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Effect of Glucose on the Ketone Body Excretion in Fasting Depancreatized Dogs.

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It is a familiar fact that the administration of carbohydrate to fasting or diabetic patients, or to phlorhizinized dogs,¹ immediately abolishes the ketosis, but the possibility of a similar effect of carbohydrates on the ketosis of completely depancreatized, fasting dogs has not hitherto been investigated. Such observations are recorded here.

Method. Dogs were completely depancreatized and were then fed twice daily, with meat, raw pancreas and sugar, and injected with insulin, until the wound had healed. To induce the diabetic state food and insulin were withheld. Urine was collected from the cage and by catheter at intervals of 12 hours. Acetone bodies in the urine were determined by the Van Slyke method, urinary glucose by the Shaffer-Hartmann, and nitrogen by the Kjeldahl method. The results of two experiments are shown below:

TABLE I.

Dog 1. Wt. 6 kg.

Period of fasting	Nitrogen	Glucose	D/N	Total ketones	Remarks
	gm.	gm.		gm.	
1st 12 hrs. 3rd day	3.45	24.0	6.9	0.16	50 gm. sucrose by stomach tube
2nd 12 hrs. 3rd day	4.56	16.3	3.6	0.56	
1st 12 hrs. 4th day	5.42	46.5	8.6	1.36	

TABLE II.

Dog 2. Wt. 6 kg.

Period of fasting	Nitrogen	Glucose	D/N	Total ketones	Remarks
	gm.	gm.		gm.	
1st 12 hrs. 3rd day	2.38	10.9	4.6	0.49	45 gm. sucrose by stomach tube
2nd 12 hrs. 3rd day	2.75	13.4	4.9	1.24	
1st 12 hrs. 4th day	3.50	54.7		1.76	
2nd 12 hrs. 4th day	3.37	12.7	3.72	1.71	

It had previously been found by one of us² that the excretion of the acetone bodies on the third and fourth days of fasting in 6 depancreatized dogs was as follows:

Period	Ketone body excretion					
	1	2	3	4	5	6
2nd 12 hrs. 3rd day	0.25	0.72	0.12	0.08	0.78	0.33
1st 12 hrs. 4th day	0.42	1.12	0.53	0.58	0.46	0.39

The results show that the antiketogenic action of carbohydrate does not obtain in the animal organism in the complete absence of insulin, and in view of the known fact that glucose stimulates the secretion of insulin in the normal animal, it is interesting to consider the possibility that the antiketogenic action of administered carbohydrate in *Diabetes mellitus* and in phlorhizin poisoning may be due to the ensuing secretion of insulin, which, it has been shown, lowers the ketone bodies of the blood following its injection to fasted, depancreatized dogs.³

¹ Wierzechowski, M., *PROC. SOC. EXP. BIOL. AND MED.*, 1925, xxii, 425.

² Chaikoff, I. L., *J. Biol. Chem.*, 1927, lxxiv, 203.

³ Chaikoff, I. L., Macleod, J. J. R., Markowitz, J., and Simpson, W. W., *Am. J. Physiol.*, 1925, lxxiv, 36.

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Return of Vision and Other Observations in Replanted Amphibian Eyes.

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Since Koppanyi¹ reported that vision returned in certain vertebrate eyes after replantation and transplantation, conflicting results have been published which show that return of vision as well as