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Gambaran histologis serebrum neonatus tikus sprague Dawley yang induknya terpapar monosodium L-Glutamat selama gestasi = Histological structure of cerebrum in the neonatus of sprague Dawley rats whose mothers exposed monosodium L-Glutamate during gestational period

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Abstrak

Latar Belakang : MSG mempunyai sifat eksitotoksik yang dapat menyebabkan kerusakan dan kematian sel neuron. Penelitian ini ditujukan untuk mengetahui pengaruh pemberian MSG terhadap gambaran histologis serebrum neonatus tikus Sprague Dawley yang induknya terpapar MSG selama gestasi.
Metode : Desain penelitian adalah eksperimental in vivo menggunakan rancangan acak lengkap. Subjek penelitian adalah 25 ekor tikus betina putih (Rattus novergicus) strain Sprague Dawley, dikelompokkan menjadi 2 kelompok yaitu 2 kelompok kontrol dan 3 kelompok perlakuan yang selama masa gestasi dicekok MSG dosis 1200 mg, 2400 mg dan 4800 mg/kg BB/hari via sonde lambung. Saat induk tikus melahirkan, neonatus diambil acak 1 neonatus dari 1 induk tikus, dibuat sajian histologi otak pewarnaan HE. Fotomikrograf dianalisis dengan Optilab Camera dan Image Raster. Paramater penelitian adalah ketebalan lapisan korteks serebri, persentase kerusakan neuron, kepadatan neuron dan jumlah jenis neuron normal di korteks serebri area sensorik primer.
Hasil : MSG mampu menembus sawar darah plasenta dan sawar darah otak Pemberian MSG selama masa gestasi menyebabkan kecenderungan terjadinya penipisan lapisan korteks serebri, peningkatan persentase kerusakan neuron, kepadatan neuron, dan jumlah sel neuron imatur korteks serebri area sensorik primer yang bermakna pada dosis MSG 2400 mg/kg BB/hari
Kesimpulan : Pemberian MSG selama masa gestasi menyebabkan terjadinya penipisan lapisan korteks serebri, peningkatan persentase kerusakan neuron, kepadatan neuron dan jumlah sel neuron imatur korteks serebri area sensorik primer yang bermakna pada dosis MSG 2400 mg/kgBB/hari.
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Background: MSG as exocitotoxin caused neuronal damage and death. This research aims to investigate the influence of MSG on the histological structure of cerebrum in the neonatus of Sprague Dawley rats whose mothers exposed to MSG during gestational periode.
Methods: This research is eksperimental investigation in vivo using completely randomaized design. The subject are 25 adult female Sprague Dawley rats, which are divided into 2 groups : 2 control groups and 3 treated groups which were given with MSG with the doses of 1200 mg, 2400 mg, and 4800 mg/kg bw/day in 4 ml aquadest. When the female rats got labour, one neonatus was taken randomly from its mother. The brain spesimen were isolated and stained with HE staining. Photomicrograph was taken with Optilab Camera and was analyzed by Image Raster for thickness of cerebral cortex layers, the percentage of neuronal damage, neuronal density, and number of normal neuron in the primary sensor area of cerebral cortex.
Result: MSG was able to penetrate blood placenta barrier and blood brain barrier of neonatal rats. MSG caused the tendency of serebral cortex layers to become thinner, the increasing of neuronal damaged

percentage, the increasing of neuronal density, and the increasing number of normal immature neuron(neuroblast) in the primary sensory area of cerebral cortex significantly with the doses of 2400 mg/kg bw/day.

Conclusion: MSG caused the tendency of cerebral cortex layers to become thinner, the increasing of neuronal damaged percentage, the increasing of neuronal density, and the increasing number of normal immature neuron(neuroblast) in the primary sensory area of cerebral cortex significantly with the doses of 2400 mg/kg bw/day.