

Effects of Intracerebroventricular Injection of Spexin and Its Interaction with Nitric Oxide, Serotonin, and Corticotropin Receptors on Central Food Intake Regulation in Chicken

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Abstract : Aim: There are several differences between birds and mammals in terms of food intake regulation. Therefore, this study aimed to investigate the effects of the intracerebroventricular (ICV) injection of spexin and its interaction with nitric oxide, serotonin, and corticotropin receptors on central food intake regulation in broiler chickens. Materials and Methods: In experiment 1, chickens received ICV injection of saline, PCPA (p-chlorophenyl alanine, 1.25 µg), spexin, and PCPA+spexin. In experiments 2-7, 8-OH-DPAT (5-HT_{1A} agonist, 15.25 nmol), SB-242084 (5-HT_{2C} receptor antagonist, 1.5 µg), L-arginine (Precursor of nitric oxide, 200 nmol), L-NAME (nitric oxide synthetase inhibitor, 100 nmol), Astressin-B (CRF₁/CRF₂ receptor antagonist, 30 µg) and Astressin2-B (CRF₂ receptor antagonist, 30 µg) were injected to chickens instead of the PCPA. Then, food intake was measured until 120 minutes after the injection. Results: Spexin significantly decreased food consumption ($P < 0.05$). Concomitant injection of SB-242084+spexin attenuated spexin-induced hypophagia ($P < 0.05$). Co-injection of L-arginine+spexin enhanced spexin-induced hypophagia, and this effect was reversed by L-NAME ($P < 0.05$). Also, concomitant injection of Astressin-B + spexin or Astressin2-B + spexin enhanced spexin-induced hypophagia ($P < 0.05$). Conclusions: Based on these observations, spexin-induced hypophagia may be mediated by nitric oxide and 5-HT_{2C}, CRF₁, and CRF₂ receptors in neonatal broiler chickens.

Keywords : spexin, serotonin, corticotropin, nitric oxide, food intake, chicken

Conference Title : ICOWM 2023 : International Conference on Obesity and Weight Management

Conference Location : Paris, France

Conference Dates : December 25-26, 2023