

This theses deal with the use and utilization of carotenoids in secondary ornamentation, particularly in birds. Carotenoids have an important role in animal organisms, and the honesty of carotenoid-based signalization has traditionally been ascribed to anti-oxidant functioning of carotenoids. However, this view has been changed recently showing the potentially harmful effect of carotenoids. The deposition of carotenoids in ornamentation is driven not only by carotenoid intake, but also by physiological processes within the organism. Importantly, when the conditions are suboptimal (and the oxidative stress increases) unstable long aliphatic chains of carotenoids derive into highly reactive non-colorful apo-carotenals. Hence carotenoids may act as classical handicaps, potentially harmful to organism, and this view changes our understanding of honesty of carotenoid-based signalization. The theses focus on summarizing the current knowledge on physiological functions of carotenoids and how they affect secondary coloration, and consist of three chapters. In the first one the basic description of carotenoids is provided, along with an overview of carotenoid classification. The second chapter deals with physiological aspects which affect the carotenoid intake, metabolisation, transport to ornaments, and hypotheses explaining the honesty of carotenoid-based coloration are discussed. In the last, third chapter, the evidence of the role of carotenoids in the process of mate choice is given and potential benefits to females from pairing with highly ornamented mates are discussed.