10833

Intestinal Secretion During Anoxia.

DAVID W. NORTHUP AND EDWARD J. VAN LIERE.

From the Department of Physiology, West Virginia University, Morgantown, West Virginia.

It has been shown previously[1, 2] that anoxia may cause a distinct diminution in urine secretion and that secretion of acid by the stomach is also decreased by anoxia.[3] In this paper the effect of anoxic anoxia on the secretion of *Succus entericus* will be reported.

Pairs of dogs as nearly the same weight as possible were used. Five hours before the experiment they were fed a standard meal, according to body weight, of cooked hamburger to encourage intestinal secretion. Under nembutal anesthesia loops of jejunum, measured to be the same length in both dogs of a pair, were washed with normal saline, stripped lightly between the fingers to remove the washing fluid, tied off, and returned to the peritoneal cavity. Thirty milligrams per kilo body weight of peptone extract prepared according to the method described by Nasset and Pierce[4] were then administered intravenously to stimulate intestinal secretion. One of the dogs was put into a low pressure chamber, the other served as a control at atmospheric pressure. Twenty minutes after the injection of the peptone extract the animal was sacrificed, the jejunal loop removed, and the amount of secretion it contained was measured.

Sixteen experiments were performed at a partial pressure of 80 mm Hg (equivalent approximately to an altitude of 18,000 ft.), and 15 at a partial pressure of 53 mm Hg (28,000 ft.), making a total of 31 pairs of dogs.

Results. The average secretion in cc of *Succus entericus* per dog was as follows:

TABLE I.

	cc
Average of all controls	14.0
" at 80 mm Hg O_2 pressure	14.5
" " 53 " " O_2 "	9.9

Anoxia obviously produced no noticeable change at 80 mm Hg

1 Toth, L. A., *Am. J. Physiol.*, 1937, **119**, 127.

2 Van Liere, E. J., Parker, H. S., Crisler, G. R., and Hall, J. E., PROC. SOC. EXP. BIOL. AND MED., 1935, **33**, 479.

3 Pickett, A. D., and Van Liere, E. J., *Am. J. Physiol.*, 1938, **123**, 163.

4 Nasset, E. S., and Pierce, H. B., *Am. J. Physiol.*, 1935, **113**, 568.

oxygen pressure; at 53 mm a slight depression of secretion appears. This apparent diminution, however, is not statistically significant.

The intestinal glands are seen to be rather highly resistant to anoxia, probably indicating that they have a low energy requirement for secretion. The questionable depression of secretion at 53 mm Hg oxygen pressure is slight at best; the glands are still secreting quite well. Not all anesthetized dogs will survive this degree of anoxia for 20 minutes.

Summary. Intestinal secretion in dogs was found to be resistant to anoxia. At a partial pressure of oxygen of 80 mm Hg (approximate altitude of 18,000 ft.) there was no effect, and at 53 mm Hg (28,000 ft.) only a mild depression of secretion, which was not statistically significant. This indicates a low energy requirement for intestinal secretion.

10834

Effects of Vitamin C Deficiency and Diphtheria Toxin on Cellular Blood Constituents of Guinea Pig.*

ALEX SIGAL.† (Introduced by C. G. King.)

From the Department of Chemistry, University of Pittsburgh, Pa.

The literature contains many reports concerning the anemia associated with scurvy in both humans and experimental animals.[1-10] There is general agreement that a continued lack of vitamin C in the diet causes a progressive decrease in erythrocytes and hemoglobin, and that the anemia becomes severe only during the later stages of a deficiency. The cause of the anemia is not well understood, however.

* Contribution No. 391 from the Department of Chemistry, University of Pittsburgh.

† Parke, Davis & Co. and Abbott Laboratories Research Fellow.

1 Hess, A. F., and Fish, M., *Am. J. Diseases Children*, 1914, **8**, 385.

2 Leitner, P., *Wien. klin. Woch.*, 1917, **31**, 978.

3 Liotta, D., *Arch. farmacol. sper.*, 1923, **36**, 76.

4 Mettier, S. R., Minot, G. R., and Townsend, E. C., *J. Am. Med. Assn.*, 1930, **95**, 1089.

5 Mettier, S. R., and Chew, W. B., *J. Exp. Med.*, 1932, **55**, 971.

6 O'Hata, S., *J. Biochem.* (Japan), 1932, **16**, 207 (*C. A.*, 1933, **27**, 123).

7 Shimada, J., *Sei-i-kwai Med. J.*, 1934, No. 6, 105 (*C. A.*, 1935, **29**, 4415).

8 Euler, H. v. and Malmberg, M., *Z. physiol. Chem.*, 1936, **243**, 121.

9 Malmberg, J., and Euler, H. v., *Naturwistn.*, 1936, **24**, 713.

10 Aszodi, Z., *Biochem. Z.*, 1937, **291**, 34.