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Urea, Promoter of the Catalytic Action of Blood Serum on a Specific Dextrose-Phosphate Reaction.

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Dextrose and phosphates have a high tendency to react. They are both present in animal and human tissue as well as in the blood serum. When mixed in an aqueous solution in the same quantities, which are present in the blood serum, *i. e.*, 3 mg. of P in the form of a neutral phosphate and ca. 100 mg. of dextrose per 100 cc., we find a very slight reaction, which can be assumed because we recover a little less of dextrose and a little less of phosphorus than we do when the chemicals are added separately; 2.8 mg. of P are recovered instead of 3 mg. per 100 cc., and 90 mg. of sugar instead of 100 mg. The same quantities added to human serum of a healthy individual react much more intensely. Instead of the original quantities added we recover only 25-50% of dextrose and ca. 70% of phosphorus. The loss of dextrose has been explained in the previous paper. It is caused by the increase of dextrose, which is counteracted by the serum colloids. The loss of phosphorus, however, does not occur if no sugar is added. In this case we recover 100% of the added phosphate. Urea added to the serum does not influence the serum phosphate, and also does not influence the dynamic equilibrium of the phosphate, when this salt (3 mg. per 100 cc.) and at the same time urea (30 mg. per 100 cc.) are added. We still recover the entire phosphate. The reaction between dextrose and phosphate, however, is intensely accelerated and intensified, if phosphate, urea and dextrose are added to the serum. In this case only a small quantity of the phosphate, 10%, and frequently none of the added salt can be recovered, provided the serum is that of a normal healthy individual. The loss of the dextrose is not influenced by the urea, but there is a loss of the urea as high as 30-50%, which, as stated previously is caused by the adding of dextrose.

Pathological conditions, in which the physiological reaction of dextrose with phosphate remains incomplete will be considered in another article.

The catalytic action of the serum colloids and their promotion by the urea are specific for dextrose. Other saccharides, such as galactose or lactose, do not react with the phosphate, but allow 100% of

the added phosphorus to be recovered, even when urea is added besides the sugar. It is evident that we deal here with an important anabolic influence of the urea, which, in the serum or tissues, is not merely a waste product, as it is as a rule considered in the urine.

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Behavior of Blood Cholesterol Following Injections of Tuberculin.

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The literature gives but scant attention to the relation of cholesterol to tuberculosis. It has been found by a few observers that the blood cholesterol is definitely decreased during the activity of the tuberculous process, and this hypocholesterolemia, therefore, may be regarded as an index of poor prognosis. With the improvement of the pathologic process, however, the blood cholesterol rises and during convalescence it may be increased above the normal level. The present experiments endeavor to study the behavior of total blood cholesterol in rabbits following injections of old tuberculin.

A total of 10 rabbits were divided into 2 groups. The first group of 6 rabbits (average weight 1660 gm.) received single injections of 1 :10 dilution of old tuberculin, and the blood cholesterol was determined daily by the Bloor method as modified by Sackett. The results are summarized in Table I.

The second group of 4 rabbits (average weight 3340 gm.) were first sensitized by repeated injections of old tuberculin over periods varying from 10-60 days. After rest periods of 2-6 months, these animals were given single injections of tuberculin and the blood

TABLE I.
Blood Cholesterol in Unsensitized Animals.

Observed	Female 1725 gm.	Female 1400 gm.	Male 1750 gm.	Female 1725 gm.	Female 1725 gm.	Female 1650 gm.
5-26	138	113	100	118	120	150
5-28	202	212	225	—	275	200
5-29	192	300	137	202	170	267
5-29	0.2 cc. 1/10 O.T.		1.0 cc. 1/10 O.T.		3.0 cc. 1/10 O.T.	
	Intraven.	Subcut.	Intraven.	Subcut.	Subcut.	Intraven.
5-30	313	380	300	332	375	288
5-31	201	282	283	289	263	220
6-1	190	267	287	240	197	250
6-2	195	325 (?)	195	193	203	215
6-3	193	260	267	214	195	312