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Unique features of internal melanin pigmentation in Oyge black chicken

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Variation in coloration can be determined by different types of pigments and by the structure of the integument. In particular, melanin pigments play a major role in the coloration of animals that is correlated to physiological process and disease resistance taking place not only in the integument but also inside the body. Melanin pigments could be explained with inter- and intraspecific differences in the deposition of external body surface of organisms and of internal melanin that exhibit different biophysical and chemical properties. Indeed, body coloration is related to the amount of melanin deposited in organs. In vertebrates, melanin is present in various organs and tissue such as the spleen, liver, heart, kidney, brain, eye, lung, connective tissues and muscles. Among animals, we focused on detecting differentially expressed genes (DEGs) across the RNA-seq analysis related to the internal melanin pigmentation of various parts of the body of oyge black chicken, which have darker blue feather-black fascia, jet-black eyes, a black tongue and bones from the tip of its comb to the end of its claws. Then, covariations between melanin-based coloration of integument and internal organs and tissues could be correlated with independent factors in regulatory process and biosynthetic pathways highlighting similarities and dissimilarities between the production of internal and external melanin, as well as between (the brown/black) eumelanin and (yellow/reddish-brown) pheomelanin. We approached this assuming that in some cases of protecting organism against a number of diseases and disorders, internal and external melanin pigments may have different function and the synthetic pathway may also differ on key melanogenetic genes having numerous pleiotropic effects.

Biography

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