Abstract

Melanins are the most common pigments incorporated into birds’ feathers. Since melanin-based coloration is variable in the extent and intensity, its function is considered to be particularly cryptic and mechanical, hardening the feather structure. However, recently it has been found that melanin-based coloration also has a signaling function, due to the observed correlation between this type of coloration and many physiological and behavioral traits. These relationships follow from the pleiotropic effects of genes regulating the melanocortin system and the physiological effects of testosterone and corticosterone, which are involved in melanogenesis. This work describes genetic and physiological mechanisms of the relationship between melanin-based coloration and behavioral traits in birds and, based on available studies, supports the signaling function of this type of coloration. Melanin-based coloration has been shown to be positively correlated with aggressiveness and dominance, sexual activity, coping with stress, a fast strategy of exploratory behavior, parental care, and anti-predator behavior in many bird species. However, despite intense research interest in this topic in last decade, it is worth noting that more experiments focused on species with a distinct sexual dichromatism or polymorphism in melanin-based coloration, whose morphs can differ significantly in life-history strategies and behavior, should be done.