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Calcium and Phosphorus Balances in Rats During Period of Pregnancy and Lactation.

HAROLD GOSS AND CARL L. A. SCHMIDT.

From the Division of Biochemistry, University of California Medical School, Berkeley.

Rats were placed on a constant diet and periodic collections of excreta were analyzed in order to follow the calcium and phosphorus balances during the period of pregnancy and lactation. The diet was made alkaline by the addition of calcium carbonate. All of the necessary factors were included in the diet.

After the onset of pregnancy and prior to parturition, the animals stored calcium and phosphorus in excess over that estimated to be contained in the litter at birth. During the period of lactation, the input of both calcium and phosphorus increased markedly, but this increase was not sufficient in most cases to account for the storage of these elements by the young. The animals were consequently in negative balance. Balances were carried out during 2 successive periods of pregnancy and lactation.

Other experiments to determine the effects of variations in the reaction of the diet are in progress.

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Body Temperature Regulation. Effects of Labyrinth Destruction on Tonus and Body Temperature in Rabbit.

LILLIAN M. MOORE.

From the Department of Physiology, University of California, Berkeley.

Labyrinth destruction in the rabbit as well as in other animals produces a marked temporary and a less marked permanent decrease in muscular tonus. If body temperature is in any way dependent upon the heat production of tonic contractions these characteristic tonus changes should be accompanied by equal and parallel changes in the body temperature.[1]

Four or 5 entirely successful operations have been performed

[1] Moore, L. M., PROC. SOC. EXP. BIOL. AND MED., 1928, xxvi, 48.

with identical post-operative symptoms. The tonus modifications are immediately evident, but the development of the hypotonia continues for about 2 hours, during which time the animal lies on its ventral side (an unusual position for a rabbit) in a completely relaxed condition, unable to maintain any antigravity posture, but permitting the elicitation of reflexes. This condition, however, is transient and within 2 to 3 hours the tonus has increased until a sitting and finally a standing position is regained. The animal then makes occasional progressive movements, but with evidence of great muscular weakness.

The temperature changes follow the same course. There is an immediate fall, in the example given, from a normal of 39.5° C. to 35.4° C. followed by a further gradual decrease to 34.6° at the time of greatest tonus loss. As the tonus again increases, the temperature rises until it reaches 38.3° C. about 10 hours after the operation. It later drops one degree and remains near 37.5° C. until the rabbit is killed.

One example, with several readings omitted for brevity, is given.

Time	Temp. of rabbit in ° C.	Tonus symptoms
7/19/28— 9:30 a. m.	39.5	
10:00 a. m.	destruction of right labyrinth	
10:30 a. m.	destruction of left labyrinth	
11:00 a. m.	35.4	Very relaxed
11:15 a. m.	34.9	Lying on ventral side.
11:45 a. m.	34.6	Marked hypotonia.
12:00 m.	34.8	
1:00 p. m.	36.3	Sitting erect.
4:20 p. m.	37.8	Occasional walking.
7:45 p. m.	38.3	
7/20/28— 8:00 a. m.	37.4	Muscular weakness.

The hypothermia in these cases cannot be due to interference with any temperature regulating mechanism in the brain, but is entirely an indirect result of the lowered tonus characteristic of labyrinth destruction. The relation which seems to exist between muscular tonus and body temperature would appear to be very significant, and may be found to account for the constant and relatively high temperature of birds and mammals.