

A 2-D Compartmental Model for Multi-capillary Supply

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Abstract

Oxygen diffusion for time-dependent diffusion and consumption can be measured for small tissue regions containing a single capillary. An all or none model is reflected by myocardial infarction where necrotic regions are clearly demarcated. However if there is more than one capillary, the problem becomes very difficult; since the boundary of the ischemic area is no longer circular and is not known a priori. A geometric compartmental model using the Fick's method will be presented for multi-capillary supply. Our method is to approach the steady-state by a transient process, which paradoxically may be more efficient than the steady state problem.