

Tooth growth, as measured by the weight of the freshly extracted tooth was as good on the rachitic as on the non-rachitic diets and varied approximately with the variations in the growth of the rats. The percentage of bone calcium, phosphorus and ash on the basal diet +  $\text{KH}_2\text{PO}_4$  + cod liver oil was about 8% higher than that on basal diet +  $\text{KH}_2\text{PO}_4$ .

In the recovery experiments when  $\text{KH}_2\text{PO}_4$  or cod liver oil was added after the rats had been on the rachitic diet for 30-45 days, the calcium and phosphorus of the bones were increased to about the same level in each case, but fell somewhat short of the calcium and phosphorus of the bones of rats that were on the basal diet +  $\text{KH}_2\text{PO}_4$  from the outset of the experiment. The latter, however, gave slightly lower values than the basal diet +  $\text{KH}_2\text{PO}_4$  + cod liver oil.

The rats grew well on the rachitic diet, but in most cases growth was not as good as on the rachitic diet +  $\text{KH}_2\text{PO}_4$ . The latter, however, did not give as good growth as the rachitic diet +  $\text{KH}_2\text{PO}_4$  + cod liver oil.

#### 4681

##### Liver Extract Therapy in Splenectomized Anemic Rats.

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(Introduced by Florence R. Sabin.)

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The therapeutic effect of liver extract on splenectomized anemic rats was investigated with the principal object of inquiring into the possibility of developing a biological assay for liver extracts. Great similarity between this severe rat anemia and human pernicious anemia had been noted by several observers, Lauda going so far as to name the disease "perniziöse Anämie" in rats.<sup>1</sup> At the time of our research we were unaware of the recently completed work of Vedder, who found that liver extract therapy was of no value in the treatment of this anemia.<sup>2</sup>

Our experiments confirmed this finding. In a series of 40 splenectomized rats (averaging 40 gm. in weight, the experimental animals being fed from 0.0125 gm. to 0.4 gm. of Lilly's liver extract No.

<sup>1</sup> Lauda, *Klin. Woch.*, 1925, ii, 1587.

<sup>2</sup> Vedder, A., *Nederl. Tijdschr. v. Geneesk.*, 1928, ii, 4411.

343 per day) no effects of the extract were noted as judged by the mortality rate, length of life after splenectomy, and total erythrocyte count. Fifty-seven per cent of the experimental animals died in a period of from 6 to 26 days after splenectomy, average 15 days; 60% of the controls died in a period of from 5 to 25 days after splenectomy, average 13 days. No significant differences were noted in the erythrocyte counts of the control and experimental animals.

## 4682

**Studies on the Physiology of Pyrimidines. The Metabolism of the Pyrimidine Nucleosides.**

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The results of previous work by one of us<sup>1</sup> indicated that the pyrimidines uracil and thymine, when fed in small amounts to dogs, are to a large extent metabolized. In the case of cytosine it was found that this substance was not utilized. It was partly excreted unchanged, partly deaminized and excreted in the form of uracil.

These experiments were undertaken to study the behavior of the pyrimidine nucleosides, uridine and cytidine. The substances were fed to dogs maintained on a nitrogen equilibrium. Our results show that these nucleosides are metabolized in the animal body, being broken down predominantly to urea. The behavior of cytosine in the nucleoside molecule is therefore in marked contrast to that of the free base, which is not utilized. Pentose determinations in the urine showed that the pentose sugar in the nucleoside molecule is practically completely burned; certainly not more than a trace is excreted in the urine.

Working with rabbits and man Wilson<sup>2</sup> previously concluded that when uracil, in the form of a nucleoside or nucleotide, is administered, only a small portion of the uracil is excreted.

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<sup>1</sup> Cerecedo, L. R., *J. Biol. Chem.*, 1927, lxxv, 661.

<sup>2</sup> Wilson, D. W., *J. Biol. Chem.*, 1923, lvi, 215.