

**Transport of Phenolsulfonphthalein Dyes in
Isolated Tubules of the Flounder and in Kidney Slices
of the Dogfish. Competitive Phenomena***

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Previous studies in the chicken (Sperber, '53) have shown that the various phenolsulfonphthalein dyes are excreted by the renal tubules at widely differing rates. Phenol red is transported at the highest rate and, in descending order, are the following: xylenole blue, chlorphenol red, brom-chlorphenol blue, bromcresol purple, bromphenol blue and bromcresol green. The various dyes are capable of competing with one another for the excretory transport mechanism. In general, those which are excreted at the highest rates are least effective as competitive inhibitors, while those excreted at the lowest rates are the most effective competitors. These observations have now been confirmed and extended in *in vitro* kidney preparations of the marine teleost (winter flounder, *Pseudopleuronectes americanus*) and in the elasmobranch (dogfish, *Squalus acanthias*). In the former, the accumulation of dye in the lumina of isolated tubules was visualized directly. In the latter species, the effects of two of the dyes on the accumulation of p-aminohippurate were studied using kidney slices.

It is of interest that the relative rates at which the various phenolsulfonphthalein dyes are transported in the isolated tubule of the flounder parallel those previously noted in the intact kidney of the chicken. Furthermore, bromcresol green, the dye within this series which is least efficiently transported, has proved to be a potent competitive inhibitor of both chlorphenol red and PAH transport.

In the course of the studies with the isolated tubules, it was noted that the use of chlorphenol red resulted in more uniform preparations than were obtained with phenol red. The bluish-red color of the former is more readily perceived and the stability of the color within the range of pH encountered in these preparations is a distinct advantage.

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