UNIVERSITAS
GADJAH MADA
KEBERADAAN DAN DISTRIBUSI NEUROPEPTIDA Y (NPY) PADA HIPOKAMPUS KELELAWAR BUAH (Rousettus amplexicaudatus)
ANANDA DWI ANINDITA, drh. Dwi Liliek Kusindarta, M.P., Ph.D.
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

ABSTRAK

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

Ananda Dwi Anindita
14/364669/KH/8094

Kelelawar buah di Indonesia sering dikenal dengan sebutan codot (*Rousettus amplexicaudatus)* termasuk dalam ordo Chiroptera, subordo Megachiroptera yang memiliki penciuman yang tajam dan dapat dengan cepat membedakan buah-buahan yang telah matang. Kemampuan tersebut tentu didukung oleh pusat proses *learning* dan memori di hipokampus. Neuropeptida Y (NPY) berperan penting dalam proses *learning* dan memori pada hipokampus. Penelitian ini bertujuan untuk mengetahui keberadaan dan distribusi NPY pada hipokampus *Rousettus amplexicaudatus* yang berkaitan dengan fungsi NPY dalam *learning* dan memori.

Tiga ekor *Rousettus amplexicaudatus* masing-masing dengan berat 55 hingga 60 g berjenis kelamin jantan yang diperoleh di daerah Yogyakarta. Kelelawar dianestesi menggunakan Ketamin dosis 10 mg/kg dan Xylazine dosis 2 mg/kg, perfusi menggunakan larutan NaCl 0.9% dan formaldehyde 4% intrakardia, otak diambil lalu disimpan dalam larutan fiksatif formaldehyde 4% selama 24 jam. Otak direndam dalam alkohol bertingkat dari 70 hingga 100% masing-masing 60 menit, dilanjutkan direndam dalam xylol I, II, dan III masing-masing selama 30 menit, dilanjutkan dalam paraffin I, II, dan III 60 ^{0}C masing-masing selama 45 menit, dan dibuat blok parafin. Blok parafin dipotong menggunakan *rotary microtome* dengan ketebalan 8 µm dan ditempelkan pada *slide glass*. Jaringan pada *slide glass*, diwarnai dengan *cresyl violet* dan dan yang lain dengan metode imunohistokimia (IHC) menggunakan serum kelincit anti-NPY (1:800, Abcam, USA). Hasil pewarnaan *Cresyl violet* dan IHC diamati serta difoto menggunakan mikroskop cahaya dan di foto dengan camera optilab®. Struktur hipokampus diamati pada pewarnaan cresyl violet dan dilaporkan secara deskriptif. Keberadaan dan distribusi sel yang imunoreaktif terhadap NPY dilaporkan secara deskriptif dan kuantitatif dengan menghitung badan sel saraf imunoreaktif NPY di area Girus dentatus, *cornue ammonis* (CA 1) dan CA3 menggunakan *software* Image J.

Hipokampus *Rousettus amplexicaudatus* tersusun terdiri girus dentatus, hipokampus proper dan subikulum. Pada area hipokampus ditemukan badan sel saraf imunoreaktif terhadap NPY, paling banyak ditemukan di area Girus Dentatus (GD), kemudian CA 3, dan CA1. Pada area GD sel imunoreaktif NPY paling banyak ditemukan pada sel granular dari stratum granular, kemudian badan sel dari stratum polimorfik, dan jumlah paling sedikit pada interneuron di stratum molekular. Pada area CA 3 dan CA 1 sel yang imunoreaktif pada NPY ditemukan paling banyak di stratum pyramid, sel saraf di stratum orien, dan jumlah paling sedikit pada sel saraf stratum molekular.

Kata kunci: Hipokampus, Imunohistokimia, *Learning* dan memori, Neuropeptida Y, *Rousettus amplexicaudatus*.

UNIVERSITAS
GADJAH MADA
KEBERADAAN DAN DISTRIBUSI NEUROPEPTIDA Y (NPY) PADA HIPOKAMPUS KELELAWAR BUAH (Rousettus amplexicaudatus)
ANANDA DWI ANINDITA, drh. Dwi Liliek Kusindarta, M.P., Ph.D.
Universitas Gadjah Mada, 2018 | Diunduh dari http://etd.repository.ugm.ac.id/

ABSTRACT

THE EXSISTENCE AND DISTRIBUTION OF NEUROPEPTIDE Y (NPY) IN HIPPOCAMPUS OF FRUIT BAT (*Rousettus amplexicaudatus*)

Ananda Dwi Anindita
14/364669/KH/8094

Fruit bats (*Rousettus amplexicaudatus*), more widely known as codot in Indonesia, hails from the Chiroptera order, and is further grouped into the Megachiroptera sub-order, possess a strong sense of smell to differentiate fruits that are ripe quickly. This capability of the fruit bats of course supported by the learning and memory process facilitated in the hippocampus. NPY plays a significant role in the learning and memory process of the hippocampus. This research is done to understand the existence and distribution of NPY in the hippocampus of Rousettus amplexicaudatus while relating the role of NPY to the learning and memory process.

A total of three male *Rousettus amplexicaudatus*, obtained from the district of Yogyakarta, with weight averaging from 55 to 60 g. The fruit bats are anaesthetised using Ketamine and Xylazine with a dose of 10 mg/kg and 2 mg/kg respectively. Perfusion is done intracardially using NaCl 0,9% solution and formaldehyde 4%. The brain of fruit bat stored in formaldehyde 4% fixative solution for 24 hours. The brain then soaked in different concentration of alcohol from 70 – 100% for an hour respectively and is immersed again in xylol I, II, and III for 30mins respectively then the brain is made into paraffin block. The sample is cut using the rotary microtome with the thickness of 8 µm and placed on a glass slide. Tissue on the glass slide is stained with Cresyl violet, while other tissues were stained with immunohistochemistry staining (IHC) using Rabbit anti-NPY (1:800, Abcam, USA). The result of Cresyl violet and IHC staining is observed using a light microscope and is captured with an optilab camera. The hippocampus structure was found for in the tissues stained with Cresyl violet and recorded descriptively. The existence and distribution of cells that are immunoreactive towards NPY are documented descriptively and quantitatively by counting the immunoreactive nerve cell bodies in the Dentate gyrus, Cornue ammonis (CA 1) and CA3 using the Image J software.

The hippocampus of *Rousettus amplexicaudatus* made out of dentate gyrus, proper hippocampus and subiculum. In the hippocampus area, immunoreactive neuron cell towards NPY was found, mostly in Dentatus Gyrus (GD), then CA 3, and CA 1. In the GD area, immunoreactive cell NPY was abundant in the granular cells from the granular stratum, then body cells from the polymorphic layer, and lesser in the interneurons in the molecular layer. At the area of CA 3 and CA 1, cells which are immunoreactive towards NPY was found mostly in the pyramid stratum, neurons in the orient stratum, and most little in the neurons at the molecular layer.

Keyword: Hippocampus, immunohistochemistry, learning and memory process, Neuropeptide Y, *Rousettus amplexicaudatus*