

Evidence was obtained which shows that the results of these studies were not due to a stimulation of the endogenous metabolism nor to the specific dynamic action of the proteins or amino acids.

The following conclusions were drawn: Both creatine and creatinine were formed, under the conditions of these experiments, as a result of an increased exogenous protein or amino acid metabolism per unit of time. Muscle creatine is an intermediate product and urinary creatinine a waste product of this metabolism. Evidence was obtained which showed that creatine may also have an endogenous origin from amino acids.

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Cure of Rickets by Water Soluble Extract of Yeast and Sodium Phosphate.

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Five albino rats, 28 days old, were removed from the mother to a dark room and placed in individual cages. The rats were of a known inbred stock of laboratory animals which had been under observation for 2 years. The animals were placed on Steenbock's Rachitogenic Diet No. 2965* and given distilled water only. This diet was continued for 30 days, when the animals were X-rayed, and all were found to have advanced rickets.

They were then returned to the dark room and fed the following diet: 960 gm. of Steenbock's Rachitogenic Diet No. 2965, thoroughly mixed with 40 gm. of $\text{Na}_2\text{HPO}_4 \cdot 12\text{H}_2\text{O}$. In addition one gram of a water soluble extract of yeast was added to each day's feeding. The water soluble extract of yeast was made by filtering cold double distilled water through brewers' yeast and evaporating the filtrate to a gum. This material was then dried by repeated trituration with absolute alcohol. The residue left after evaporation of the alcohol was combined with the original material and the whole powdered. This water soluble extract gave a negative test for sterols after it had been shaken out with chloroform and treated

* Steenbock's Rachitogenic Diet consists of: 76% whole yellow corn; 20% gluten; 3% CaCl_2 ; 1% NaCl .

with acetic anhydride and sulphuric acid (Liebermann-Burchard test.) But a sample of the whole yeast gave a decidedly positive reaction, and the water soluble extract of the yeast, to which one drop of Viosterol was added, also gave a strongly positive reaction.

The feeding of this latter diet was continued for 30 days, when the animals were again X-rayed, showing that the rickets had been cured.

This improvement was not due to time, since rats that continue to eat the rachitogenic diet for 60 days show skeletal changes that are at least as abnormal as those of the rats on the diet for 30 days, when examined by means of the X-ray.

In addition to this group of rats, other groups have been fed varying amounts of phosphate and the water soluble extract of yeast, with results that are analogous to those described.

Conclusion. It is clear that the addition of sterol free, water soluble, extract of yeast plus secondary sodium phosphate to a rachitogenic diet caused the disappearance of the rachitic skeletal changes in rats.

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Rôle of Certain Anaerobic Toxins in Pneumococcus Infection.

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The search for the factors responsible for the toxemia of pneumococcus infections is long and unsuccessful. The approach to this problem has been primarily by studies of the toxic substances which may be obtained from the pneumococcus *in vitro*. Following the intravenous injection of pneumococcus autolysates into guinea pigs, Rosenow¹ and Cole² early observed anaphylactic-like reactions which could not be correlated with the signs of toxemia in pneumococcus infections. Recently, Parker³ described certain toxic substances obtained by the anaerobic autolysis of concentrated pneumococcus

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¹ Rosenow, E. C., *J. Infect. Dis.*, 1911, **9**, 190; 1912, **11**, 94, 235.

² Cole, R., *J. Exp. Med.*, 1912, **16**, 644.

³ Parker, J. T., *J. Exp. Med.*, 1928, **47**, 531; 1929, **49**, 695; 1929, **50**, 161.