

9052 P

Ascorbic Acid Content of Tissues Following Ether Anesthesia.

DONALD E. BOWMAN AND EDWARD MUNTWYLER.

From the Department of Biochemistry, School of Medicine, Western Reserve University, Cleveland.

It was recently reported by us¹ that following ether anesthesia in dogs, rats and guinea pigs the urinary excretion of ascorbic acid is increased. This excess excretion, which amounts to a 10 to 15 fold increase in the case of the dog but which is somewhat less in the case of rats and guinea pigs, is only of short duration. That is, the excretion falls to the normal level or slightly below in the second 24-hour urine collection following the anesthesia.

It was naturally of interest to determine whether similar periods of ether anesthesia as employed in the above studies are followed by changes of the ascorbic acid content of the tissues. Therefore, rats and guinea pigs, after being maintained on a constant diet for some time, were subjected to 2-hour periods of ether anesthesia.

TABLE I.
The Ascorbic Acid Content of Rat and Guinea Pig Tissues Following Ether Anesthesia.

No. of Animals	Tissues					Remarks
		Muscle	Kidney	Liver	Adrenal Spleen	
		Ascorbic acid, mg. per 100 gm. fresh tissue.				
15	Aver.	6.2	14.4	26.6	337	Normal adult rats.
	Max.	8.5	19.8	35.3	447	
	Min.	4.2	10.5	16.2	152	
8	Aver.	7.6	27.2	45.1	287	Rats killed immediately after 2 hr. ether anesthesia.
	Max.	8.8	38.2	57.8	353	
	Min.	6.7	19.1	34.1	225	
6	Aver.	6.8	21.9	40.9	248	Rats killed 4 hr. after the end of 2 hr. anesthesia.
	Max.	8.9	32.6	52.8	335	
	Min.	4.9	12.7	34.6	126	
5	Aver.	6.3	18.7	32.1	184.6	Normal adult guinea pigs.
	Max.	7.5	20.3	39.4	215	
	Min.	5.8	17.6	26.7	168	
5	Aver.	7.0	17.6	33.9	116.9	Guinea pigs killed immediately after 2 hr. anesthesia.
	Max.	8.0	20.1	42.0	141.9	
	Min.	6.0	13.5	22.4	91.2	
5	Aver.	6.0	14.6	21.6	113.8	Guinea pigs killed 2 hr. after the end of 2 hr. anesthesia.
	Max.	6.2	17.6	23.8	150	
	Min.	5.8	11.4	19.3	86	

¹ Bowman, D. E., and Muntwyler, E., *J. Biol. Chem.*, 1936, **114**, XIV.

The animals were killed by a blow on the head either immediately after the anesthesia or 2 to 4 hours later. The ascorbic acid content of the various tissues was determined by titration with 2,6 dichlorophenol indophenol according to the procedure outlined by Birch, Harris and Ray.²

Table I presents the results obtained. In the case of rats which were killed immediately following the anesthesia, the average ascorbic acid content of kidney and liver is definitely higher than that found in the controls. On the other hand, the average ascorbic acid content of the adrenals is reduced. When the rats were killed 4 hours following the anesthesia, the ascorbic acid content of kidneys and liver, though less than that observed in the animals killed immediately following the anesthesia, is still definitely above the control level. At the same time the ascorbic acid content of the adrenals shows a continued decrease. Somewhat different changes were observed in the case of guinea pigs. There appears in this case to be a definite tendency to a reduced ascorbic acid content of kidneys, liver, adrenal and spleen tissue. That is, the ascorbic acid content of these 4 tissues in animals killed 2 hours following ether anesthesia is definitely below the control level.

Experiments are being continued with the object of finding an explanation for these results.

9053

Relationship Between Brain Potentials and Some Other Physiological Variables.

DONALD B. LINDSLEY AND BORIS B. RUBENSTEIN.* (Introduced by T. Wingate Todd.)

From the Brush Foundation, Western Reserve University.

Most prominent in the records of the electrical activity from the brain in intact human subjects are large and fairly rhythmic oscillations of potential called alpha waves. In a recent study of brain potentials in children and adults by Lindsley¹ the average frequency of the alpha rhythm in 54 adults was found to be 10.4 per second with a range of variation from 8 to 12 per second. Under normal

² Birch, T. W., Harris, L. J., and Ray, S. N., *Biochem. J.*, 1933, **27**, 590.

* General Education Board Fellow.

¹ Lindsley, D. B., *Science*, 1936, **84**, 354.