

of blood did not appreciably retard the daily average loss in body-weight, but actually quickened it as a rule.

The work is nearing completion and its results will shortly be published in detail.

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On the metabolic influence of magnesium sulfate in dogs, with special reference to the partition of the nitrogenous constituents of the urine.

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In these experiments, in which relatively large doses of magnesium sulfate were given to dogs, abscesses and sloughing followed subcutaneous injections, but were not caused by intramuscular or intravenous injections nor by administrations *per os*. Very large doses of magnesium sulfate could repeatedly be injected intravenously without causing death, when care was taken to conduct the process slowly.

Daily fluctuations in the weight of the animals, as well as in the volume and specific gravity of their urines, resulted chiefly from diuretic or diarrheal influences and the consequent compensatory tendencies.

Administration *per os* caused diarrhea. Bone ash in the food appeared to exert only a mechanical diminution of such diarrheal tendencies. Injections under the skin or into a muscle or into the circulation failed to elicit any evidence of diarrhea, except in one doubtful case after subcutaneous application. On the contrary, such injections appeared to make the feces drier and harder than ordinarily, and the urine volumes greater.

If there was any effect on the quantitative elimination of solid matter in the feces, it was not more than a slight increase. The same may be said of the content of nitrogen in the feces, and also of the fecal discharge of magnesium (after intravenous injection of magnesium sulfate).

In a general way elimination of nitrogen in the urine was increased after the normal periods, but the increase was not suf-

ficient to warrant the conclusion that it was a direct effect of the dosage. The observed absolute increase of urinary nitrogen was registered chiefly in the form of urea, although the relative excretion of the latter was below normal in one of the two main experiments.

The most striking and consistent effect on the partition of the urinary nitrogen was the continued absolute as well as relative increase of ammonia elimination throughout the whole of the dosage part of each metabolism experiment, in spite of the fact that the Folin method does not permit of complete recovery of ammonia from crystallized ammonio-magnesium phosphate. (See the next abstract.) The increased elimination of ammonia nitrogen may be attributed, in large part at least, to special formation and elimination of ammonio-magnesium phosphate under the prevalent conditions.

Considering the data pertaining to the partition of nitrogen from the standpoint of direct agreement, in the two main experiments, it is noticeable that the increased elimination of ammonia in all the postnormal periods is the most striking and perfect concordance. That this increase was largely due to the combination of ammonia with magnesium in the form of ammonio-magnesium phosphate appears to be certain. The increase indicated by our figures in one of the two main experiments was doubtless below the full increase that would have been exhibited by a perfect method of determining ammonia nitrogen when in the form of "triple phosphate."

The nitrogen of urea, creatinin and allantoin, taken collectively, appeared in increased amounts, both absolutely and relatively, in a majority of the postnormal periods.

It is especially noteworthy that recovery from dosage with magnesium sulfate, however profound the immediate effect of such treatment may have been, was always prompt and apparently complete so far as general observation and our data indicated. That magnesium sulfate exercises surprisingly little measurable effect on nitrogen metabolism under the conditions of these experiments has also been shown by the results.

The paper will shortly appear in the *Journal of Biological Chemistry*.