

## SUMMARY

Everted sacs of rabbit distal ileum were prepared from animals of various age groups over the age range of 1 day to young adult (4-8 months). The initial, and the average 2.5 minute, 5 minute, and 20 minute transmural P.D. were measured in these preparations with the sacs incubated in Tris-bicarbonate Krebs-Henseleit buffers containing 0 mM, 2 mM, 5 mM or 10 mM D-glucose aerated with 95%O<sub>2</sub>-5%CO<sub>2</sub> or 95%N<sub>2</sub>-5%CO<sub>2</sub>.

Under aerobic conditions the endogenous P.D. and the P.D. in the presence of glucose increased with growth. In the presence of glucose the P.D. began to increase at about the fourth week, reaching a peak value at the sixth week. At all ages the transmural P.D. was higher in the presence of glucose than in its absence. This increase in P.D. is known as the transfer potential ( $\Delta$  P.D.). The P.D. vs glucose concentration curves for all age groups exhibited saturation at 2-5 mM glucose.

Anaerobic conditions apparently stimulated the endogenous P.D. of the younger animals while in the 6 week and young adult animals the endogenous P.D. was unaffected by hypoxia. In the presence of glucose hypoxia significantly reduced the transmural P.D. only in the 6 week and young adult rabbits.

In the young adult animals increasing the Mg: Ca ratio above 2 caused a reduction in the 20 minute average  $\Delta$  P.D. while in 1 week animals the  $\Delta$  P.D. appeared independent of the relative concentrations of these cations.

Substantial changes apparently take place in the transport functions of the rabbit ileum with development, the major transitional period being between 4-6 weeks.