

PROPERDIN CONCENTRATION IN BLOOD SERUM OF MONKEYS

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The properdin level is approximately the same and relatively high in the blood serum of rhesus monkeys, baboons, and green guenons, irrespective of sex.

Differences in protein concentration are found only in young animals under one year of age.

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The serum protein properdin, discovered and described by Pillemer and co-workers [8], was described by them as a new factor responsible for the bactericidal properties of the blood and playing an important role in the natural immunity of the organisms.

Results obtained by several investigators have demonstrated the wide distribution of properdin among different members of the animal world [3, 5, 8]. It is found also in the serum of monkeys [1, 2]. However, because of the limited number of animals investigated and the conflicting nature of the results thereby obtained, the need has arisen for a more detailed investigation of this factor in monkeys, which stand closest to man and are widely used for the study of certain diseases.

The object of this investigation was to determine the mean normal values of the properdin concentration in different species of monkeys and to study how its concentration varies with age and sex.

EXPERIMENTAL METHOD

Experiments were carried out on 198 monkeys of both sexes aged from 2-3 months to 10 years or over. The sera of 78 rhesus monkeys, 67 baboons, and 53 guenons were investigated.

Properdin activity was determined by Pillemer's method in the modification suggested by Ioffe and co-workers [6].

EXPERIMENTAL RESULTS

The blood properdin level was found to be approximately the same in healthy adult monkeys of all species (Table 1). The slight differences which were found are not statistically significant. The lowest properdin level was found in the serum of monkeys of all species studied at the ages of 1.5-2.5 years.

The picture observed was rather different in the young monkeys. For instance, in the serum of rhesus monkeys aged from 2-3 to 10-12 months a higher properdin concentration was found than in adult animals of the same species. The blood properdin level was on the whole identical in young and adult baboons, apart from the results obtained in the animals aged 1.5-2.5 years. However, none of these differences were statistically significant.

The blood protein level was characteristically lower in the green guenons of all age groups. This was clearly demonstrated in the young animals: its level in the serum of the guenons was lower than in the rhesus monkeys by a statistically significant margin ($t = 3.7$, $P = 0.001$).

The properdin concentration in all the monkeys investigated varied within fairly wide limits. In the rhesus monkeys, for instance, it ranged from 15 to 90 units/ml, in the baboons from 8.3 to 78 units/ml, and in the guenons from 10 to 48 units/ml. The commonest values found for the monkeys of all three species were from 25 to 37 units/ml.

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TABLE 1. Serum Properdin Concentration of Monkeys of Different Species and Age (unit/ml)

Species of monkey	Age (in years)			
	under 1	1½ - 2½	3-4	5 and over
Rhesus monkeys	48.7±5.3	32.7±9.5	36.8±3.2	36.9±2.3
Baboons	39.8±9.8	25.8±3.8	40.2±1.8	38.5±2.8
Green guenons	25.9±3.1	22.3±4.2	32.8±2.8	33.5±1.4

TABLE 2. Properdin Concentration in Serum of Adult Monkeys of Different Sexes (units/ml)

Species of monkey	Females	Males
Rhesus monkeys	36.9±2.8	35.4±2.3
Baboons	34.8±2.7	38.1±2.4
Green guenons	33.5±1.5	32.8±3.5

When the sera of males and females were investigated, no difference was found in the properdin level in the monkeys of different sexes (Table 2).

The results obtained by investigation of the sera of these monkeys can thus be used to establish the normal properdin level in these animals. We found considerable individual variations in the content of this factor in monkeys. Comparison of our results with those obtained

by other workers [1, 2], who studied a few animals (10-14), shows that the low values in one case (8-16 units/ml) and high in another (90-120 units/ml) are associated with the very wide variations in the serum properdin concentration in monkeys.

Our investigations also showed that the properdin concentration in monkeys reaches its adult level (in baboons), or actually exceeds it slightly (in rhesus monkeys), at an early age (2-3 months). Information in the literature concerning the relationship between the properdin level and age of the investigated animal is conflicting. Some authors [7, 8] deny that such a relationship exists in the animals they studied. Others observed a low properdin concentration in the serum of newborn animals and young animals in the first months of life. Not until the age of 2 years does its level reach the normal value characteristic of the adult human [4, 5].

When the serum properdin concentration was investigated in monkeys, its concentration was found to be independent of the animal's sex. These findings are in agreement with those obtained on other animals [7, 8].

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