PARAMETERS OF THE ERYTHROCYTIC SYSTEM OF RABBITS IN A HOT AND HUMID CLIMATE

A. N. Bulygin, R. Otero Fernandes, and P. Lopestigui Souti

UDC 612.111:616-092.9:612.233.3

KEY WORDS: erhthrocytic system; normal; rabbit; climate.

Information on normal parameters of the erythrocytic system in experimental animals and, in particular, in rabbits, is very contradictory [2, 4-6]. The great quantitative differences in indices of the erythrocytic system obtained by different workers can be explained by many causes: different conditions of feeding the animals; undiscovered parasitic diseases [9]; incorrect determination of true values because of failure to take into account the animal's biorhythms [7], or their inadequate acclimatization to the experimental conditions; differences in the climatic conditions when the parameters were determined.

The writers are unaware of any published analyses of the state of the erythrocytic system in a hot and humid climate, which would be of undoubted interest in experimental hematology. The investigation described below was carried out for this purpose.

EXPERIMENTAL METHOD

The work was done in Cuba at the Havana Medical Institute. Altogether 228 healthy adult rabbits of the Blanco Semiguigante breed weighing 2.5-3 kg were studied. The animals' body temperature was 39.3 ± 0.3°C, the blood leukocyte count $(9.8 \pm 0.42) \cdot 10^9$/liter, and the plasma protein concentration 76.9 ± 1.60 g/liter. The animals were kept on a special diet, as prepared for rabbit farms (with water *ad lib*) and were kept in the open air but under cover at a day temperature of 28-32°C and night temperature of 18-21°C, with a humidity of 80-84%.

Blood was taken from the animals in a special air-conditioned room (air temperature 22-23°C, humidity 75-80%), in which the animals were placed 2-3 h before the experiment. Blood was taken from the marginal vein of the rabbit's ear once a day in the morning, and in view of Gattermann's remarks [8], this was not repeated before 2 days had elapsed. The blood indices were considered to be reliable if they were consistent in at least three successive tests. The true indices of the erythrocytic system were thus obtained not before 2.5 weeks after the investigation.

EXPERIMENTAL RESULTS

Normal indices of the erythrocytic system [3] were: erythrocytes $(5.3 \pm 0.06) \cdot 10^{12}$/liter, hemoglobin 121.0 ± 1.80 g/liter, hematocrit 38.5 ± 0.60%, reticulocytes 10.8 ± 0.83‰, reticulocyte maturation time 9.9 ± 0.61 h, circulating blood volume 0.064 ± 0.004 liter/kg body weight, intensity of erythropoiesis $(28.1 \pm 2.92) \cdot 10^9$ erthrocytes/day, serum iron 37.4 ± 3.23 μmoles/liter, total bilirubin 5.9 ± 0.34 μmoles/liter. The duration of acid hemolysis, measured by the method of Gitel'zon and Terskov [1], was 6.5-7 min, with maximal erthrocyte destruction at 4-4.5 min. In all cases the blood plasma exhibited very slight erythropoietic activity.

These data can be taken as a guide for research under similar climatic conditions.

LITERATURE CITED

1. I. I. Gitel'zon and I. A. Terskov, The Erythrogram as a Method of Clinical Investigation of the Blood [in Russian], Krasnoyarsk (1959).

Department of Normal Physiology, Ivanovo Medical Institute. Department of Physiology, Havana Medical Institute, Cuba. (Presented by Academician of the Academy of Medical Sciences of the USSR N. A. Fedorov.) Translated from Byulleten' Éksperimental'noi Biologii i Meditsiny, Vol. 92, No. 10, pp. 394-395, October, 1981. Original article submitted February 17, 1981.

 0007-4888/81/9210-1308$07.50

2. D. I. Gol'dberg, E. D. Gol'dberg, and N. G. Shubin, Animal Hematology [in Russian], Tomsk (1973).
3. V. V. Men'shikov and L. I. Delektorskaya, Lab. Delo, No. 11, 694 (1978).
4. S. A. Seleznev, I. A. Il'inskii, and O. P. Khrabrova, Fiziol. Zh. SSSR, No. 5, 650 (1961).
5. A. P. Suvorov, G. B. Kudrin, and L. T. Dolzhikov, Lab. Delo, No. 8, 507 (1968).
6. S. Yu. Shekhter, Fiziol. Zh. SSSR, No. 1, 62 (1974).
7. R. R. Fox and C. W. Laird, Am. J. Physiol., 218, 1609 (1970).
8. G. Lesbouyries, Enfermedades del Conejo, Saragossa (1965).