Comparative leukocyte blood profile of *Emys orbicularis* (Reptilia: Emydidae) from two populations

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Abstract. A comparative estimation of the leukocyte profile of the marsh turtle *Emys orbicularis* (Linnaeus, 1758) living in the Ural river basin (Orenburg region, Belyaevsky district, 11 females and 5 males) and in the Volga river basin (Astrakhan region, Krasnoyarsk district, 28 females and 20 males) was made. The blood formula (WBC) of males and females was calculated together with the calculation of integral leukocytal indices (the lymphocyte-granulocyte index, the leukocyte shift index, the heterophile/lymphocyte ratio, the heterophil/eosinophil ratio, and the lymphocyte/eosinophil ratio). Lymphocytes were the predominant leukocyte cells in the peripheral blood of *Emys orbicularis* (40–45%). Among granulocytes, heterophiles (the population from the Orenburg region) or basophils (the population from the Astrakhan region) predominated. The absence of any differences in the quantitative indicators of the blood formula and integral indices for males and females indicated a comparable level of impact and identity of the physiological adaptation mechanisms occurring in the animals in the Orenburg region. Intersexual differences were manifested in an increased content of monocytes ($u = 3.13$, $p = 0.001$), which indicated activation of the natural immunity of males in comparison with females from the Astrakhan region. The leukocyte composition of the *Emys orbicularis* blood differed in the content of granulocytes and agranulocytes in different populations. The males from the Orenburg region differed from those from the Astrakhan region by an increased proportion of heterophiles and a reduced content of basophils. Females differed in all blood count parameters, except for eosinophils whose fraction was equal ($u = 0.71$, $p = 1.00$). In the peripheral blood of females from the Orenburg region, a higher content of heterophiles, monocytes and a lower content of basophils and lymphocytes were found in comparison with those from the Astrakhan region. Quantitative-qualitative changes were detected in the leukocyte composition of the blood during the invasion of hemoparasites. The specific immune response (the content of lymphocytes) decreased, and the nonspecific defense system (the content of heterophiles) increased. The maintenance of the immunological reactivity of the organism under the conditions of invasion was determined by the functional activity of heterophiles, which was confirmed by a higher value of the heterophil/lymphocyte index. The blood formula (WBC) and the dynamics of leukocytal indexes of *Emys orbicularis* reflected the active response of the organism to a complex of environmental factors, including parasitic invasions.

Keywords: *Emys orbicularis*, leukocytal index, peripheral blood, WBC (white blood cells), Orenburg region, Astrakhan region

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