

## 8402 P

## Urinary Excretion of Ascorbic Acid in the Dog Following Ether Anesthesia.

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Some time ago in a study in this laboratory<sup>1</sup> dealing with the influence of ether anesthesia on the acid-base balance in dogs it was noted that when silver nitrate was added to urine collected following the anesthesia for the chloride estimation, the silver was reduced and a black precipitate formed before the acid indicator was added. This observation led us to investigate the influence of the ether anesthesia on the excretion of ascorbic acid as determined by titration with 2:6-dichlorophenolindophenol.

Female dogs were employed. The urine was collected by catheterization into a bottle containing a few drops of glacial acetic acid, after which sufficient 20% trichloroacetic acid was added to give a 5% trichloroacetic acid concentration. This was then titrated into a known amount of 2:6-dichlorophenolindophenol. The dye was standardized with crystalline ascorbic acid (Merck) according to the procedure of Birch, Harris and Ray.<sup>2</sup> It was found, however, that when urine was allowed to stand even for short periods the reducing value decreased appreciably. Consequently it was thought necessary to perform a preliminary step of bubbling hydrogen sulfide through the urine for ten minutes and then allowing it to stand over night under an atmosphere of hydrogen sulfide, after which the H<sub>2</sub>S was driven off by bubbling nitrogen through the urine for 15 minutes (or until no nitroprusside test was obtained). The trichloroacetic acid was then added and the titration carried out immediately.

Table I presents the results of one of a number of experiments which have been performed.

From these results it is observed that the urinary excretion of ascorbic acid as determined by titration with 2:6-dichlorophenolindophenol is markedly increased in the dog following ether anesthesia.

Recently Zilva<sup>3</sup> observed that when ether was used as a general anesthetic for the intravenous injection of l-ascorbic acid in guinea

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<sup>1</sup> Pomerene, E., *The Total Acid-Base Equilibrium in Anesthesia*, Doctor's Dissertation, Western Reserve University, 1929.

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

<sup>3</sup> Zilva, S. S., *Biochem. J.*, 1935, **29**, 2366.

TABLE I.  
The Urinary Ascorbic Acid Following Ether Anesthesia.

Date	Urine Volume cc.	—Ascorbic Acid—		Remarks
		mg. per 100 cc.	mg. per 24 hr.	
6/ 5/35	994	3.2	31.7	Control
6/ 6/35	635	3.9	24.5	"
6/ 7/35	1610	11.8	190.0	Two hours ether anesthesia
6/ 8/35	810	2.6	22.0	
6/ 9/35	830	3.2	26.5	
6/14/35	500	6.1	31.3	Control
6/15/35	2385	11.1	266.0	Two hours ether anesthesia
6/16/35	300	3.6	10.9	
6/17/35	610	3.6	22.2	
6/20/35	850	3.8	29.6	Control
6/21/35	1571	16.2	255.0	Two hours ether anesthesia
6/22/35	1090	2.7	29.2	
6/23/35	710	4.8	34.2	

pigs, the urinary excretion of the l-ascorbic acid was increased. Other experiments are in progress dealing with the metabolism of ascorbic acid in the dog and also experiments attempting to explain the action of ether anesthesia in causing the increased urinary excretion.

### 8403 P

#### New Pharmacological Actions of Physostigmine.

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While investigating the peripheral action of barbiturates it was observed that in all experimental animals where the cardiac vagus response to weak faradic stimulation had been abolished by large doses of most barbiturates, and by moderate doses of amytal and pernoston, the administration of physostigmine salicylate in doses from 0.2 to 0.35 mg. per kilo by vein, caused usually no detectable spontaneous effect upon the heart rate or blood pressure. The injection of comparable doses of acetylcholine and pilocarpine produced in the same animals a marked fall in blood pressure which in many cases was accompanied by a slowing of the heart.<sup>1</sup> If 2 or 3 minutes were allowed to elapse after the intravenous administration of physostigmine and then the peripheral vagus was stimulated elec-

<sup>1</sup> Koppanyi, Linegar and Dille, *Science*, 1935, **82**, 228.