

**Thesis Title**                Microvascularization in Adrenal Gland  
of the Common Tree Shrew (*Tupaia glis*)

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### ABSTRACT

Fifteen adult common tree shrews of both sexes weighing between 110 and 180 g were divided into 3 groups for the study of the adrenal gland with light microscopy (LM), transmission electron microscopy (TEM), and with corrosion cast/SEM technique. It is found that the adrenal gland is supplied by branches of the inferior phrenic artery, of the abdominal aorta, and of the renal artery entering the superior, middle and inferior portions of the gland, respectively. Upon reaching the gland, they divide into cortical and medullary branches. The cortical branches give rise to the subcapsular capillary plexus. These plexuses partially enclose the clusters of cell in the zona glomerulosa being lobular-like microvascular network which further gives rise to capillaries running among the cellular cords of the zona fasciculata into the zona reticularis. It is noted that the capillaries in the zona glomerulosa and the zona reticularis are with more anastomoses than those in the zona fasciculata. The blood from the adrenal cortex is collected into peripheral radicles of the central vein in the area of cortico-medullary junction before joining each other to become the medullary collecting veins. The medullary branches of the adrenal arteries penetrate the adrenal cortex and give off few small branches to supply to zona fasciculata and zona reticularis before breaking up into larger capillaries of sinusoidal type in the adrenal medulla. These capillaries drain into the medullary collecting veins and proceed further into the very large central vein becoming the adrenal vein. The left and right adrenal veins join the left renal vein and the inferior vena cava, respectively. The ultrastructural study of the adrenal gland reveals that each cortical cells in the zona fasciculata contains numerous lipid droplets which are lower in the zona glomerulosa and lowest in the zona reticularis. Furthermore, it is found that the zona glomerulosa cells have round or spherical mitochondria with

tubulo-vesicular cristae. In the zona fasciculata, the cells contains the lamellae tubular cristae in the spherical mitochondria. The cells in the zona reticularis have irregular and elongated mitochondria with vesicular cristae in the dark matrix. It is noteworthy that the capillaries in all parts of the gland are of fenestrated type.