Central food intake and appetite regulation in layer and meat type chicken: New findings

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Food intake and energy expenditure mediates via complicated neurological network from central and peripheral nervous system. In the brain, feeding behavior regulates in results of neurotransmitters in several brain nuclei including striatum, hypothalamus, amygdala, nucleus tractus solitaries and arcuate nucleus. Neurotransmitters interact by a wide distributed neurological network on food intake regulation in the central nervous system. In this field, agonist and/or antagonists of the neurotransmitters inject into the right ventricle of the chicken brain and their interactions on food and water intake were determined. Based on new findings, control of appetite in birds is usually impressed by numeral homeostatic sophisticated mechanisms. Lipopoly-saccharides have hypophagic effect and Nociceptin/Orphanin and Endocannabinoids has hyperphagic effect while central opioids and cannabinoids impress different effects in broiler and layers. Several neurotransmitters interact with each other which can weaken or amplify their hypophagic/hyperphagic effects. Despite discrepancy between these results is not fully elicited, perhaps, animal's genetic background and age are responsible for observed discrepancy. Genetic selection altered chicken's brain neurological pathways associated with food intake. It seems, broilers have less sensitive to anorexigenic signals from peripheral tissues. In this regards nutrients of diets which synthetize special neurotransmitters in body are the key point for regulation of feeding behavior in this species. During the past decades, several researches have been done to determine central and peripheral regulatory systems responsible for appetite regulation in both mammalian and avian. So, the aim of the current study was to determine new findings on central food intake and appetite regulation in layer and meat type chicken.

Recent Publications

1. Ahmadi F, Zendehdel M, Babapour V, Panahi N, Hassanpour S and Khodadadi M (2017) Modulatory function of NMDA glutamate receptor on MC3/MC4 receptors agonist-induced hypophagia in neonatal meat-type chicken. Veterinary Research Communications DOI: 10.1007/s11259-017-9693-x.
2. Hassanpour S, Zendehdel M, Babapour V and Charkhkar S (2015) Endocannabinoid and nitric oxide interaction mediates food intake in neonatal chicken. British Poultry Science 56(4):443-451.
3. Torkzaban M, Zendehdel M, Babapour V, Panahi N and Hassanpour S (2017) Interaction between central opioidergic and glutamatergic systems on food intake in neonatal chicks: role of NMDA, AMPA and mGLU1 receptors. International Journal of Peptide Research and Therapeutics DOI: 10.1007/s10989-017-9601-9.
4. Zendehdel M, Ghashghayi E, Hassanpour S, Baghbanzadeh A and Jonaidi H (2016) Interaction between opioidergic and dopaminergic systems on food intake in neonatal layer type chicken. International Journal of Peptide Research and Therapeutics 22:83-92.
5. Zendehdel M, Tirgari F, Shohre B, Deldar H and Hassanpour S (2017) Involvement of GABA and Cannabinoid Receptors in central food intake regulation in neonatal layer chicks: role of CB1 and GABAA receptors. Revista Brasileira de Ciência Avícola 19(2):51-60.

Biography

Shahin Hassanpour has research area in evaluation and passion in central food intake mechanisms in domestic fowls. Feeding behavior regulates by a complex systems by central and peripheral signals which interact to regulate food intake and energy expenditure. In our search team, we are working on the identification of central appetite regulation pathways in poultry. They built this model after years of research, evaluation, teaching and administration in education institutions.

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