

peptone supplied the necessary nitrogen, then medium 4 should support growth as well as medium 6. This has not been found to be the case. It occurred to us that perhaps the excellent growth in medium 6 as compared to medium 18 (the extract being constant) might be due to the buffer action of the peptone rather than to its nutritional value. Accordingly we made a Sørensen citrate buffer of pH 6.5 diluted 1 to 10 and substituted this for the peptone. This buffer behaved exactly as the peptone. In fact the differences between media 18 and 6 were even more marked.

Although citrate is a good buffer and might replace the peptone for this reason, it is also an excellent source of carbon. This could explain our observations. To rule out this possibility, we next made a N/100 NaHCO₃ solution and used that in place of the citrate. Our results were exactly the same and we were forced to the conclusion that for *S. lactis* at least the peptone serves largely, if not entirely, as a buffer. How general this is remains to be seen. It is obvious, too, that the possibilities in the use of this device are almost limitless.

7813 P

Effect of a Diet Low in Magnesium on the Rat.*

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Feeding a diet containing only 0.18 mg. of magnesium per 100 gm. of food, Kruse, Orent and McCollum¹ have discovered a syndrome in the rat which they term magnesium tetany. In this condition, which is characterized by a hyperexcitability manifested by spontaneous or induced convulsive seizures, these authors found the plasma magnesium content to be reduced to a low level of 1 mg. % or less.

A considerably different sequence was observed by the present writers on a diet containing between 1 and 2 mg. of magnesium per 100 gm. of dry food which was composed of casein, sucrose, vegetable fat, vitamin supplements, and a purified salt mixture. On this

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¹ Kruse, H. D., Orent, E. R., and McCollum, E. V., *J. Biol. Chem.*, 1932, **96**, 519; 1933, **100**, 603.

diet the animals have never been observed to suffer spontaneous convulsions, but convulsive seizures can be readily induced through application of a suitable stimulus, such as the hissing sound of an air blast. A striking observation is that the plasma magnesium content of these animals, while invariably lower than the content of the controls, falls within the range of variation which has been reported for normal animals. The body magnesium level, too, was found to be markedly reduced. Results of the plasma magnesium and body magnesium analyses are given in Table I.

TABLE I.

| Series | Time on diet wk. | No. animals in each group | Plasma Mg† | | Body Mg | | | | |
|--------|------------------|---------------------------|------------|--------------------------|----------|-------------|-----------|--------------|-------|
| | | | Controls | Mg deficient mg./100 ml. | Controls | Range | Mean | Mg deficient | Range |
| | | | | | | mg./100 gm. | gm. | body weight | |
| I | 7 | 2 | 3.75 | 2.65 | ‡ | 42 | ‡ | 28 | |
| I | 10 | 2 | 4.30 | 2.25 | ‡ | 32.5 | ‡ | 18 | |
| II | 8 | 4 | 2.55 | 1.55 | 38-42 | 40 | 26-29 | 27 | |
| III | 12 | 4 | 3.00 | 2.25 | 30.5-32 | 31 | 19.5-24.5 | 22 | |

† The plasma magnesium values were determined on pooled blood samples.

‡ Analyses differed slightly from each other.

The period of time required to reach the condition in which the rats are subject to convulsions was found to be markedly affected by the level of the vitamin G intake. Animals fed a ration low in G reach this stage much sooner than those given larger amounts of this vitamin. With an ample quantity of vitamin G and at the level of magnesium stated, there was not developed the trophic changes such as loss of hair, emaciation and edema of the feet, which are stated by Kruse, Orent and McCollum to be characteristic of the terminal stage of the deficiency.

7814 C

Failure of Theelin and Thyroxin to Affect Plumage and Eye-Color of the Blackbird.*

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Evidence from a number of sources has made it apparent that sexual differences in the plumage of the common fowl

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