

LACK OF INFLUENCE OF K-FREE SEAWATER ON PLASMA Na IN SEAWATER EELS *Anguilla rostrata*

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It has been proposed (Maetz, J., Science 166:613, 1969) that sodium extrusion by teleost gills in seawater is accomplished by exchange with external potassium in a reaction facilitated by Na-K-ATPase. A corollary of this hypothesis is that serum Na⁺ should rise in seawater-adapted fish if K⁺ is removed from the external medium.

Fully adapted saltwater eels (*Anguilla rostrata*) were immersed in aerated artificial seawater containing normal quantities of Na⁺, Cl⁻, HCO₃⁻, Mg⁺⁺, and Ca⁺⁺, but without K⁺. Control animals were placed in a similar artificial solution containing 10mM K⁺. Each bath was changed daily so that the external potassium concentration remained less than 0.4 meq/L. In three eels placed in K-free seawater serum Na did not change importantly in the course of 72 hours (150-152; 151-153; 149-159). Changes in two control eels were likewise negligible (143-148; 148-152). Eels kept in K-free seawater were able to adjust rapidly to injections of hypertonic saline designed to elevate their serum Na by 30 meq/L (3 ml/100 gm of 0.7 N NaCl). Twenty-four hours after injection their serum Na had returned to normal.

These data do not support the notion of external-K-for-internal-Na exchange across the gill (though they do not necessarily exclude it). The "potassium effect" described by Maetz may vary in different species and some mechanism for the active extrusion of sodium chloride in seawater appears to operate regardless of the concentration of external potassium.

OSMOREGULATORY ROLE OF THE URINARY BLADDER IN THE STENOHALINE MARINE TELEOSTS, *Lophius americanus* and *Hemitripteris americanus*

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These *in situ* observations reveal the ability of the urinary bladder to alter markedly the composition and volume of urine formed both by the glomerular kidneys of the goosefish (*Lophius americanus*) and the glomerular kidneys of the sea raven (*Hemitripteris americanus*). This is a preliminary report of a study aimed at characterizing secretory mechanisms which underlie the formation of urine by renal tubules in the absence of glomeruli, and in the production of urine flows that are significantly higher than simultaneous glomerular filtration rates under certain conditions in glomerular teleosts (J. Cell. Comp. Physiol., 42: 487-510, 1953). In comparing our current data on urine collected by ureteral catheterization we found discrepancies with earlier studies on residual bladder urine taken