Thesis Title SCANNING ELECTRON MICROSCOPIC STUDY ON PINEAL VASCULARIZATION OF COMMON TREE SHREWS (Tupaia glis)

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ABSTRACT

SEM of vascular corrosion cast technique has been widely used to study the blood vessels in various organs of mammalian species. However, the study on blood vessels of common tree shrew (Tupaia glis) which is known as the most primitive primates with this technique has never been reported. The aims of this study is to investigate detail blood supply including capillary patterns of the pineal gland in the common tree shrew (Tupaia glis) using SEM of vascular corrosion cast technique. Adult common tree shrew of both sexes weighing between 120 to 180 g were divided into 3 groups to be injected with red latex, blue vinyl resin and plastic mixture (Batson's no. 17) respectively. Under ether anaesthesia the right atrium was cut open, 150 ml of 0.9% NaCl solution was perfused through the left ventricle following with 50 ml of 10% neutral formalin solution. Then each injecting medium were perfused manually at the rate of 8 ml/min, also through the left

ventricle, until it was flowing out from the right atrium. After hardening,the latex injected specimens were dissected to expose the arterial supply to the pineal gland and viewed with naked eyes and stereomicroscope. Meanwhile the blue vinyl resin and plastic mixture injected specimens were corroded in 40% KOH overnight to remove out the tissues. After washing in water and drying in room temperature, the blue vinyl resin corrosion casts were studied under stereomicroscope. The plastic corrosion casts of pineal region were dissected free, coated with carbon and gold before viewing under SEM at 20 kV. It was found that the pineal gland of common tree shrew was supplied by 2 to 4 branches of medial posterior choroidal artery which entered laterally to the gland as reported in man. Two types of capillary patterns were observed. The capillaries in proximal 2/3 of the gland organized into fan-like fashion with characteristic comparable to fenestration of in the capillary was found in other endocrine glands, whereas that of distal 1/3 of the gland contained network fashion capillaries. Blood from capillaries was collected into venules and drained by 8 to 12 superficial veins before emptying into 1 or 2 pineal veins and finally drained directly into the great cerebral vein of Galen. The great cerebral vein of Galen drained into rectus sinus and thereafter via the confluens sinus immediately in the systematic venous circulation. In addition, the vascular cast could be viewed at very high magnification of 6000 x at 20 kV.