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Fate of Glucose and Other Sugars in the Eviscerated Animal.

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Rats fasted previously for 24 hours were operated upon under amytal anesthesia. The whole intestinal tract, including spleen and pancreas, and occasionally kidneys and adrenals, was removed. The blood sugar falls in such a preparation owing to the fact that the liver is out of circulation. The sugar content of the whole rat was determined by passing the heat coagulated tissues through a meat grinder and extracting them with hot water. Separation of sugar from non-sugar reducing substances was attempted.

Sugar (100 mg. per 100 gm. rat) was injected intravenously after evisceration and groups of rats were killed and analyzed, (a) 10 minutes after the sugar injection, (b) after 1 hour of sugar injection at a constant rate, and (c) after 1 hour of sugar injection plus insulin. The average percentages of sugar recovered in the 3 cases are shown in the following summary:

	10 minutes	1 hour	1 hour (insulin)
Glucose	97	90	2
Mannose	91	60	54
Fructose	98	61	62
Dihydroxyacetone	80(92)*	67	63

* 1 minute after injection.

The specificity of the insulin action is a very striking phenomenon. In experiments with injection of larger amounts of sugar and extending over 2 hours, glucose, in the absence of insulin injection, was found to disappear to the same extent as the other sugars. The glycogen content of the muscles increased under these conditions.