produced by the carrier were not necessarily portrayed by the radio-isotope. These are problems in common with any radio-isotope which is being used in biological experiments, but particularly important with one as physiologically sensitive as calcium. However, though the uptake of carrier-Ca^{45} as presented here is not a physiological situation due to the excessive amount of calcium given, the use of carrier-Ca^{45} may prove to be a useful tool in determining the ability of bone to handle large amounts of calcium.

These preliminary experiments with normal and hypoparathyroid rats did not yield any information having a direct bearing on the physiological functioning of the parathyroid hormone. However, they do illustrate very clearly the difference in bone uptake and turnover of calcium in the two situations. All radio-autographs showed the primary sites of calcium entry into the bone to be at the epiphyses and in the periosteum and indicate that this process is affected only in degree in the various situations tested by these experiments. Whether or not one could conclude from this that the basis of the action of the parathyroids is other than in bone itself is doubtful, but it is hoped that further experiments now in progress will bear on this point.

Summary. This study has presented two factors which can markedly affect the uptake and distribution of Ca^{45} in tissues of the rat. The first of these was concerned with the influence of the carrier calcium accompanying the radio element and emphasizes the need for carefully controlled experiments if even small amounts of carrier are administered with the Ca^{45}. The second factor was concerned with the influence of parathyroidectomy on the uptake of Ca^{45}. The uptake by bone was divided into two time periods, the "exchange period" and the "turnover rate" portion. The exchange period was not markedly affected by the absence of the parathyroids while the turnover of calcium in the bone was at a significantly lower rate.

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Effect of Sympathomimetic Amines upon Amino Acid Nitrogen Content of the Blood. (19689)

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The lowering of blood amino acid nitrogen which follows upon the administration of insulin to man and experimental animals (1-8,11) is also observed when epinephrine is injected(9-11). The insulin effect persists even when the hypoglycemia is prevented by the oral administration of glucose(12) or by the simultaneous administration of epinephrine(9). Insulin hypoaminoacidemia is not observed, however, in the adrenodemedullated rabbit(13) although, in such animals, epinephrine continues to evoke its characteristic lowering of the concentration of blood amino acids(13). It was, therefore, concluded by Luck and associates(10,11,13), that insulin hypoaminoacidemia is, in reality, the result of stimulation of the adrenal medulla, and that the epinephrine thus secreted evokes the observed response or stimulates another gland of internal secretion in a chain of hormonal interactions.

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TABLE I. Sympathomimetic Amines and Hypoaminoacidemia. Blood amino nitrogen in percentage of initial value.*

Substance administered	Dose, mg/kg	Hr after administration: 0	½	¾	1	2	4
Epinephrine HCl	.2	100	91.8 (3.7)		80.1 (6.1)	71.2 (3.4)	67 (4.7)
Ephedrine H_2SO_4	2	100	100.9 (4.8)		95 (3)	94.5 (10)	101 (5.5)
dl-Desoxyephedrine†	20	100		100.5		99.1	98.3
dl-Arterenol HCl	2	100		99.3 (1.1)		99.1 (.7)	96.6 (.2)
Phenylethylamine HCl	20	100		102.7 (4)		106.2 (6.5)	110.3 (5.6)
Propadrine HCl‡	5	100		102.4 (1.4)		102.4 (1.9)	101.7 (.7)
	15						
Neosynephrine HCl	10	100		99.9 (3)		100.2 (4.9)	103.8 (2.2)
Tuamine H_2SO_4	10	100		99.8 (3)		101.4 (.8)	102.5 (3.8)

* Each value is the avg of determinations on 4 rabbits, the figures in parentheses representing the avg deviation from the mean.

† One animal only.

‡ Two animals received the lower dose, 2 the higher.

The important role of epinephrine in the induction of hypoaminoacidemia led us to inquire into the possible effect of various sympathomimetic amines, as substitutes for epinephrine, in producing an amino acid lowering.

Materials and methods. Rabbits were used as the subjects in this series of experiments. A preliminary blood sample was obtained from the ear, and the compound to be tested was administered subcutaneously. The dosage given for the various drugs was roughly equivalent to that given for epinephrine in terms of pressor activity. Blood samples were then taken from the ear at the time intervals noted below. The amino acid nitrogen content of these blood samples was determined colorimetrically using the Folin method as modified by Danielson(14).

Conclusions. From the data obtained it is seen that only epinephrine displays the ability to lower the blood amino acid nitrogen. This confirms the observations of Luck and associates(9-11). While 3 out of 4 rabbits displayed a moderate increase in amino acid N following phenylethylamine administration, the significance of this is not apparent. The fluctuations obtained with the other sympathomimetic drugs are not great enough to exclude experimental error.

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