wellscintillation counter so that the Na^{22} concentration in the outside solution could be monitered continuously by a rate meter throughout the experiment. With this preparation, it was shown that the sodium outflux was directly proportional to the blood flow in the range of flow from 0.6 to 4.7 ml/min. Doubling the blood flow (with consequent doubling of sodium outflux) was associated with an increase in ventral aortic pressure of 6 mm Hg. Increase in the dorsal aortic pressure by 6 mm Hg produced only a 10% increase in sodium outflux. The removal of colloid (6% Ficol) from the blood perfusion fluid caused a marked increase in sodium outflux. These results emphasize the importance of controlling blood flow, capillary pressure and colloid osmotic pressure before attempting to approach the problem of active sodium chloride transport by the gill membrane.

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Salt Transport By Eel Gill Epithelium IV. The Effect Of Sodium Concentration On Sodium And Water Transport In Perfused Gills From Fresh And Salt Water Adapted Eels

D. C. Tosteson, M. P. Blaustein and B. Schmidt-Nielsen
Duke University School of Medicine

The experiments described in this report were directed toward the physiological role of the salt and water transport by eel gills. The experiments were performed on the perfused eel gill preparation described in a previous report. The perfusion rate was kept constant in each experiment. The fluid perfusing the blood vessels of the gills contained 6% Ficol in all experiments. When gills taken from fresh water adapted eels were perfused with fresh water (5 mM/1 NaCl) on the outside and 115 mM/1 NaCl on the inside, the outwardly secreted fluid contained 96 mM/1 NaCl. The net outward secretion of sodium was 75 μEq/min. while the outward water flow was 0.78 ml/min. In the same preparation, when the concentration of sodium in the fluid perfusing the blood vessels was increased to 240 mM/1, the concentration of sodium in the secreted fluid rose to 231 mM/1. The net outward movements of sodium and water were 383 μEq/min. and 1.66 ml/min. respectively. When gills taken from eels adapted to sea water for at least ten days were perfused with sea water (540 mM/1NaCl) on the outside and 240 mM/1 NaCl on the inside, the outwardly secreted fluid had a sodium concentration of 563 mM/1. The net outward movements of sodium and water were 17 μEq/min. and 0.03 ml/min. respectively. In this preparation, reduction of the sodium concentration in the fluid perfusing the blood vessels to 115 mM/1 produced a net inward movement of sodium of 5.1 μEq/min. while the water movement remained outwardly directed at a value of .14 ml/min. These data are consistent with the view that both fresh and salt water adapted eels filter salt and water outwardly across the gill epithelium but that in the salt water adapted form an out-

wardly directed active transport system for both sodium and chloride is also present.

Thyroid Tissue In The Hagfish, Myxine Glutinosa

Allyn J. Waterman* and A. Gorbman
Williams College and Barnard College

Thyroid tissue has been studied both histologically and functionally with I^{131} in female sexually mature hagfish caught off the third Porcupine Island (Frenchman's Bay) near Bar Harbor on July 27-28 and August 8, 1959 in traps baited with herring and set in over 200 feet of water. Animals measured 44.5-72 cm. in length, with weights between 96.5 and 378 gms. In animals kept constantly in subdued light, thyroid activity in terms of the uptake of I^{131} was measured at various intervals after injection of 3 and 6.7 microcuries. Radioactivity of a number of representative body tissues (blood, integumentary, digestive and reproductive systems) was also tested.

Numerous small vesicles, similar in size in any one animal but varying in size between different animals (largest measuring around 3 mm. in diameter), and scattered in the connective tissue ventral to the pharynx, produced strong radioautographs with "no screen" X-ray film. These bodies, visible to the unaided eye, probably represent the thyroid tissue. Trimmed samples of this part of the pharyngeal floor showed higher radioactivity than any other tissue mass of comparable weight. Thyroidal I^{131}-uptake was: 3-4 hours, 0.82 percent of injected dose (average of 5 animals); 23-25 hours, 2.2 percent (average of 4 animals); 48 hours, 2.3 percent (average of 5 animals); 96 hours, 2.7 percent (average of 3 animals); 144 hours, 3.4 percent (average of 4 animals); and 192 hours, 2.9 percent (average of 3 animals). The thyroid area is being studied histologically.

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Action Of Cortisone In Increasing Metastases

Irving Zeidman, MD.
Univ. Of Pennsylvania

It has been found by numerous investigators that cortisone will increase the number of metastases which follow subcutaneous or intravenous injection of transplantable tumor cells into mice. The hypothesis is proposed that cortisone acts by increasing the number of tumor cells *trapped* by the capillaries; in this way more cells will have the opportunity to develop into metastases. If this hypothesis is true, then a single dose of cortisone followed by an intravenous injection of tumor cells should lead to an unexpectedly high number of lung tumors. An experiment was performed