

requirement for adults, and were in a good state of vitamin C nutrition at the start of the experiment. We believe that these conditions constitute, if anything, a better test of the effect of acetylsalicylic acid on vitamin C excretion. Our experiments indicate that the ingestion of acetylsalicylic acid in daily doses of 0.6 to 2.6 gm. (10 to 40 grains) does not increase (nor decrease) the excretion of vitamin C in the urine in adults.

9121

Ascorbic Acid in Gastric Juice.*

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The literature on vitamin C contains numerous reports on the presence of ascorbic acid in various body fluids and tissues. However, we could find no information on whether vitamin C was present in gastric juice. The fact that normal gastric juice is the most acid of all body secretions suggested that an analysis be made.

First, the gastric juices of dogs were analyzed and later human gastric juice. Nine dogs which had been starved 24 hours were used. Their stomachs were washed with 200 cc. saline and then aspirated. Histamine was given subcutaneously and one hour later the gastric juices were drawn. These fluids were immediately filtered and 25 cc. portions were titrated against the 2-6 dichlorophenolindophenol indicator prepared as described by Bessey and King.¹ The dye was standardized against a standard ascorbic acid (Hoffmann La Roche) solution made up just before analysis, using 25 mg. of the vitamin C per 100 cc. 5% acetic acid. The samples of gastric juice from 9 dogs showed a range of from 0.33 to 1.51 mg. of vitamin C per 100 cc. of gastric juice with an average value of .692 mg.

With a view to ascertaining which part of the gastro-intestinal tract contained the greatest amount of the ascorbic acid, the following analysis was done. The mucosae of the stomach, duodenum,

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¹ Bessey, O. A., and King, C. G., *J. Biol. Chem.*, 1933. **103**, 687.

ileum, and colon of dogs No. 2 and No. 9 were analyzed. Using 8% trichloroacetic acid for extraction, the mucosae were scraped off and weighed and then macerated with white sand using a mortar and pestle. After centrifuging and the volume made up to 25 cc. with the trichloroacetic acid, the titration was carried out rapidly and in the manner described before, until the first faint pink color was observed. The amount of the dye required for 25 cc. trichloroacetic acid was allowed for in all titrations. These results were obtained:

	Mg. ascorbic acid per gram of tissue	
	Dog No. 2	Dog No. 9
Duodenal mucosa	.1095	.2195
Iliac mucosa	.0985	.2073
Colic mucosa	.0605	.1076
Stomach fundic portion	.0526	.0570
Stomach pyloric portion	.00552	.0372

Although the figures on comparison differ considerably, they show separately that the mucosa of the duodenum has the greatest amount of the ascorbic acid, next the ileum, then the colon, gastric fundus, and finally the pylorus.

The next step was to analyze human gastric juice for the vitamin. Twelve hospitalized patients were deprived of their breakfasts, had their stomachs washed and aspirated, and given proper dosages of histamine. The specimens were filtered and analyzed immediately. The preparation of the standard vitamin C solution was the same as described by Farmer and Abt² in their analysis for reduced ascorbic acid in blood. The procedure was then carried out in the following way. The strength of the dye was determined in terms of the standard solution of ascorbic acid made up just before each analysis. The gastric juice was dropped into the dye from a 5 cc. micro-burette until the dye was decolorized, *i. e.*, until the dye turned from a pink to a colorless solution.

The samples of human gastric juice from 12 patients showed a range of from .046 to 1.04 mg. vitamin C per 100 cc. of gastric juice with an average value of .397 mg.

We observed on subsequent titrations of dog gastric juice that there was little loss of vitamin C over a 24-hour period, demonstrating the high protective properties of this body fluid, but subsequent analyses on human gastric juice gave different results. Like blood,³ it appeared from our experiments that the human gastric juice an-

² Farmer, C. J., and Abt, A. F., *Proc. Soc. Exp. Biol. and Med.*, 1935, **32**, 1625.

³ Pijoan, M., Townsend, S. R., and Wilson, A., *Proc. Soc. Exp. Biol. and Med.*, 1936, **35**, 224.

alysis should be carried out immediately to get the maximal value for the vitamin C contained in it. It is possible that the explanation of this discrepancy is due to the type of stomach tube employed. Those used on human beings had brass tips, while those used on dogs were rubber catheters. Barron, Barron, and Klemperer⁴ have shown that minute amounts of copper destroy the protective power of biological fluids.

Whether the presence of vitamin C in gastric juice has any clinical significance remains to be seen. Work is being carried on to determine any correlation between the amounts of vitamin C in blood and gastric juice.

Conclusions. 1. Gastric juice of dog contains vitamin C in variable amounts. In our series it varied from 0.33 mg. to 1.51 mg. per 100 cc. 2. Rated in descending order according to the amount of vitamin C contained within their mucosae, parts of the gastro-intestinal tract showed the duodenum to have the most, then the ileum, colon, fundus, and finally the pylorus. 3. Human gastric juice also contains variable amounts of vitamin C according to our study ranging from .046 to 1.04 mg. per 100 cc.

9122 P

The Adrenotropic Principle of the Pituitary in Relation to Lactation.*

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It was reported¹ that the simultaneous injection of galactin, the adrenal cortical extract (eschatin) and a glucose solution stimulated the initiation and continuation of lactation in hypophysectomized guinea pigs. In the present report the effect of the injection of the adrenotropic hormone of the pituitary as a substitute for eschatin is reported.

The adrenotropic hormone was prepared from whole sheep pit-

⁴ Barron, E. S. G., Barron, A. G., and Klemperer, F., *J. Biol. Chem.*, 1936, **116**, 563.

* Contribution from the Department of Dairy Husbandry, Missouri Agricultural Experiment Station, Journal Series No. 497.

¹ Gomez, E. T., and Turner, C. W., *Proc. Soc. Exp. Biol. and Med.*, 1936, **35**, 365.