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The energy metabolism of normal, full term infants.

By RUTH CONKLIN, M. ELIZABETH MARSH and JOHN R. MURLIN.

[*From the Physiological Laboratory of the University of Rochester and the Obstetrical Division of the Highland Hospital, Rochester, N. Y.*]

Upon 50 infants under 2 weeks of age, 234 observations of respiratory metabolism were made but of this number only 108 were truly basal. The methods used were all exactly as described previously for the study of premature infants.[1]

The respiratory quotient and also heat production varied with age. The R. Q. was lowest on the second day and gradually rose. Heat production per square meter of body surface (Lissauer formula) was lowest on the 4th day, remained practically constant until the 8th day, and then rose.

Total heat production was found to be 6.67 calories per hour when all basal periods were averaged. Heat expressed per kilo of body weight per hour was 1.86 calories where only minimal production for each child was averaged but for all basal periods was 2.00 calories with a coefficient of variability of 13.0 per cent. When expressed per square meter per hour the average for minimal was 27.42 calories and for basal 29.16 calories with a coefficient of variability of 11.9 per cent.

Assuming that the Lissauer formula, $10.3\sqrt[3]{W^2}$, gives an essentially correct surface area for the infant, surface area is a slightly better measure of metabolism than weight, since the coefficient of variability is slightly lower.

As a measure of metabolism, pulse must be considered a very poor criterion since the coefficient of correlation between the two was found to be 0.178, whereas a perfect correlation is represented by unity.

Increases in heat production due to muscular activity went as high as 56 per cent in successive periods and as high as 117 per cent when maximum was compared with minimum for the whole series of observations on a single infant.

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[1] Marsh, M. E., PROC. SOC. EXP. BIOL. AND MED., 1923, xx, 523.

In several cases a material increase in metabolism was obtained when the amount of the feeding was increased over the amount given before a preceding observation. Feedings of 10 per cent lactose and also dextrose solutions were given in several cases, particularly the first three days after birth and in most instances were as effective in increasing heat production as breast milk.

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Regeneration of hemoglobin and diet factors in prolonged, severe experimental anemia.

By G. H. WHIPPLE and F. S. ROBSCHEIT-ROBBINS.

[*From the Department of Pathology, School of Medicine and Dentistry, University of Rochester, Rochester, N. Y.*]

Our earlier observations were made upon dogs rendered anemic by two or three large hemorrhages. Following this sharp reduction of blood hemoglobin from about 120 per cent to approximately 60 per cent, we observed the curve of blood hemoglobin regeneration as it returned to a normal level. It was easy to show that under these conditions a maximal hemoglobin regeneration was induced by certain diets—for example, liver and meat feeding. Many other diet factors were almost inert and certain drugs (iron and arsenic) were inert in this type of experiment.

The data given in this paper are derived from experiments on dogs under very different anemic conditions but the methods used are similar to those described in recent papers.[1] The *anemia level* is maintained as near a constant level as possible by frequent bleedings. The number and amount of bleedings are determined by the hemoglobin, hematocrit and plasma volume figures. Under such conditions the animal is lively, active and healthy but with a constant hemoglobin level of 40 to 50 per cent. We assume, therefore, a constant and maximal stimulus to blood hemoglobin

[1] Whipple, G. H., Hooper, C. W., and Robscheit, F. S., *Am. J. Physiol.*, 1920, liii, 2, 151.