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**The Excretion of Injected Glucose by the Sculpin**

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This note constitutes a report on uncompleted work on the disposition of glucose by the marine teleost, and as such encompasses several observations which, while not material to the main problem, were essential preliminaries to its further study.

**Methods and Material.**

Glucose in blood and urine was determined by the method of Hagedorn and Jensen<sup>1</sup>. The fish were caught from the laboratory dock during July and August, 1952. Blood was obtained by puncture of the dorsal aorta. No anticoagulant was used. Urine was collected directly from the exposed bladder; the urinary papilla having previously been ligated at the start of the experiment. Observations were made almost entirely on *Myoxocephalus octodecimspinosus*. The fish weighed 150 to 200 grams. Single specimens of *M. scorpius* and *Lophius piscatorius* were also studied.

**Results.**

Blood glucose in the freshly caught, vigorous *M. octodecimspinosus* was found to range between 39 and 85 mgm. per cent, with an average of 59 mgm. per cent. When the fish were studied after a five hour to three day fast in the live-car, their blood glucose concentrations varied from 43 to 104 mgm. per cent with an average of 83 mgm. per cent. When the fish were in the live-car for more than three days the blood glucose would occasionally be found to be as high as 200 mgm. per cent. Because of the higher concentrations in the fish that had not been freshly caught, the remaining experiments were undertaken on the same day that the fish was caught. In many of these observations were started within an hour of the taking of the fish.

The glucose tolerance curve was determined in six fish after an intramuscular injection of 150 mgm. of glucose. The blood concentrations were as follows:

# Research Report: 1952

Time hrs.	Range mgm. per cent	Average mgm. per cent
3 1/2	168-294	230
8 1/2	164-321	266
27	74-222	150

The procedure was repeated after administration of glucose in the dorsal aorta. Ten fish were given 150 mgm. of glucose and the urinary papillas ligated. They were not subjected to further manipulation until the single bleeding twenty hours after injection. The blood glucose at twenty hours varied between 83 and 247 mgm. per cent with an average of 150 mgm. per cent.

During these twenty hours the fish excreted 2.5 to 19.8 mgm. of glucose or 1.6 to 13.2 per cent of the injected quantity. The average percentage of glucose excreted was 6.7. The average glucose concentrations in the urine was 354 mgm. per cent and the maximum concentration observed was 588 mgm. per cent. The urine volume averaged 2.8 ml. in 20 hours and it is thought that these observations were completed before the onset of post-manipulation diuresis.

Similar values were found in the single specimen of *M. scorpius* examined, but a single specimen of *L. piscatorius* failed to excrete any of 1.5 grams of intravascularly injected glucose. Nevertheless, the blood glucose was only 122 mgm. per cent 20 hours after injection. Preliminary experiments have failed to demonstrate the passage of glucose through the gill membrane when the fish is maintained under adequate aeration, minimal handling and 20°C temperature.

## Conclusion.

*M. octodecimspinosus* excretes an average of 6.7 per cent of an injected dose of 1 gram of glucose per kilogram. The remainder of the glucose is presumably metabolized.

## Reference

1. Peters, J. P. and Van Slyke, D. D. Quantitative Clinical Chemistry Vol. II, pp. 471. The Williams and Wilkins Co., Baltimore, 1932.