GAMBARAN HISTOLOGIS SEL PIRAMIDAL HIPOKAMPUS TIKUS PUTIH (*Rattus norvegicus*) JANTAN DEWASA STRAIN WISTAR PASCA PENGHENTIAN PAJANAN MONOSODIUM GLUTAMAT PERORAL

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Abstrak

Latar Belakang: Monosodium glutamat (MSG) merupakan salah satu bahan penyedap masakan yang berperan menciptakan rasa *umami*. Penggunaan MSG melebihi ambang batas menyebabkan kerusakan hipokampus. **Tujuan**: penelitian ini bertujuan untuk mengetahui gambaran histologis sel piramidal hipokampus tikus putih (*Rattus norvegicus*) jantan dewasa strain wistar pasca penghentian pajanan MSG peroral. **Metodologi:** Desain penelitian ini merupakan *true eksperimental.* Penelitian ini menggunakan 27 tikus dan dibagi 9 kelompok. Sampel dipilih dengan metode *simple random sampling.* Kelompok kontrol positif (KP) diberikan akuadest 1,5ml selama 28, 42, 56 hari; Kelompok kontrol negatif (KN) diberikan MSG 5mg/gBB/hari selama 28, 42, 56 hari; Kelompok perlakuan (P) diberikan MSG 5mg/gBB/hari selama 28 hari dan dihentikan selama 1, 14, 28 hari. Tikus kemudian dibedah secara bertahap pada hari ke-29, ke-43 dan ke-57. Hipokampus dibuat preparat mikroskopik dengan pewarnaan H&E. Variabel data adalah jumlah sel piramidal normal dan rusak. Data diamati pada kedua hipokampus dengan perbesaran lensa objektif 40x. Data dianalisa menggunakan *one-way anova* dilanjutkan LSD dan *Kruskal Wallis Test* dilanjutkan *Mann-Whitney Test*. Analisa data menggunakan program SPSS versi 16.0. **Hasil:** Tidak terdapat perbedaan bermakna rerata jumlah sel piramidal rusak pada seluruh kelompok perlakuan (P) pada hari yang berbeda ($p \geq 0,05$). Terdapat perbedaan bermakna rerata jumlah sel piramidal normal pada seluruh kelompok perlakuan (P) pada hari yang berbeda ($p < 0,05$). **Kesimpulan:** Penggunaan MSG melebihi ambang batas menyebabkan kerusakan hipokampus berupa degenerasi sel piramidal dan terjadi regenerasi pada 28 hari pasca penghentian pajanan MSG.

Kata kunci: Monosodium Glutamat (MSG), regenerasi, sel piramidal

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HISTOLOGICAL OF HIPPOCAMPAL PYRAMIDAL CELLS ADULT MALE WISTAR RATS (Rattus norvegicus) AFTER CESSATION OF ORAL ADMINISTRATION MONOSODIUM GLUTAMATE

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Abstract

Background: *Monosodium glutamate (MSG) is a flavor enhancher which used for arising umami taste. Excessive consumption of MSG resulted in hippocampal pyramidal cells degeneration.* ***Objective:*** *The aim of this study was to determine the histological of hippocampal pyramidal cells adult male wistar rats (Rattus norvegicus) after cessation of oral administration monosodium glutamate.* ***Methodology:*** *This is true experimental study. This study used 27 rats and divided into 9 groups with simple random sampling. Positive control groups (KP) were given aquadest 1,5ml for 28, 42, 56 days; Negative control groups (KN) were given MSG dose 5mg/gBW/day for 28, 42, 56 days; Treatment groups (P) were given MSG dose 5mg/gBW/day for 28 days and stopped for 1, 14, 28 days .The rats were then dissected gradually at day-29, day-43 and days-57. The hippocampus was processes into microscopic preparations and stained with H&E. Measured variables include normal and abnormal pyramidal cells. The variables data were observed in the both side of hippocampus with a magnification of 40x objective lens. Data were analyzed using One-way ANOVA followed by LSD and Kruskal Wallis Test followed by Mann-Whitney Test. Data analysis using SPSS version 16.0* ***Results:*** *There were no significant differences in the mean number of pyramidal cells degeneration between treatment groups (P) ($p \geq 0,05$). There were significant differences in the mean number of normal pyramidal cells between treatment groups (P) ($p < 0,05$).* ***Conclusions:*** *Excessive consumption of MSG resulted in hippocampal pyramidal cells degeneration and regeneration occur in 28 days after withdrawal of exposure to MSG for 28 days.*

Keywords: Monosodium Glutamate (MSG), regeneration, pyramidal cells.

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