Uptake and Run-out of Chlorphenol Red By Isolated Renal Tubules of Flounder *In Vitro*

Suk Ki Hong and Roy P. Forster
University of Buffalo and Dartmouth College

Attempts were made to elucidate further by direct observation the mechanism involved in the active transport of acidic dyes by the isolated renal tubules of flounder.

Neither alterations of magnesium concentration nor of the potassium/calcium concentration ratio in the medium modified the active process transporting dye from cell to lumen (Step II). However, the replacement of calcium by strontium blocked Step II as occurs in calcium-free medium. Chlorphenol red which had previously accumulated in the lumen ran out of the lumen at a faster rate in a dye-and calcium-free medium than in the control dye-free medium. During this facilitated run-out of chlorphenol red in dye-and calcium-free medium, there was no visible accumulation of dye within cells. These observations seem to indicate that the Step II process is influenced specifically by the calcium ion.

Various competitive inhibitors of chlorphenol red such as PAH, Diodrast, probenecid (Benemid), and Carinamide were also investigated for their effects on both the uptake and run-out processes at concentrations of 3×10^{-4} M of each competitor. Although all the competitors inhibited uptake of chlorphenol red and facilitated run-out of the dye, PAH showed the least inhibitory effect on dye uptake and it was the most effective in facilitating dye run-out, whereas Diodrast's relative effectiveness on the two processes was just the opposite. These observations are consistent with our earlier view that both Step I (intracellular uptake from medium) and Step II are subject to competitive inhibition, but the nature of competition at these respective sites seems to be quite different.

Phlorizin in the control medium at concentrations of 3×10^{-3} to 3×10^{-5} M inhibited chlorphenol red uptake and also facilitated dye run-out from lumen. These effects were graded as a function of the concentration of phlorizin in the medium. However, to what extent this phlorizin effect is competitive in nature or due to an inhibitory effect on oxidative phosphorylation is not yet established.

Distribution of Carbonic Anhydrase in Several Non-Mammalian Species, with a Few Notes on Function

T. H. Maren
University of Florida College of Medicine

Using a simplified and scaled-down (1/10) version of a method previously described (Bull. Johns Hopk. Hosp. **95**, p. 244, 1954), carbonic