

## ABSTRAK

### **PENGARUH DIET TINGGI LEMAK TERHADAP JUMLAH NEURON NITRERGIK JEJUNUM DIAMETER KECIL, SEDANG, DAN BESAR TIKUS WISTAR (*Rattus norvegicus*)**

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Fungsi utama lemak adalah sebagai cadangan energi tubuh. Lemak dicerna dan diserap di usus halus. Dalam usus halus terdapat gerakan peristaltik yang akan mendorong isi usus dari arah oral menuju anus. Gerakan peristaltik merupakan kerja dari neuron eksitatorik (kolinergik) dan inhibitorik (nitrergik). Penelitian ini bertujuan untuk mengetahui pengaruh diet tinggi lemak terhadap jumlah neuron nitrergik jejunum berdiameter kecil, sedang, dan besar pada tikus Wistar (*Rattus norvegicus*).

Penelitian ini menggunakan 9 ekor tikus jantan Wistar dengan kisaran bobot 100 gram yang kemudian dibagi menjadi 3 kelompok secara acak. Kelompok satu sebagai kontrol diberi pakan dengan konsentrasi lemak 7% (K1), kelompok dua perlakuan diberi pakan dengan konsentrasi lemak 10% (K2), dan kelompok tiga perlakuan diberi pakan dengan konsentrasi lemak 13% (K3). Tikus dipelihara dalam kandang individual, diberi air minum RO secara *ad libitum* dan diberi pakan pellet sesuai dengan diet tinggi lemak masing-masing kelompok selama 2 bulan. Tikus dianestesi kemudian euthanasi dengan cara dislokasi servikal. Abdomen dibedah dan diambil organ jejunum. Jejunum dicuci dengan *phosphate buffer saline* (PBS), direndam dengan formalin 10%, lalu sampel diwarnai dengan teknik histokimia *Nicotinamide Adenine Dinucleotide Phosphat-diaphorase* (NADPH-d). Preparat yang telah diwarnai kemudian diamati morfologi dan diukur diameter neuron nitrergiknya. Data diameter dikategorikan menjadi kecil (2,12-3,59  $\mu\text{m}$ ), sedang (3,05-5,35  $\mu\text{m}$ ), dan besar (4,59-7,95  $\mu\text{m}$ ) lalu dianalisis statistik dengan uji anova pola searah.

Hasil penelitian menunjukkan bahwa semakin tinggi diet lemak, semakin meningkat jumlah neuron berdiameter kecil dan menurunkan jumlah neuron berdiameter sedang. Dapat disimpulkan diet tinggi lemak mempengaruhi waktu transit gastrointestinal.

Kata kunci: jejunum, lemak, neuron nitrergik, tikus Wistar

## ***ABSTRACT***

### **The Effect of High Fat Diet to The Number of Nitrergic Neurons In Wistar Rat's (*Rattus norvegicus*) Jejunum in Small, Medium, and Large diameter.**

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Fat mainly functions as energy reserve. Fat is digested and absorbed in the small intestine. In the small intestine, there were peristaltic reflex that will push the intestinal contents from the oral direction to the anus. Peristaltic reflex is the activity of excitatory (cholinergic) and inhibitory (nitrergic) neurons. This study aimed to investigate the effect of high-fat diet to the number of nitrergic neurons of rats' jejunum (*Rattus norvegicus*) Wistar strain in small, medium, and large diameter.

This study used 9 male wistar rats with a weight range of 100 grams and were divided into 3 groups randomly. Group one as a control was fed with 7% fat concentration (K1), group two treatment was fed with 10% fat concentration (K2), and group three treatment was fed with 13% fat concentration (K3). Rats were kept in individual cages, given RO drinking water ad libitum and given pellet feed according to the high-fat diet of each group for 2 months. Rats were anesthetized and euthanized by cervical dislocation. The abdomen was dissected and jejunal organs were taken. Jejunum was washed with phosphate buffer saline (PBS) solution, soaked with 10% formalin, then the samples were colored by Nicotinamide Adenine Dinucleotide Phosphat-diaphorase (NADPH-d) histochemical techniques. The preparations were observed for morphology and measured the diameter of nitrergic neurons. Diameter was categorized to be small (2.12-3.59  $\mu\text{m}$ ), medium (3.05-5.35  $\mu\text{m}$ ), and large (4.59-7.95  $\mu\text{m}$ ) then analyzed statistically by one way anova test.

The results shows that the more high-fat diet can increase the number of small nitrergic neurons yet decrease the number of medium-sized nitrergic neurons. It can be concluded that high-fat diet affects gastrointestinal transit time.

**Key words:** jejunal, fat, nitrergic neurons, Wistar rat