CHAPTER II

RATIONALE

Dorsal skinfold chamber model for intravital microscopy

The term intravital microscopy summarizes experimental approaches in which the microcirculation of organs is made accessible to direct observation in anesthetized or conscious animals (Menger and Lehr, 1993).

Dorsal skinfold chamber model is design for direct, quantitatives studies of hemodynamic and morphologic parameters in the microcirculation. Adaptation of an observation chamber to the skin of body was first described by Williams in 1934 and later in a modified version by Algire in 1943, who implanted a chamber into the dorsal skin-fold of mice. The implantation of dorsal skin-fold into rats, first described by Yamaura et al in 1971. Later, Papenfuss et al. (1979) were the first to use aluminum chamber in rats. In 1980, Endrich et al. adapted the rat dorsal skinfold model to the syrian golden hamster. These models have been applied to the study of the autochtonous microvasculature but also of the growth and microvascularization of transplanted neoplastic and non-neoplastic tissue (Lehr et al., 1993).

The combination between intravital microscopy and dorsal skinfold chamber have been advanced sucessfully in experimental models of disease mechanisms such as organ graft preservation, reperfusion and rejection, autoimmunopathology, aspects of early atherogenesis, wound healing , as well as the growth and maintenance of vascular networks in neoplastic and non-neoplastic tissue grafts. Therefore, intravital microscopic visualization of these dynamic events at the microcirculatory level opens far-reaching

possibilities for the study of the underlying trigger and effector mechanisms as well as their individual contributions to tissue damage (Menger and Lehr, 1993).