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Effect of Epinephrin on Normal and Diabetic Response to Insulin.

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The search for a cause of the marked difference in the course of action of insulin intravenously injected in the normal and depancreatized dog[1] brings up the question whether epinephrin secretion in response to low blood sugar can be responsible for the rapid return to the initial level which sets in at 20 to 25 minutes in the normal animal.

When the action of 3 mg. of epinephrin (3 cc. of 1:1000 solution) is superimposed on insulin action in normal and diabetic dogs they still show respectively a curve with a definite minimum at 20 minutes and a continuous drop to at least 60 minutes. Eight experiments were carried out to cover a reasonable dose range of both drugs. An example is given in Table I.

TABLE I.

Dog No. 211 (Normal) With epinephrin 10 min. before injection of 0.1 u. of insulin per kg.		Dog No. 209 (Depancreatized) With epinephrin 10 min. before injection of 0.1 u. of insulin per kg.	
Min. after insulin	% of initial blood sugar value	Min. after insulin	% of initial blood sugar value
0	100	0	100
10	68	10	102
16	59	20	93
20	64	31	88
24	69	41	85
32	63	51	79
38	73	61	78
42	77	72	84
44	88	81	88
63	94	110	104
78	103	141	135
104	119		

According to the data of Hrubetz[2] the amount of epinephrin given should be more than enough to counteract the insulin effect if the 2 drugs were direct antagonists. Control experiments where epinephrin alone is given, as well as the late blood sugar rise when both drugs are given, indicate also that the epinephrin dose is large

[1] Berg, B. N., Gross, J., McAfee, J., and Zucker, T. F., PROC. SOC. EXP. BIOL. AND MED., 1935, **32**, 1080.

[2] Hrubetz, M. C., PROC. SOC. EXP. BIOL. AND MED., 1934, **32**, 218.

enough to meet the requirements of the experiment, *i. e.,* give a blood sugar raising effect equal to the blood sugar lowering effect of the insulin. Against a background of several hundred blood sugar curves we would judge that with the doses here used the epinephrin has little effect on the course of insulin action and asserts itself only after the action of the latter has passed off.

The lack of rapid return of blood sugar towards the initial level in the diabetic animal cannot be attributed to absence of mobilizable liver glycogen. Epinephrin alone causes the usual mobilization of sugar in the diabetic dog. When both drugs are given the delayed blood sugar rise also testifies to the presence of liver glycogen.

Unless secreted epinephrin has an altogether different action from injected epinephrin the conclusion seems warranted that the normal type of response to intravenous insulin with its early return to the normal is not due to epinephrin secretion.

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Placental Immunity. 1. A Method of Determining Dosage of Placental Globulin in Measles Prophylaxis.

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(Introduced by B. Schick.)

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Globulin extracted from human placenta has been found by McKhann and Chu[1] to be effective in measles prophylaxis. Our experiences with this preparation confirm their results. The dosage employed by us has, however, been larger than those previously recommended, and the percent of our cases completely protected was smaller. One reason for this discrepancy is that we treated only those children who were intimately exposed to measles in their own homes, and did not include children who were presumably exposed in hospitals, nurseries, schools, buses, playgrounds, etc. Results of measles prophylactic studies[2] made under such conditions are more accurate than those of institution epidemics.

The dosage of globulin extract from placenta is being determined by injecting various amounts under comparable conditions of exposure to children of a definite age range, as has previously

[1] McKhann, C. F., and Fu Tang Chu, *Am. J. Dis. Child.*, 1933, **45**, 475.
[2] Karelitz, S., and Schick, B., *J. Am. Med. Assn.*, 1935, **104**, 991.