ORAL COMMUNICATIONS

ADRENERGIC MODULATION OF THE HYPOTHALAMIC-PITUITARY-THYROID AXIS IN THE LIZARD *PODARCIS SICULUS*

Francesca Carrella[1], Assunta Lallo[1], Stefania Boccia[2], Maria De Falco[3|4], Rosaria Sciarrillo[1]

[1]Department of Science and Technologies, University of Sannio, Benevento, Italy; [2]Department of Mental and Physical Health and Preventive Medicine, University of Campania "Luigi Vanvitelli", Naples, Italy; [3]Department of Biology, University of Naples "Federico II", Naples, Italy; [4]National Institute of Biostructures and Biosystems (INBB), Rome, Italy

The adrenergic system, a fundamental component of the autonomic nervous system, is known for its ability to influence various physiological and metabolic processes; however, its involvement in thyroid function in non-mammalian vertebrates remains poorly explored. Adult male lizards were treated with β-adrenergic agonists (isoproterenol, terbutaline, and L-isopropylamino-3-(2-thiazoloxy)-2-propanol) and the α-adrenergic antagonist phentolamine. Plasma levels of TSH, T3, and T4, hepatic thyroid hormone content, type II 5′-monodeiodinase activity, blood glucose levels, and thyroid histology were evaluated. β-adrenergic stimulation, particularly with isoproterenol and terbutaline, significantly enhanced thyroid activity, as indicated by increased T3 and T4 levels, reduced TSH, and elevated hepatic deiodinase activity. These effects were more pronounced after repeated treatments, suggesting dose- and time-dependent responses. In contrast, L-isopropylamino-3-(2-thiazoloxy)-2-propanol showed no significant effects. Phentolamine induced opposite outcomes, with increased TSH and decreased thyroid hormones, indicating inhibition of thyroid function and compensatory activation of the HPT axis. Hepatic data supported reduced peripheral hormone activation. Histological findings confirmed increased follicular activity following β-adrenergic stimulation and decreased thyroid activity after α-adrenergic blockade. Both treatments increased blood glucose levels. This study contributes to expanding current knowledge of neuroendocrine mechanisms in non-mammalian vertebrates and highlights the importance of the interaction between the sympathetic nervous system and endocrine regulation.

Keywords: Adrenergic system, HPT axis, Thyroid hormones, Deiodinase activity, Podarcis siculus