

INFRADIAN RHYTHMS OF PLUMAGE CHANGE AND THYROXINE LEVEL AT PASSERINE BIRDS, THE INFLUENCE OF DAY LENGTH

M.E. Diatroptov

Research Institute of Human Morphology, Russian Academy of Medical Sciences, Moscow, Russia

Abstract. The infradian biorhythms of pen-feather plumage change dynamics were studied in various photoperiods in postnuptial molting of European Greenfinch (*Chloris chloris*) and post-juvenile one of Eurasian Tree Sparrow (*Passer montanus*). We have found that in various light regimes (20L:4D; 17L:7D; 14L:10D; 12L:12D and 10L:14D) the time intervals between adjacent pen-feather shifts are multiple of 3 days. The dynamics of plumage change in all experimental groups of both species, which were kept with 10 to 20 hour photoperiod, had synchronous 3-days rhythm. In the 8L:16D regime both species of birds had intervals of adjacent pen-feather change with multiple of 2-days rhythm. Thyroxine level measured by ELISA method in the serum of European Starling (*Sturnus vulgaris*) had 3-days rhythm when birds were contained with normal day/night light and 2-days rhythm when they were contained with 8 hours photoperiod, it was synchronous in different specimens. We have discovered that the date of egg hatching doesn't influence the phase of infradian biorhythm in the plumage change dynamics. The coincidence of the found infradian rhythm of molting in different specimens of two species suggests that the molting synchronizing factor could be of external origin. The comparison between acrophases of thyroxin level biorhythms and molting and calendar dates of the maximum value of interplanetary magnetic field Bz-component may lead to proposition that there exists an involvement of this physical factor in synchronization of infradian dynamics of these biological processes.

Keywords: infradian rhythms, molt, thyroxine, photoperiod, passerine birds, helio-geophysical factors.