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Neuroendocrine control of hydromineral balance: Participation of estradiol and its interaction with corticosterone

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In the past decades several studies demonstrating the influence of sex hormones, especially estrogens in the control of body fluid homeostasis were described. In this context, changes in body fluid balance, associated with the different phases of the reproductive cycle, gestation period and reproductive senescence have been published. It is well established in the literature that estradiol (E2) regulates thirst and sodium appetite in females. Furthermore, several studies have described the involvement of the hypothalamic-pituitary-adrenal (HPA) axis in the homeostatic control of hydromineral balance and the influence of E2 in the modulation of this system. However, to date, the physiological relevance of HPA axis activity in hydromineral balance in women has not been adequately elucidated. Therefore, for a better understanding of the influence of E2 and its interaction with corticosterone in the modulation of appetitive behavior, endocrine system and molecular alterations involved in controlling the homeostasis of bodily fluids, we use the experimental model of adrenalectomy, with or without glucocorticoids replacement, in ovariectomized rats. Analysis of sodium and water consumption were performed; radioimmunoassay and qRT-PCR techniques. The results showed that E2 in the presence of corticosterone reverses the reduction in water intake, changes hormonal responses induced by adrenalectomy and alters the negative feedback exerted by corticosterone in neurons of paraventricular nucleus in adrenalectomy condition. In addition was observed that E2 modulates the sodium appetite effect induced by treatment with corticosterone in rats with intact adrenal glands.

Biography

Gislaine de Almeida Pereira is Veterinarian graduated from Federal University Rural of Rio de Janeiro, Brazil (2010) and has completed her MSc (Physiology area) from University of Sao Paulo, School of Medicine of Ribeirao Preto (2012). Currently, she is PhD student of Physiology of University of Sao Paulo, School of Medicine of Ribeirao Preto under supervision of Professor José Antunes Rodrigues MD, PhD. She works with neuroendocrine control of hydromineral balance with emphasis on role of estradiol and its modulation on the angiotensin II central actions.

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