

BLOOD SEROTONIN CONCENTRATION IN HEALTHY DOGS

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The blood serotonin concentration in dogs is independent of sex and age but varies considerably with the time of year. The blood serotonin concentration is twice as high in summer as in winter.

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Insufficient attention has been paid in the literature to the effect of age, sex, and time of year on the blood serotonin concentration of laboratory animals. The results of the few investigations which have been carried out [3-5] are contradictory in character and were obtained mainly in mice and rats.

The present investigation was carried out to study the serotonin concentration in whole blood of 110 healthy dogs in relation to age, sex, and time of year.

EXPERIMENTAL METHOD AND RESULTS

The serotonin concentration in whole blood was determined by a biological method [2].

Analysis of the results shows that the blood serotonin concentration of dogs varies within wide limits, from 0.018 to 0.15 $\mu\text{g/ml}$, with a mean value of $0.077 \pm 0.004 \mu\text{g/ml}$ (Table 1). Other workers have reported considerable variations in the blood serotonin concentration of healthy dogs [1, 2, 6].

As Table 1 shows, no significant differences exist between the serotonin level in females ($0.077 \pm 0.009 \mu\text{g/ml}$) and males ($0.071 \pm 0.017 \mu\text{g/ml}$). No statistically significant differences likewise were detected in the serotonin concentration in dogs under and over 4 years of age. However, as the results given in Table 2 show, considerable differences were found in the blood serotonin concentration of dogs depending on the time of year at which the determination was made. In summer, for instance, the serotonin concentration was about twice as high as in winter (difference statistically significant).

As these results show, in dogs the blood serotonin concentration is independent of sex and age, but varies considerably with the time of year.

TABLE 1. Blood Serotonin Concentration (in $\mu\text{g/ml}$) in Dogs of Different Age and Sex

Group of animals	No. of animals	Serotonin, $M \pm m$
Mean serotonin concentration	110	0.077 ± 0.004
Males	70	0.071 ± 0.017
Females	28	0.077 ± 0.009
Under 4 yrs.	71	0.072 ± 0.007
4-6 yrs.	15	0.061 ± 0.011

TABLE 2. Blood Serotonin Concentration (in $\mu\text{g/ml}$) in Dogs at Different Times of Year

Time of year	No. of animals	Serotonin, $M \pm m$	P
Mean serotonin concentration	110	0.077 ± 0.004	—
January—February—March	33	0.046 ± 0.005	0.1%
May	29	0.088 ± 0.009	—
June	26	0.105 ± 0.008	0.2%
September—October	22	0.070 ± 0.010	—

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LITERATURE CITED

1. M. O. Raushenbakh and G. A. Chernov, *Probl. Gematol.*, No. 3, 3 (1959).
2. G. A. Ghernov and A. A. Lipats, *Pat. Fiziol.*, No. 3, 80 (1962).
3. P. G. Albrecht, M. B. Visscher, J. J. Bittner, et al., *Proc. Soc. Exp. Biol. (N. Y.)*, 92, 703 (1956).
4. R. G. Mitchell and R. Cass, *J. Clin. Invest.*, 38, 595 (1959).
5. G. Pepeu and N. J. Ciarman, *J. Gen. Physiol.*, 45, 575 (1962).
6. D. Quivy, *Sang*, 30, 903 (1959).