Role Of Raphe In The Body Temperature Regulation Of Precocious Birds

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Introduction: It is demonstrated in mammals that, at least in rats, caudal brain regions, such as raphe nuclei, are involved in the modulation of thermoeffectors for heat loss and heat production, such as peripheral vasodilation/vasoconstriction, nonshivering and shivering thermogenesis. If the same scenario occurs in the other group of endothermic vertebrates, i.e., birds, it is still completely unknown.
Objective: To verify the role of raphe in the regulation of body temperature (Tb) in chicken chicks at the first week of life after hatching.
Material and Methods: Specifically, in this first experimental approach, we verified the effect of the disinhibition of raphe on body temperature (Tb) of chicks. To this end, Tb was measured in chicks, implanted with a mini temperature sensor in the coelomatic cavity, before and each 10 min up to 2hs after intra-raphe microinjections of the GABA receptor antagonist bicuculline (0.05mM and 0.5mM) or saline (vehicle). Protocols were approved by the local Animal Care Committee (CEUA of FCAV/Unesp, nº 013907/17).
Results: Bicuculline (0.05 mM) significantly decreased ($P < 0.05$) Tb of the animals when compared to the vehicle group (in °C. Vehicle: 40.8 ± 0.1, bicuculline 0.05 mM: 40.3 ± 0.2, bicuculline 0.5 mM: 40.8 ± 0.1).
Conclusions: Our preliminary results suggest that the disinhibition of Raphe neurons is able to modulate the Tb of chicks, and the thermoeffectors involved in this response is currently under investigation.

Keywords: thermoregulation, body temperature, Rafe, GABA

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