

**Potensi Camilan Cokelat Gonad Landak Laut (*Diadema setosum*) terhadap Kadar Hemoglobin, Berat Badan, Berat Otak, Volume Otak, dan Jumlah Sel Otak Mencit (*Mus musculus*)**

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**ABSTRAK**

**Latar Belakang:** Terbukti bahwa gonad landak laut dapat meningkatkan berat badan mencit dan memberikan peningkatan persentase sel neuron dan hemoglobin yang signifikan.

**Tujuan:** Mengetahui kandungan asam amino pada produk cokelat gonad *Diadema setosum* dan pengaruhnya terhadap berat badan, jumlah hemoglobin, berat otak, volume otak, jumlah sel neuron subjek *Mus musculus*.

**Metode:** Kandungan asam amino produk cokelat gonad *D. setosum* dianalisis dengan metode kromatografi cair kinerja tinggi dengan pemberian ransum gonad landak laut 0,5, 1, dan 1,5 g/subjek/hari dan dengan minyak ikan pada kelompok tikus yang berbeda selama 70 hari. Tikus diukur berat badan, jumlah hemoglobin, jumlah sel neuron, berat dan volume otak dan jumlah sel otak dengan metode histologi. Terdapat juga kelompok subjek khusus yang diberi perlakuan dengan minyak ikan.

**Result:** Hasil analisis persentase asam amino dari kadar tertinggi ke terendah adalah: alanin, asam glutamin, glisin, valin, asam aspartat, leusin, serin, l-leusin, tirosin, fenilalanin, treonin dan arginin.

Perkembangan berat badan tinggi pada perlakuan K- (39,4 g). Jumlah hemoglobin tertinggi pada perlakuan P2 (13,15 g/dL). Berat otak tertinggi pada kelompok perlakuan K- (0,485g). Volume otak pada P3 (3,25 ml). Jumlah sel neuron subjek tertinggi pada kelompok perlakuan P2 (838). Analisis statistik menunjukkan bahwa tidak ada perubahan yang signifikan pada berat badan, jumlah hemoglobin, berat otak, dan volume otak meskipun ada perubahan penting pada jumlah sel neuron.

**Kesimpulan:** Pemberian cokelat gonad *D. setosum* perlakuan P2 (1,0 g cokelat gonad *D. setosum*) memberikan kadar hemoglobin dan jumlah sel neuron yang paling signifikan. Volume otak ditemukan tertinggi pada kelompok P3 (1,5 g cokelat gonad *D. setosum*).

**Kata Kunci :** cokelat gonad *D. setosum*, asam amino, hemoglobin, otak, sel neuron

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## The Potential Effect of Chocolate Snack Made of Sea Urchin (*Diadema setosum*) on Hemoglobin Level, Body Weight, Brain Weight, Brain Volume, and Number of Brain Cells in Mice (*Mus musculus*)

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### Abstract

**Background:** It has been proven that sea urchin umbilical gonads can increase the body weight of mice and provide a significant increase in neuron cells and haemoglobin levels.

**Objective:** The study aimed to investigate the amino acid content of the *Diadema setosum* chocolate product, body weight, haemoglobin count, neuron cell count, brain weight and volume of the *Mus musculus* subjects.

**Methods:** The contents of amino acid products from the gonad of *D. setosum* were analyzed using high-performance liquid chromatography with the provision of gonad sea urchin ransoms of 0.5, 1, and 1.5 g/subject/day and fish oil in different groups of rats for 70 days. The rats were measured by body weight, haemoglobin count, neuronal cell count, brain weight and volume, and brain cell count by histology. A particular group of subjects were also treated with fish oil.

**Result:** The analysis result of the highest to lowest percentage of amino acid is alanine, glutamic acid, glycine, valine, aspartic acid, leucine, serine, isoleucine, tyrosine, phenylalanine, threonine and arginine. The highest body weight increase was in the negative control group (39.4 g). The highest haemoglobin level was in the P2 treatment (13.15 g/dL). The highest brain weight in the K- group (0.485g). The highest brain volume in P3 (3.25 ml). The highest number of subject neuronal cells in the P2 treatment (1.0g gonad *D. setosum*) (838). The ANOVA statistical analysis indicated no significant change in body weight, haemoglobin level, brain weight, and brain volume. However, there was a substantial change in the number of neuronal cells.

**Conclusion:** The conclusion was that administering gonad *D. setosum* resulted in the most significant haemoglobin rate and neuronal cell number in the P2 treatment. The highest brain volume was found in the P3 group.

**Keywords:** Chocolate gonads *D. setosum*, Amino acids, Hemoglobin, Brain, Neuron cells

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