

News

The Hormone Prolactin can be Prevented from Secreting with Anti-prolactin

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The anterior pituitary produces the steroid hormone prolactin, which is involved in many physiological processes in vertebrates, including osmoregulation, growth and development, metabolism, immunological control, energy balance, and behaviour. It is believed that the genes linked to broodiness are involved in the control of prolactin production. This study was carried out to investigate the association between these genes and prolactin hormone secretion as well as the mechanism regulating prolactin hormone secretion to brooding characteristics. Four broodiness-related genes (Prl, Pit-1, PREB, and VIP) were used in this investigation. To track the pattern of expression of the four genes linked to the release of the prolactin hormone, different anti-prolactin dosages were given.

For this investigation, a total of 25 hens between the ages of 7-8 months old were used. There were five treatment groups for the hens. The ELISA method was used to analyse the prolactin hormone following the manufacturer's instructions. For the blood to coagulate and create the serum, it was left out for some time. To ascertain the impact of the medication on the prolactin hormone profile, a one-way analysis of variance (ANOVA) was used. Test animals' brains were removed from each treatment and replication, and they were then immediately placed in vials with an RNA Later solution.

With an increase in anti-prolactin dose, the concentration of prolactin hormone dropped. Prolactin hormone levels were highest in the control therapy (absent of anti-prolactin) and were distinct from other treatments in a meaningful way ($p < 0.05$). The four genes' histograms of gene expression patterns revealed a diminishing effect across all treatments in comparison to controls. The change in these genes' expression patterns suggests that these genes are involved in causing broodiness in chicken behaviour. Dopamine is a prolactin inhibitor (PIF) neurotransmitter that is present in large amounts in the hypothalamus. The existence of high dopamine concentrations in the median eminence and hypoxic blood vessels, it was added, "reinforces the concept that dopamine is the highest physiological PIF of the pituitary."

Dopamine is secreted to the anterior pituitary by the dopaminergic tuberoinfundibular nerve system through the long portal vessel system. The findings of this study support the idea that the dopamine agonist bromocriptine decreases the activity of adenylate cyclase, which in turn inhibits the production of cAMP. Labelled VIP, on the other hand, binds to lactotroph cells and activates adenyl cyclase to increase prolactin release. cAMP inhibits the inhibitory effect of ergocryptine on the prolactin gene while stimulating transcription of that gene. Anti-prolactin therapy reduced the levels of the prolactin



hormone as well as the pattern and intensity of Prl, VIP, Pit-1, and PREB gene expression.

JOURNAL REFERENCE

Joice J. Bana, Anggraini Barlian and Ahmad Ridwan, 2021. Prolactin hormone profile, patterns and expression level of prolactin, Pit-1, VIP and PREB gene in Kampung chicken (*Gallus gallus domesticus*) induced by anti-prolactin Int. J. Poult. Sci., 20: 249-255.

KEYWORDS

Prolactin hormone profile, Prl gene, VIP gene, Pit-1 gene, PREB gene, Kampung chicken

