to 6 hours after the injection. Blood plasma, and urine samples were analyzed for pH, total CO_2, sodium, chloride, and potassium concentrations.

In blood (or plasma) the total CO_2 and pH increased after chlorothiazide in 6 out of 8 experiments. In this respect the action of chlorothiazide resembles that of Diamox in the dogfish. Changes in the urine volume, pH, and urinary excretion of sodium, chloride, potassium, titratable acid, and total CO_2 were variable and apparently not related to chlorothiazide. It is inferred that chlorothiazide, like Diamox, has no effect on the tubular reabsorption of sodium in this species. The increase in plasma total CO_2 and pH is less than that induced by Diamox. This may be attributable to the failure of the former to enter the red cell, or may be merely a dose difference.

Electrolyte Metabolism of the Swimbladder and Gastric Mucosa

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While direct evidence is wanting, it is believed that the swimbladder secretes gas by acidifying blood. Carbonic anhydrase has a critical role. Because the acidification mechanism would require intracellular H^+ production, it is possible that carbonic anhydrase does not simply maintain a low intracellular pH.

The swimbladder mucosa of the eel (Anguilla vulgaris) was not viable even when mounted, bathed by saline and oxygenated within 10 minutes of pithing. In several instances, the initial resistance was as high as 2000 ohms cm^{-2} but the resistance declined within one hour to 200 ohms. Gastric mucosae from the same animals, mounted subsequently. secreted H^+ and maintained a normal potential. Only one of several possible factors responsible for the resistance deterioration was implicated, carbon dioxide. In no instance was there a transepithelial potential or H^+ secretion.

Though there is an important association between acid secretion and the gastric electrical potential in amphibia and mammals, it is not known where this is obligatory. The importance of the association was demonstrated by spontaneous secretion of H^+ and development of a typical potential by the isolated stomachs of two teleosts; eel (Anguilla rostrata) and catfish (Ameiurus nebulosa). Even though the dogfish (Squalus acanthias) gastric mucosa was isolated with ease, it did not develop either a potential or spontaneous H^+ secretion. The undifferentiated gut of a cyclostome (Myxine limosa) did not develop a significant potential or pH changes.