

ABSTRAK

IDENTIFIKASI MORFOLOGI DAN DISTRIBUSI SEROTONIN (5-HYDROXYTRYPTAMINE, 5-HT) PADA CEREBELLUM KELELAWAR BUAH (*Rousettus amplexicaudatus*)

Nourrisma Dyah Ayu Widiati

15/382798/KH/08611

Kelelawar buah (*Rousettus amplexicaudatus*) termasuk dalam ordo Chiroptera, subordo Megachiroptera yang keberadaannya di Indonesia dikenal dengan sebutan codot. Aktivitas tidur, membawa, memakan, mengunyah, dan menelan buah, serta defekasi dilakukan dalam posisi bertengger terbalik. Aktivitas tersebut didukung oleh pusat lokomosi di *cerebellum*. Serotonin (5-HT) berpengaruh terhadap proses lokomosi pada *cerebellum*. Penelitian ini bertujuan untuk mengetahui morfologi dan distribusi serotonin (5-HT) pada *cerebellum* codot berkaitan dengan fungsinya dalam proses lokomosi.

Tiga ekor codot dengan berat badan 55-65 gram dianestesi menggunakan Ketamin dosis 10 mg/kgBB dan Xylazine dosis 2 mg/kgBB, diperfusi menggunakan NaCl 0.9% dan formaldehyde 4%. Otak diambil dan disimpan dalam larutan fiksatif kemudian dilakukan pemrosesan jaringan. Jaringan dipotong dengan ketebalan 8 μ m. *Slide* jaringan diwarnai dengan Hematoksilin-Eosin (HE) dan *Cresyl echt violet* serta Imunohistokimia (IHC) menggunakan antibodi serotonin 1:200. Hasil diamati dengan mikroskop dan foto diambil menggunakan *Optilab Image Viewer*. Struktur *cerebellum* dilaporkan secara deskriptif. Distribusi sel yang imunoreaktif terhadap serotonin dilaporkan secara deskriptif dan kuantitatif menggunakan aplikasi *ImageRaster* dan *GraphPad Prism 7*.

Hasil pewarnaan menunjukkan struktur histologi *cerebellum Rousettus amplexicaudatus* terdiri dari korteks dan medula. Korteks terdiri dari lapisan molekuler yang tersusun dari sel stelata dan sel basket, lapisan piriformis tersusun dari sel purkinje, lapisan granuler tersusun dari sel granuler dan sel golgi. Sel yang imunoreaktif terhadap antibodi serotonin paling banyak ditemukan pada lapisan piriformis dengan prosentase rata-rata 100 ± 0 %, lapisan granuler $82,33 \pm 1,53$ %, dan lapisan molekuler $47 \pm 6,24$ %.

Kata kunci: *Cerebellum*, Imunohistokimia, *Rousettus amplexicaudatus*, Serotonin

ABSTRACT

MORPHOLOGICAL IDENTIFICATION AND DISTRIBUTION OF SEROTONIN (5-HYDROXYTRYPTAMINE, 5-HT) IN THE *CEREBELLUM* OF FRUIT BATS (*Rousettus amplexicaudatus*)

Nourrisma Dyah Ayu Widiati

15/382798/KH/08611

Old world fruit bats (*Rousettus amplexicaudatus*) are included in Chiroptera order, Megachiroptera suborder which commonly known as *codot* in Indonesia. Activities such as sleeping, carrying, chewing, and swallowing fruits, as well as defecating are done in a reversed perch position. Those activities are supported by the central locomotive in the *cerebellum*. Serotonin (5-HT) affected the locomotive process in the *cerebellum*. This study is conducted to find out the morphology and distribution of serotonin (5-HT) in *codot*'s *cerebellum* that related to the function in the locomotive process.

Three old fruit bats each weigh in 55-65 gram were anesthetized using ketamin 10 mm/kgBB and xylazine 2 mm/kgBB, then perfused with NaCl 0.9% and formaldehyde 4%. The brain was later taken and kept in a fixative solution and tissue processing was performed after. Tissues were cut with 8 μ m thickness. Tissue slides then colored using Hematoxylin-Eosin (HE), Cresyl Echt Violet and immunohistochemistry (IHC) with rabbit's anti-serotonin (1:200). The result were observed and photos were taken using Optilab Image Viewer. The structure of *cerebellum* then reported descriptively. The distribution of immunoreactive cells toward serotonin are reported descriptively and quantitatively using Image Raster and Graphpad Prism 7 software.

Colored result showed that histological structure of *Rousettus amplexicaudatus cerebellum* composed of cortex and medulla. The cortex are consist of molecular stratum made from stellar cells and basket cells. Piriformis stratum made from purkinje cells, granular stratum made from granular cells and golgi cells. Most immunoreactive cells toward serotonin are found in piriformis stratum with the average percentage of $100\pm 0\%$, followed by granuler stratum $82.33\pm 1.53\%$ and molecular stratum $47\pm 6.24\%$.

Key words: *Cerebellum*, Immunohistochemistry, *Rousettus amplexicaudatus*, Serotonin