P. The GABA(B1a) splice variant of GABA(B1) was always more abundant than GABA(B1b) in this tissue. Similar to the pituitary, hypothalamic GABA(B1) and GABA(B2) mRNAs decreased in E5; this was confirmed at the protein level. In the hypothalamus GABA(B1b) was the main variant expressed in P rats, and was the one significantly sensitive to estradiol-induced decrease, as determined by Western Blots. Castration did not modify GABA(B)R expression with regards to P in either tissue. In P pituitary cells baclofen induced a decrease in [Ca(2+)](i), in contrast this effect was lost in E5 cells. We conclude that chronic estradiol treatment negatively regulates the expression of the GABA(B)R subunits in the pituitary and the hypothalamus. This effect is coupled to a loss of baclofen action on intracellular calcium in pituitary cells.

Publisher Elsevier Science
ISSN/ISBN 0024-3205
edoc-URL http://edoc.unibas.ch/dok/A5262234
Full Text on edoc No;
Digital Object Identifier DOI 10.1016/j.lfs.2006.01.014
PubMed ID http://www.ncbi.nlm.nih.gov/pubmed/16516242
ISI-Number WOS:000238455500004
Document type (ISI) Journal Article