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bicarbonate; excretion of a sodium bicarbonate load is slow and not effected by the gills. The two species respond similarly with respect to branchial elimination of CO_2 which is partially inhibited by Diamox. Unlike the dogfish, the branchial carbonic anhydrase of the freshwater catfish seems to facilitate the formation of diffusable CO_2 from HCO_3^- , rather than supplying ions for an exchange mechanism.

Excretion of Sodium Bicarbonate and CO_2 by the Fresh-water Catfish, *Ameiurus Nebulosus*

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As recorded previously (Am. J. Physiol. 183:155, 1955), a carbonic anhydrase (C. A.) which is sensitive to inhibition by Diamox is present in the kidney of the fresh-water catfish. Intraperitoneal administration of sodium bicarbonate leads to alkalization of the urine and renal excretion of sodium and bicarbonate. Sodium bicarbonate is not excreted by the gills. Branchial CO_2 excretion is partially inhibited by Diamox, possibly in consequence of inhibition of C.A. in red cells. The branchial C. A. seems to facilitate the formation of CO_2 from HCO_3^- , rather than to promote an ion exchange mechanism. These results are in contrast to the marine dogfish, *Squalus acanthias*, which has a Diamox sensitive carbonic anhydrase in the gills but not in the kidney; and in which exogenous sodium bicarbonate is entirely excreted by the gills (apparently by an ion exchange mechanism) and does not alkalize the urine.

The Effect of Chlorothiazide on the Urinary Excretion of Sodium Chloride, and Potassium in the Marine Dogfish, *Squalus Acanthias*

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Chlorothiazide is a diuretic which in man and the dog inhibits the reabsorption of sodium and chloride, supposedly by an inhibitory effect on carbonic anhydrase, but possibly by a second mechanism as well. The kidney of the marine dogfish contains no carbonic anhydrase sensitive to inhibition by Diamox. Therefore, this kidney was considered suitable for the study of the carbonic anhydrase independent diuretic effect of chlorothiazide. Fifty to 200 mg of the drug were given iv. to 8 dogfish weighing between 10.5 and 7.3 kg, after collection of control urine and blood specimens. The second urine and blood specimens were taken 2½