

FENESTRATED CAPILLARIES AS "TUNNEL CAPILLARIES": INFORMATION ABOUT BLOOD-TISSUE-LYMPH RELATIONSHIPS

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From various regions of the jejunum of 8 cats, the numbers, dimensions and distributions of endothelial *fenestrae* were estimated. Endothelial *fenestrae* were found to occur predominantly in the *villi* tips and to some extent in the crypts, being much more prevalent on the venous side of the microcirculation. In this tissue they are much more important for permeability than are the junctions and vesicles.

The fenestrated capillaries corresponded to the "tunnel-capillaries" of Intaglietta and de Plomb (1973); i.e. the endothelium exerts a negligible effect on either the PS or the CFC, which are determined by the extravascular tissues. This was shown both by calculating these values (using the orifice equation, as well as the less applicable Poiseuille's equation) and finding that they should have been much greater than those obtained experimentally. It was also confirmed by the use of Intaglietta and de Plomb's data. The latter enabled the CFC of the jejunum to be estimated; this was identical with the experimental value. The PS and CFC were shown to be probably entirely controlled by the extravascular tissues, thus it was possible to estimate the effective radius (~ 60 nm), and the minimal length (~ 40 μm) of the connective tissue channels, and to show that these are likely to be oriented preferentially towards the vessels.

The passage of macromolecules through the extravascular tissue was estimated to be ~ 8 mg of albumin/min per 100 g of tissue; this result was identical with some experimental findings. It was ~ 10 times more than leaves the jejunum via the lymph. This confirmed other experimental results which indicated a large extravascular circulation of fluid and macromolecules returning to the large blood vessels rather than to the lymph.

Intaglietta, M. and de Plomb, E. P. (1973). *Microvascular Research* **6**, 153-168.