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The fate of xylose in the animal body.

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The very similar chemical properties, correlated with closely corresponding structural configurations of the pentoses and hexoses, make difficult the elaboration of chemical methods for the determination of one in the presence of the other. The resistance of pentoses to fermentation by ordinary baker's yeast has furnished a means that has been used at times to separate the two types of substances for analytical purposes. In the present study this procedure has been employed to determine the pentoses in the blood following their administration intravenously. The reducing power of normal blood can not be removed completely by fermentation with yeast, but since this residual reduction seems to remain small and fairly constant no real difficulty arises. It is scarcely unjustifiable to assume that in the presence of pentoses the difference from the usual unfermented reducing power of the blood furnishes a reliable index of the amount of pentoses present.

The details of this series of experiments may be summarized as follows: One gram of xylose in 15 cc. of solution was injected into the marginal ear vein of a 2 to 2.4 kg. fasting rabbit. The blood samples (2 to 3 cc.) were collected at the following intervals: one the preceding day, one just before and one just after the experiment, others after one, two, four and eight hours, respectively. These were analyzed for non-protein nitrogen, blood sugar and reducing power after fermentation. For this latter determination the whole blood was incubated one hour at 37 C. with a suspension of yeast. Then the proteins were precipitated according to the Folin-Wu procedure, and the reducing power of the filtrate determined by the Shaffer-Hartmann method, the results being expressed in terms of glucose.

In general, the total blood sugar paralleled the unfermented fraction. In the control experiments there was no change in the residual reduction in the normal rabbits or those with phlorhizin diabetes. Tartrate nephritis is associated with a pronounced in-

crease and chloroform poisoning with a less marked increase in the residual reduction, the changes being accompanied by a rise in the non-protein nitrogen, to which they are undoubtedly due in large measure. After the injection of one gram of glucose, while there was the usual marked temporary hyperglycemia, there was no change in the unfermented residuum. Subsequent to the administration of xylose the reducing power of the blood after fermentation returned to its previous value in four hours in the normal rabbit, two hours in phlorhizin diabetes, four hours in chloroform poisoning, but was scarcely back to the control level in eight hours in tartrate nephritis.

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Evidence for the supernormal phase and a recovery curve of conduction in the human heart.

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Recent work by Ashman[1] and by Ashman and Woolley[2] has demonstrated that the compressed or injured cardiac muscle of the turtle may, after excitation, recover its conductivity along a curve which passes through a supernormal phase. Thus an impulse traversing the compressed muscle will travel most rapidly during the supernormal period. If the degree of compression is sufficient only impulses arriving at the compressed region during the supernormal phase are transmitted; earlier or later ones are blocked. These experimental observations add much weight to the argument for a supernormal phase in the recovery of conductivity in the human hearts discussed below.

Lewis and Master[3] reported two cases of block in the human heart which they interpreted as evidencing a supernormal phase. In their first case typical complete heart block was interrupted at

[1] Ashman, Richard, *Am. J. Physiol.*, 1925, lxxiv, 140.

[2] Ashman, R., and Woolley, E., PROC. SOC. EXP. BIOL. AND MED., 1925, xxiii, 159.

[3] Lewis, T., and Master, A. M., *Heart*, 1924-25, xi, 371.