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EXTRACELLULAR SPACE AND INTRACELLULAR SODIUM OF SKELETAL MUSCLE IN *Squalus acanthias*

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The inulin space (ECF) of dogfish skeletal muscle was measured by extracting the inulin content of a weighed muscle slice, from a fish, 5 hours after the intravenous administration of inulin (400 mg/kg BW). The sodium concentration of the extract was read by flame photometry. From this, the sodium content of the slice was calculated and, using ECF X Pna as Extracellular sodium, the intracellular sodium concentration was estimated by difference.

Skeletal muscle inulin space of five fish averaged 5.9% of muscle weight (range 3.8 - 7.1%).

Intracellular sodium concentration averaged 11.5 mEq/kg intracellular water (range 9 - 14 mEq).

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GILL WATER FLOW ($\dot{V}$) IN THE DOGFISH SHARK, *Squalus acanthias*

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An accurate knowledge of gill gas exchange in aquatic animals requires quantitation of the volume of flow of water through the gills ($\dot{V}$). The present study presents a modification of the Hamilton-Steward dye dilution technique adopted for the measurement of gill water flow ($\dot{V}$) in the elasmobranch, *Squalus acanthias*.

Twenty fish of either sex weighing from 1.3 to 4.8 kilograms were studied within four hours after capture by trawl. During the studies the fish were kept submerged in an upright position in a small tank with fresh running sea water. Indocyanine green was injected into the respiratory chamber (pharynx) through a polyethylene catheter. Adequate mixing was accomplished with a soft plastic stirrer inserted into the respiratory chamber through a catheter. Expired water was sampled via a catheter in an opercular orifice using an automatic sampling and recording densitometer (Gilford). Cardiac output was calculated using the down slope of the inscribed dye dilution curve. The animal could be maintained under relatively normal physiological circumstances during the study, and remained in good physical condition following serial gill flow determinations. Validation of the gill water flow technique was obtained by perfusion of the gills via the spiracles with measured volumes of water. Satisfactory agreement between the directly measured volume flows and the simultaneous dye dilution curves was found throughout a wide range of flow rates.

One hundred seven determinations were performed with gill water flow ($\dot{V}$) averaging 26.6 ± 1.00 (S.D.) L/Kg/Hr. ($\dot{V}$) increased with increasing weight. The ratio of ($\dot{V}$) to cardiac output was approximately 18 to 1.