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Insulin and CO_2 Combining Power of Blood Plasma in Normal Dogs.

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In connection with other work in this laboratory we determined the CO_2 combining power of the blood plasma in normal dogs at intervals after the administration of insulin subcutaneously. We were surprised to find that after a slight rise in the CO_2 combining power a much greater fall always occurred.

The dogs used were fasted from the previous day. The experiments were started, usually, about 10:00 A. M. From the table it may be seen that the blood samples were drawn at irregular intervals. After several experiments these sampling times were chosen because of the short duration in the rise and the subsequent prolonged fall in the CO_2 combining power.

By reference to the table on page 32 it is seen that the slight rise in the CO_2 combining power, occurring from 40 to 50 minutes after the injection of insulin, is a constant phenomenon and that it occurs at nearly the same time that the blood sugar begins to fall. This might be due to the burning of the residues of fat metabolism thus freeing some base in the blood. On *a priori* grounds we would assume that the fall in the CO_2 combining power of the plasma is a phenomenon of a different nature.

It is becoming common practice to treat acidosis, whether due to ketogenesis or not, by means of insulin. Our results indicate that insulin may intensify a non-ketogenic acidosis.

Further work on this problem is in progress in our laboratories.

TABLE I.

Changes in glucose of blood and CO_2 combining power of blood plasma after subcutaneous injection of insulin in normal dogs.

Minutes after Injection		0	25	50	120						Wt. kg.	Insulin units
Dog 101	Glucose, mgm. %	80	79	63	50							
	CO_2, vol %	46	48	56	39						17.5	35
Minutes after Injection		0	40	50	60	120	210	265				
Dog 102	Glucose, mgm. %	86	91	74	42	41	40	36				
	CO_2, vol %	42	47	47	43	42	37	32			15.0	30
Minutes after Injection		0	30	46	60	120	180					
Dog 103	Glucose, mgm. %	88	83	68	55	50	50					
	CO_2, vol %	43	46	47	37	33	32				15.0	30
Minutes after Injection		0	30	45	60	120	180	240*	270	305		
Dog 104	Glucose, mgm. %	70	47	41	38	40	34	32	90	167		
	CO_2, vol %	50	53	53	39	31	37	37	39	46	22.0	62

*At 246 minutes, 25 gm. of glucose were given by stomach tube.