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Session 773 - Neuroendocrine Processes: The HPG Axis

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773.02 / XX10 - Localization and quantification of kisspeptin and gonadotropin inhibitory hormone in green anole lizards (*anolis carolinensis*)

November 7, 2018, 1:00 PM - 5:00 PM

SDCC Halls B-H

Presenter at Poster

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- 3:00 PM

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Disclosures

R.E. Cohen: None.

Abstract

It has been well supported among mammalian species that the hypothalamic-pituitary-gonad (HPG) axis is regulated positively by kisspeptin and negatively by gonadotropin inhibitory hormone (GnIH). Studies with seasonal breeding models have generally shown higher levels of kisspeptin in areas of the hypothalamus associated with reproduction, such as the preoptic area (POA) and arcuate nucleus, during the breeding season. Conversely, when examining models during the non-breeding season, studies have indicated GnIH to be higher in hypothalamic nuclei, such as the POA. However, kisspeptin's role in regulating reproduction may not be consistent among all vertebrate groups. While kisspeptin has been shown to upregulate reproduction in mammals, this peptide has not been detected in avian species and recent work in fish has suggested that kisspeptin may not play a regulatory role in reproduction. Relatively little is known about these peptides in reptiles and the seasonal regulation of kisspeptin and GnIH has not been investigated in this group. Green anole lizards (*Anolis carolinensis*) have a distinct breeding and non-breeding season, and during the breeding season, steroid hormone levels in the plasma are elevated, males are more territorial, and display reproductive behaviors at a higher frequency. Previous work in this species has demonstrated that, in non-breeding anoles, kisspeptin-positive neurons were present in the POA and the dorsomedial hypothalamus. It is currently unknown whether kisspeptin expression is altered in breeding lizards and there is no data available on GnIH expression in this species. We hypothesize that there is a seasonal effect on kisspeptins and GnIH in green anole lizards, with kisspeptins more highly expressed in the breeding season, while GnIH is more highly expressed in the non-breeding season. Preliminary data using quantitative PCR has revealed no significant difference between seasons in the expression of *kiss1*, *kiss2*, and *Gnih* mRNA from a dissection of the brain that contained the hypothalamus ($F_{1,16} \leq 4.35$, $p \geq 0.053$, $n = 4-6$ per group). Although we did not detect a significant difference between seasons, expression in specific regions may differ. Therefore, using fluorescent *in situ* hybridization, we aim to determine the localization and expression levels of *kiss1*, *kiss2* and *Gnih* expression throughout the hypothalamus. This study expands upon available data and bridges the evolutionary gaps in the roles of kisspeptin and GnIH in regulating reproduction.

Abstract Citation