

ABSTRAK

KEBERADAAN DAN DISTRIBUSI NEUROPEPTIDA Y (NPY) PADA BULBUS OLFAKTORIUS KELELAWAR BUAH (*Rousettus amplexicaudatus*)

Ulayatul Kustiati

Rousettus sp. merupakan hewan nokturnal, dalam mencari makan, *Rousettus sp.* mengandalkan indra penciuman yang tajam dan dengan cepat dapat membedakan buah matang. Pusat pengaturan *input* dan pengolahan data serta *output* penciuman berada pada bulbus olfaktorius. Ketajaman indra penciuman *Rousettus sp.* didukung oleh struktur bulbus olfaktori khusus seperti pada anjing dan tikus. Bulbus olfaktorius mempunyai susunan yang berlapis-lapis, dengan urutan dari superficial ke profundus yaitu *Olfactory Nerve Layer* (ONL), *Glomerular Layer* (GL), *External Plexiform Layer* (EPL), *Mitral Cell Layer* (MCL), *Internal Plexiform Layer* (IPL), *Granular Cell Layer* (GCL) dan *Lapisan Subependimal*. Kemampuan penciuman *Rousettus sp.* didukung oleh Neuropeptida Y (NPY). Neuropeptida Y merupakan peptida yang mempunyai rantai panjang 36 asam amino dengan ujung *amidated tyrosine* (Y). Penelitian ini menggunakan 3 ekor kelelawar buah dengan berat antara 60-80 g. Identifikasi jenis dilakukan di Laboratorium Struktur Hewan Fakultas Biologi Universitas Gadjah Mada. *Rousettus sp.* dianestesi dengan Ketamin 10% dosis 10 mg/kg BB dan *Xylazine* 2% dosis 2 mg/kg BB secara intramuscular, kemudian diperfusi dengan larutan NaCl fisiologis 0,9% dan formaldehid 4% secara intrakardia. Sampel otak yang diambil meliputi serebrum, serebelum, dan batang otak disimpan dalam larutan fiksatif formaldehid 4%. Pemrosesan sampel dimulai dengan *embedding* dan *blocking* dalam parafin dipotong serial menggunakan *rotary microtome*. Potongan sampel diambil potongan paling depan selisih tiga *slide* berikutnya untuk diwarnai *cresyl echt violet* dan imunohistokimia (IHK) *Rabbit anti-NPY*. Hasil pewarnaan *cresyl echt violet* dan IHK diamati serta difoto menggunakan mikroskop optilab. Pewarnaan *cresyl echt violet* dianalisis secara deskriptif. Keberadaan dan distribusi sel yang imunoreaktif terhadap NPY dianalisis secara deskriptif dan kuantitatif dengan menghitung sel saraf yang imunoreaktif pada lapisan bulbus olfaktorius menggunakan software *optilab image raster*. Hasil pewarnaan *cresyl echt violet* menunjukkan struktur bulbus olfaktorius codot memiliki tujuh lapisan, ONL, GL, EPL, MCL, IPL, GCL, dan lapisan Subependimal. Imunoreaktif NPY ditemukan pada serabut saraf dengan intensitas sangat rendah (+) pada EPL, intensitas rendah (++) pada MCL, IPL, Subependimal, intensitas sedang (+++) pada GL, dan intensitas kuat (+++++) pada GCL. Sedangkan jumlah *vericosities* pada ONL adalah $275 \pm 0,58$ *vericosities/mm*², GL $533 \pm 2,89$ *vericosities/mm*², EPL $92 \pm 0,58$ *vericosities/mm*², MCL $83 \pm 0,58$ *vericosities/mm*², IPL $167 \pm 1,53$ *vericosities/mm*², GCL $858 \pm 4,93$ *vericosities/mm*², dan lapisan Subependimal $325 \pm 1,1$ *vericosities/mm*².

Kata kunci: Bulbus Olfaktorius, *Cresyl Echt Violet*, IHK, NPY, *Rousettus sp*

ABTRACT

THE PRESENCE AND DISTRIBUTION PF NEUROPEPTIDA Y (NPY) ON THE FRUIT BATS OLAFCTORY BULB (*Rousettus amplexicaudatus*)

Ulayatul Kustiati

Rousettus sp. is a nocturnal animal, in foraging, *Rousettus sp.* rely on a keen sense of smell and can quickly distinguish ripe fruit. The central input setting and data processing, also the olfactory output is located in the olfactory bulb. *Rousettus sp.* is supported by special olfactory bulbous structures similar in dogs and mice. The olfactory bulb has multiple layers, in order from superficial to profundus: ONL, GL, EPL, MCL, IPL, GCL and subependymal layers. The inner olfactory ability of *Rousettus sp.* is supported Neuropeptide Y (NPY). The Y neuropeptide is a long chain peptide containing 36 amino acids with the tip of amidatedtyrosine (Y). This study uses 3 fruit bats weighing between 60-80 g. Identification of the species is done in the Animal Structure Laboratory of Faculty of Biology Gadjah Mada University. *Rousettus sp.* was aesthetically induced with ketamine 10% dose 10 mg/kg BW and Xylazine 2% dose 2 mg/kg BW intramuscularly. Then was perfused with 0.9% physiological NaCl solution and 4% formaldehyde through intracardiac. Brain samples taken include cerebrum, cerebellum, and brainstem stored in 4% formalin fixation. Sample processing begins with embedding and blocking in serial cut paraffins using microtome rotary. The sample pieces were taken with the interval of the next three slides later to be coloured by cresyl echt violet and immunohistochemical (IHC) Rabbit anti-NPY. The results of cresyl echt violet and IHC were observed and photographed using an optical microscope. The cresyl echt violet staining was analysed descriptively on the olfactory bulb. The presence and distribution of immunoreactive cells against NPY were analysed descriptively and quantitatively by counting the immunoreactive nerve cells in the olfactory bulb layer using the optilab image rafter software. The result of cresyl echt violet staining shows the structure of the fruit bats olfactory bulb has seven layers: ONL, GL, EPL, MCL, IPL, GCL, and Subependymal layers. Immunoractive NPY found in nerve fibers with very low intensity (+) found in EPL, low intensity (++) in MCL, IPL, Subependimal, moderate intensity (+++) on GL, and strong intensity (+++++) on GCL and vericosities on ONL 275 ± 0.58 vericosities / mm^2 , GL 533 ± 2.89 vericosities / mm^2 , EPL 92 ± 0.58 vericosities / mm^2 , MCL 83 ± 0.58 vericosities/ mm^2 , IPL 167 ± 1.53 vericosities/ mm^2 , GCL 858 ± 4.93 vericosities / mm^2 , and Subependimal layer 325 ± 1.1 vericosities / mm^2 .

Keywords: Olfactory bulb, Cresyl Echt Violet, IHC, NPY, *Rousettus sp*