

XII. THE RED AND WHITE CORPUSCLES AND CATALASE IN THE BLOOD OF COMPLEMENT DEFICIENT GUINEA PIGS**L. B. Nice, Alma J. Neill and H. D. Moore.**

From the Laboratories of Physiology and Bacteriology in the University of Oklahoma.

A strain of guinea pigs deficient in complement was developed at the Vermont Agricultural Experiment Station.* In that laboratory these animals were found to be less resistant to disease and more susceptible to changes in temperature than normal guinea pigs. This lowered resistance suggested to us that other factors besides complement might be lacking in the blood of these animals. A series of investigations was planned to study the blood elements of these guinea pigs. In this research we have determined the number of red and white corpuscles and the amount of catalase and complement in the blood of 12 complement deficient guinea pigs and an equal number of controls which were kept under the same experimental conditions. Later 10 more normal guinea pigs were tested in the same manner.

Summary

1. A relation between the number of red blood corpuscles and lack of complement was found in our animals. The complement deficient guinea pigs averaged from 18 to 34 per cent fewer red blood corpuscles per cubic millimeter of blood than did the normal animals. This decreased number should lessen the oxygen carrying power of the blood, and this in turn would decrease the available oxygen in the tissues and may account for the lowered resistance of these animals to zero temperature.

2. The average number of white blood corpuscles was higher in the complement deficient line than in any of the lines of normal animals. This is an indication of a protective device on the part of the organism to make up for the lack of complement as a defense against foreign invasion.

3. No consistent relationship was found between the number of white and red blood corpuscles and the amount of catalase in the blood.

4. Two sets of normal guinea pigs fell into two groups as regards the catalase content of the blood; in half of the animals of each set the catalase was low, while in the other half it was more than twice as high. This fifty-fifty ratio in two different sets of normal guinea pigs suggests that high and low catalase may be Mendelian characters.

*Moore, H. D., *Jour. Immunology* 1919, Vol. IV, p. 425.