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the native pigment turns deep purplish and is rapidly destroyed, presumably by oxdation to a dark-greenish substance which tends to precipitate out. The native pigment as well as its prosthetic group have been optically characterized at different pH-levels in the range 220-1000 Mu. Isoelectric and isobestic points were established, and the salt-sensitivity, solubility and oxido-reduction properties studied. It was found that the native pigment and the prosthetic group differ markedly in most of their properties. It was also established that the pigment belongs in the general group of echinoand spinochromes, but that its properties are different enough to preclude its identification with any of the known members of the group.

It is interesting to note that the pigment is located in the jelly coat which is known to be the carrier of the fertilizine of the sea urchin egg. Fertilizine activity has previously been ascribed to pigments of the echinochrome group, which were isolated from sea urchin ovaries and from the egg cell itself. The claim of identity between echinochrome and fertilizine has, however, been disputed.

Role of Manganese in Sea Urchin Metabolism

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The total Mn-content of the sea urchin material from the Maine Coast was found considerably lower than values reported from the European Atlantic Coast. A colorimetric micro-chemical method of analysis was used, whereas the European results were obtained spectrographically.

A Warburg-technique test-system was worked out for the analysis of the effect of trace-metal additions on the activity of the echinoderm oxidase system. It comprises mitochondrial fractions from echinoderm eggs in glycyl-glycine buffer + cytochrome c + DPN (or TPN) + pyruvate.

Further Studies on the Adrenalin Diuresis in Squalus acanthias

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Previous observations (Bull., M.D.I.B.L., 1954) on Adrenalin diuresis in S. acanthias were extended. With one exception, mature females

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and males showed a typical response. Adrenalin (0.67 mg/kg/body weight) injected intramuscularly produced a 1.5 - 5 fold increase in urine flow over a period of 2 to 4 hours. This was clearly an osmotic diuresis. The osmotic clearance, measured by freezing point depression of plasma and urine, rose 1.5-5.6 fold over control values, while the osmotic U/P ratio showed insignificant changes.

The urea clearance typically increased, in one instance 18 fold. In one instance the urea U/P ratio rose from 0.25 to 0.73, in another from 0.08 to 0.60. A straight line relationship is demonstrable between filtered and reabsorbed urea throughout the entire range of urine flow, arguing against the existence of a tubular reabsorption maximum for urea. Fluctuations in filtered urea reflected changes in glomerular filtration rate and not of plasma urea concentrations.

Sodium clearance increased after Adrenalin injection, but with no consistent change in the U/P ratio. Potassium clearance also increased, the potassium U/P ratio varying from 5.8 to 42.6, while the sodium U/P ratio varied from 0.8 to 1.3. The potassium/inulin clearance ratio varied from 0.6 to 3.6. Potassium and sodium are apparently excreted in the urine by a different mechanism.

The glomerular filtration rate, as measured by the inulin clearance, showed a marked elevation in 4 of 5 fish which showed a diuresis. This recalls Toth's (Am. J. Physiol., **126**: 347, 1939) observation that Adrenalin produces a diuresis in the glomerular puffer, *Spheroides maculatus*, but not in the aglomerular toadfish, *Opsanus tau*.

The calculated increase in solute excretion during diuresis was not entirely explained by the increased excretion of urea, sodium and potassium. Preliminary sulfate determinations in 2 fish (Rose Boyarsky with the aid of Fredrik Berglund) showed only a slight increase in sulfate excretion.

Observed changes in PAH clearance were of insufficient magnitude, after correction for possible acetylation, to permit any interpretation with respect to changes in renal blood flow. It is suggested that acetylated PAH phenol red or Diodrast be used as a measure of renal blood flow in this species.

The occasional failure of Adrenalin to produce a diuresis was confirmed in a large scale experiment, but could not be correlated with changes in hematocrit or graded cumulative hemorrhages. Random fluctuation of urine flow in captivity did not approach the order of magnitude of Adrenalin diuresis.