

## ABSTRAK

### MIKROSKOPIK ANATOMI NEURON SEROTONERGIK PADA KLAS TER ROSTRAL BATANG OTAK LASIWEN (*Myotis sp.*)

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Lasiwen (*Myotis sp.*) merupakan kelelawar yang hidup sebagai satwa liar di Indonesia. Kelelawar ini termasuk dalam kelompok pemakan serangga dan populasinya masih banyak terdapat di alam. Neuron serotonergik pada klaster rostral batang otak mamalia memiliki fungsi dalam mengatur ritme sirkadian, termoregulasi dan *rapid eye movement sleep*. Belum ada penelitian mengenai neuron serotonergik pada batang otak lasiwen sehingga hal ini menarik untuk diteliti.

Penelitian ini menggunakan seekor lasiwen yang dianestesi menggunakan isofluran. Setelah itu dilakukan perfusi menggunakan larutan NaCl 0,9% dan paraformaldehid 4% secara intrakardia. Otak lasiwen dipotong sagital yang kemudian diproses menjadi blok parafin dan dipotong dengan ketebalan 12  $\mu\text{m}$  secara serial. Pewarnaan imunohistokimia menggunakan antibodi primer serotonin (anti 5-HT bs-112 6R, 1/500) kemudian diamati dan dianalisis secara deskriptif.

Hasil penelitian menunjukkan distribusi neuron serotonergik pada lasiwen dibagi menjadi empat nukleus yaitu nukleus kaudal linear, nukleus supraleminiskus, nukleus raphe dorsal dan nukleus raphe median. Nukleus kaudal linear memiliki neuron serotonergik berbentuk bipolar dan multipolar, berdiameter  $6,01 \pm 1,32 \mu\text{m}$  dengan kepadatan  $23,33 \pm 7,49/50.000 \mu\text{m}^2$  luas area. Nukleus supraleminiskal mempunyai neuron serotonergik berbentuk bipolar dan multipolar dengan diameter  $9,39 \pm 3,04 \mu\text{m}$  dan kepadatan adalah  $22,60 \pm 8,46/50.000 \mu\text{m}^2$  luas area. Neuron serotonergik pada nukleus raphe dorsal berbentuk bipolar dan multipolar, berdiameter  $5,68 \pm 1,43 \mu\text{m}$  memiliki kepadatan  $42,63 \pm 18,61/50.000 \mu\text{m}^2$  luas area. Nukleus raphe median memiliki neuron serotonergik berbentuk bipolar dan multipolar, dengan diameter  $6,43 \pm 1,79 \mu\text{m}$  dan kepadatan  $22,20 \pm 9,79/50.000 \mu\text{m}^2$  luas area.

Kata kunci: batang otak, imunohistokimia, lasiwen, neuron serotonergik

## ABSTRACT

### MICROSCOPIC ANATOMY OF SEROTONERGIC NEURON IN ROSTRAL CLUSTER BRAINSTEM LASIWEN (*Myotis sp.*)

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Lasiwen (*Myotis sp.*) is one of the flying mammals as a microchiroptera that their population still alot in nature. Serotonergik neuron in rostral cluster mammal's brainstem has function of regulating circadian rhythms, thermoregulation and rapid eye movement sleep. Serotonergic neurons can be found in the brainstem. There has been no research on serotonergic neurons in the lasiwen brainstem so this is interesting to searched.

This research was used a lasiwen which was anesthetized using isofluran. After that, intracardial perfusion was performed using 0.9% NaCl solution and continuedly by 4% paraformaldehyde as fixation. The lasiwen brain is sagittally cut then processed into paraffin blocks then cut with 12  $\mu\text{m}$  thickness in a series. The organ was stained using serotonin primary antibodies (anti 5-HT bs-112 6R, 1/500) to reveal serotonergic neuron and then was observed with light microscope.

The results showed the distribution of serotonergic neurons in lasiwen was divided into four nuclei that were caudal linear nucleus, supralelemniscal nucleus, dorsal raphe nucleus and median raphe nucleus. Serotonergic neurons in the caudal linear nucleus was bipolar and multipolar in shaped diameter  $6,01 \pm 1,32 \mu\text{m}$  with density  $23,3 \pm 7,49 \text{ cell}/50.000 \mu\text{m}^2$  area. Serorotonegic neurons in the supralelemniscal nucleus was bipolar and multipolar in shaped with diameter  $9,39 \pm 3,04 \mu\text{m}$  and density  $22,6 \pm 8,46 \text{ cell}/50.000 \mu\text{m}^2$  area. Serotonergic neurons in the dorsal raphe nucleus were bipolar and multipolar in shaped with diameter  $5,68 \pm 1,43 \mu\text{m}$  and density  $42,6 \pm 18,61 \text{ cell of } 50,000 \mu\text{m}^2$  area. Serotonergic neurons in the median raphe nucleus were bipolar and multipolar with diameter  $6,43 \pm 1,79 \mu\text{m}$  and density of  $22,2 \pm 9,79 \text{ cell}/ 50.000 \mu\text{m}^2$  area.

Keyword : brainstem, immunoistochemistry, lasiwen, serotonergic neuron