

Interactive hormonal regulation of cerebellar estrogen- and thyroid hormone receptor expression in primary cerebellar granule cell culture

GYÖRFFY, A., SOMOGYI, V., KISS, D.S., BARTHA, T., FRENYÓ V.L., ZSARNOVSZKY, A.

Department of Physiology and Biochemistry, Faculty of Veterinary Sciences, Szent István University; H-1078 Budapest, István u. 2. Hungary

Introduction

Recent studies revealed that the trophic hormones estradiol (E2) and thyroid hormones (THs) activate specific, yet combined regulatory signals in the cerebellum via their cognate receptors (ERs and TRs) to regulate genetically programmed developmental events. Recent data on intracellular signalling mechanisms of these hormones imply possible receptor interactions and/or cross-activation between ERs and TRs.

Aims and methods: We used a primary culture of cerebellar granule cells as a self-developed in vitro experimental system to investigate the possible interactions of hormone receptors after single and combined treatment with physiological concentrations of E2 and THs. In addition, we also aimed to assess the role of glia in the receptor activating process by comparing the effects of analogous hormonal environments in glia-containing- or glia-free granule cell cultures. Hormone-induced receptor- and receptor mRNA expression levels were determined.

Results and discussion

Both E2 and THs, alone or in combination regulate ER and TR protein and mRNA expression levels, and these effects are significantly modulated by the presence or absence of glia. We propose that the regulatory effects of E2 and THs on cerebellar development are orchestrated based on real-time co-presence of both (and most probably other) hormones, therefore consideration of sole hormone effects in this regard may be misleading.

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IMPACT OF PASTURE ON THE COUNT OF SOMATIC CELLS IN RAW COW'S MILK

HNISOVÁ, J., ČERMÁK, B., CEMPÍRKOVÁ, R.

Jihočeská univerzita v Českých Budějovicích, Zemědělská fakulta, Katedra genetiky, šlechtění a výživy zvířat, České Budějovice 370 05, Česká republika

Abstract

The aim of this study was to observe the PSB (somatic cell counts) of raw milk. For this purpose we used dairy cows from different dairy cattle farms, i.e. there were compared three dairy herds using summer pasture and five dairy herds without using summer pasture. There were found significant differences ($P = 0,03$; the statistical significance was declared at $P < 0,05$) between PSB values (in average $260,99 \cdot 10^3 \cdot \text{ml}^{-1}$) of summer pastured herds and PSB values (in average $282,44 \cdot 10^3 \cdot \text{ml}^{-1}$) of non summer pastured herds, both herds estimated during the year 2007. The increasing amount of PSB was measured at the beginning of pasture season, and then followed the decreasing of PSB in two of observed herds. One of the observed herds (herd with higher presence of subclinical mastitis) had the same level of PSB during the whole pasture season.