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Observations on Excretion of Vitamin C in Some Vascular Diseases.*

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The urinary excretion of vitamin C by normal individuals has been studied by Harris, Ray, and Ward, and was found to average about 0.03 mg. per cubic centimeter of urine for 24 hours.

What rôle, if any, vitamin C plays in the evolution of pathological states associated with vascular damage and hemorrhagic tendencies other than in scurvy is still unknown.

Studies were therefore undertaken upon the excretion of vitamin C in the urine in certain pathological conditions. The rate of vitamin C excretion following the intravenous administration of 100 mg. of cevitamic acid (vitamin C) was also studied. Here are presented the results of these studies upon cases of various types of purpura, metrorrhagias, and 2 cases of acute lupus erythematosus, all of which conditions are associated with tendency to hemorrhage and with a greater or lesser degree of vascular damage.

In the titration of cevitamic acid 2:6-dichlorophenolindophenol was used as the indicator.

TABLE I.
Excretion in Urine of Cevitamic Acid (Vitamin C) Before and Following Intravenous Injection of 100 mg. Cevitamic Acid.

Name	Diagnosis	Aver. Daily Mg. Vitamin C per cc. Urine	Mg. Vitamin C per cc. urine 2 to 3 hr. following injection	Mg. Vitamin C per cc. urine 4 to 6 hr. following injection
E.M.	Normal Control	.025	.195	.09
M.F.	"	.04	.25	.08
D.S.	"	.025	.15	.05
M.L.	"	.03	.17	.04
E.G.	Purpura Hemorrhagia	.006	.007	.007
R.LaC.	"	.02	.012	.02
I.E.	"	.006	.005	.008
A.K.	"	.019	.011	.019
S.C.	"	.016	.02	.02
E.Z.	Metrorrhagia	.01	.02	.007
M.L.	"	.009	.007	.006
F.B.	"	.017	.017	.028
R.B.	"	.017	.015	.016
H.B.	Acute Lupus Erythematosus	.01	.012	.011
M.G.	"	.015	.021	.016

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In comparing the values for vitamin C excretion in normal urines with those found in the pathological conditions studied, the writer found what appears to be a significant difference between them. In the latter cases the excretion was considerably lower than normal, as much as 80% in some instances. This marked diminution in vitamin C excretion was observed in the cases of purpura and metrorrhagias, as well as in the cases of lupus erythematosus.

Following the intravenous administration of cevitamic acid, the excretion in normals rose to about 5 to 6 times the values found before the intravenous injections. This rise occurred in about 2 hours following injection, and came down to the normal level in about 4 to 6 hours.

The pathological cases studied showed a striking difference from the normal in their excretion curves, following intravenous administration of cevitamic acid. There was practically no change in urinary excretion of vitamin C. Not only was there no rise in excretion following injection, but the values still remained considerably lower than the normal.

One of the patients with acute lupus erythematosus was given intravenously 200 mg. of cevitamic acid daily for 6 days. She then received about 500 cc. of orange juice daily for one month. While the excretion level rose to normal after this prolonged administration of fairly large quantities of vitamin C, there was a rise only to double the output following intravenous administration of 100 mg. of cevitamic acid. This is a considerably smaller rise than occurred in normals.

A normal control was studied, after he had refrained for 5 days from taking orange juice or vitamin C in other forms. The excretion level was still normal, rising to 5 times the level following intravenous injection.

At present it is not possible to appraise the significance of these results in the diseases studied.