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著者	Buyse J., Swennen Q., Decuypere E.
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**E-2. Dietary and hormonal effects on growth performance and on plasma hormone and metabolite levels of broilers**

Buyse, J., Swennen, Q., and E. Decuypere

Laboratory for Physiology and Immunology of Domestic Animals. Department of Biosystems, Catholic University Leuven. Kasteelpark Arenberg 30, B-3001 Leuven, Belgium.

(Neuro)endocrine factors act as an interface between genetic, environmental and nutritional factors (input) on the one hand and the animal performance (output) on the other hand, by regulating the intermediary metabolism. The present contribution gives an overview of the most important hormonal axes and their mediating role in the nutritional control of growth in broiler chickens.

Growth hormone (GH) is secreted in distinct pulses and is a prerequisite for normal growth and development of chickens. However, in contrast to other farm animals, exogenous GH therapy impairs broiler growth rate and feed efficiency and enhances fat deposition. The anabolic effects of GH are thought to be mediated by the insulin-like growth factors (IGF)-I and -II. Most studies reveal growth-stimulating and fat-reducing effects of postnatal exogenous IGF-II therapy in broiler chickens, whereas IGF-I has opposite effects. Thyroid hormones are also crucial endocrine regulators of somatic growth and metabolism. With respect to gonadal hormones, androgens are mainly anabolic while oestrogens are lipogenic. The role of the recently discovered hormones leptin and ghrelin in food intake regulation will be briefly discussed.

Feed restriction as well as dietary composition (mainly the protein component) has a major impact on animal performance. Again, these effects are mediated by endocrine factors, which shift intermediary metabolism in particular directions. Chickens reared on a diet with reduced dietary protein content are characterized by an enhanced pulsatile GH secretion and this is considered as a causal factor in efficiency of dietary protein retention. Such chickens have also a higher fat deposition and elevated heat production (with concomitant increased plasma T<sub>3</sub>) levels.