18 (543)

Creatinine and creatin metabolism in dogs with Eck fistula.

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In connection with certain studies of hepatic function the creatin and creatinine metabolism were investigated in two dogs with Eck fistula. This subject was studied last year by London and Boljarski.[1] They found that the administration of creatinine did not increase urinary creatinine, and that the feeding of creatin caused no increase in creatin excretion but was followed by a slight increase in eliminated creatinine.

The diet given our dogs consisted of unsweetened condensed milk, cracker meal, lard and water. Dog I took food with no apparent hunger and would at no time eat the prescribed amount, some days taking scarcely any. To this, in part is to be assigned the rapid loss in weight. Dog II took his food well and maintained constant weight.[2]

A study of the tables shows that ingestion of creatinine increased the creatinine output in the urine. The excretion of this substance is not quantitative in every instance, though at times this is approximated. There was no clear cut effect upon creatin excretion after giving creatinine. Following the ingestion of creatin there is no corresponding rise in creatin excretion; a slight rise in the creatinine output is suggestive but not convincing. Both creatinine and creatin appear to act as diuretics and the increase in nitrogen excretion on those days is possibly due to a washing out of excretory substances rather than to a conversion of creatin or creatinine into some other substance previous to excretion. The disproportion between the urinary nitrogen and the amount of substance administered suggests this explanation:

[1] *Zeit. f. Physiol. Chem.*, 1909, lxii, 465.

[2] Both dogs were examined carefully at autopsy to ascertain if a collateral circulation had rendered the Eck fistula useless for our purpose. In Dog I no such condition could be detected, but in Dog II a minute aberrant branch of the splenic vein was found which in some slight degree might have diminished the effects of the operative anastomosis.

Dog I. Eck Fistula.

Date, 1910.	Body Weight, Kilos.	Amount of Urine, c.c.	Total N, gram.	Creatinine, gram.	Creatin, gram.	Amount Fed.
April 11	11.85	625	3.79	0.209	None	
12	11.81	410	2.41	.167	.040	
13	11.45	690	4.50	.364	.084	2.33 gm. creatin.
14	11.60	330	3.77	.251	.046	
15	11.50	340	2.81	.219	.027	
16	11.50	300	2.47	.135	.015	
17	11.30	420	5.46	.399	.032	
18	11.20	490	2.79	.172	.014	
19	11.35	840	6.29	.756	.043	0.60 gm. creatinine.
20	11.05	240	2.89	.166	.017	
21	10.80	420	4.99	.318	.067	1.2 gm. creatin.
22	10.68	550	3.57	.234	.063	
23	10.12	780	7.64	.694	.208	0.35 gm. creatinine.
24	10.07	425	3.62	.187	.161	
			Dog II.			
July 2	10.67	170	4.76	0.418	0.017	
3	10.35	130	3.06	.346	.078	
4	10.85	240	6.92	.381	.004	
5	10.65	160	5.87	.350	.041	1.11 gm. creatin.
6	10.70	115	2.58	.253	.002	
7	10.60	100	2.94	.288	.080	1.0 gm. creatin.
8	10.65	430	9.99	.507	.009	0.3 gm. creatinine.
9	10.60	180	4.69	.460	.000	
10	10.78	135	2.56	.360	.008	
11	10.72	160	4.96	.373	.076	
12	10.68	320	3.14	.326	.014	
13	10.71	175	3.14	.378	.004	
14	10.70	190	3.04	.363	.017	
15	10.76	420	3.31	.340	.008	
16	10.72	355	4.12	.387	.161	1.07 gm. creatin.
17	10.65	230	2.77	.324	.000	
18	10.68	160	3.89	.301	.010	
19	10.67	300	3.03	.486	.011	0.5 gm. creatinine.

[Compare the data for the 13th with the 21st day and those for the 19th with 23d of Dog. I.[1]] The creatin used in these experiments gave no reactions for creatinine. We are indebted to Dr. S. R. Benedict for creatinine made from this creatin. The amounts were computed from weights of substance on the basis of quantitative estimation by the Folin method.

[1] We are indebted to Drs. E. H. Poole and H. H. Janeway for operative procedures.