PENGARUH PEMBERIAN EKSTRAK DAUN UNGU (Graptophyllum pictum (L.) Griff) TERHADAP REGENERASI SEL GLIA PADA TIKUS MODEL STROKE DENGAN METODE IMUNOHISTOKIMIA

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ABSTRAK

Latar Belakang: Stroke iskemik merupakan salah satu penyebab utama kematian di Indonesia dan menyebabkan kerusakan jaringan otak melalui mekanisme stres oksidatif, inflamasi, serta kematian sel neuronal. Salah satu biomarker kerusakan otak adalah *Glial Fibrillary Acidic Protein* yang meningkat sebagai respons terhadap astrogliosis. Graptophyllum pictum (L.) Griff merupakan tanaman herbal yang mengandung flavonoid, tanin, dan saponin yang berperan sebagai antioksidan sehingga berpotensi menurunkan stres oksidatif dan mendukung regenerasi sel glia pasca stroke iskemik.
Tujuan: Menganalisis pengaruh pemberian ekstrak daun ungu terhadap regenerasi sel glia dan neurophil spongiosis pada jaringan otak tikus *Rattus norvegicus* galur Sprague Dawley yang diinduksi stroke iskemik.
Metode: Penelitian ini merupakan *true experimental design* dengan rancangan *post-test only control group*. Hewan coba tikus jantan galur Sprague Dawley diinduksi stroke menggunakan metode *Middle Cerebral Artery Occlusion* (MCAO). Kelompok perlakuan diberikan ekstrak daun ungu dengan beberapa dosis, sedangkan kelompok kontrol tidak diberikan terapi. Setelah periode perlakuan, otak diambil untuk pemeriksaan histologi Hematoxylin-Eosin guna menilai neurophil spongiosis serta imunohistokimia GFAP untuk menilai ekspresi astrosit reaktif sebagai indikator regenerasi sel glia.
Hasil: Kelompok tikus yang diberi ekstrak daun ungu menunjukkan penurunan derajat neurophil spongiosis dan penurunan ekspresi GFAP dibandingkan kelompok kontrol, yang mengindikasikan berkurangnya proses inflamasi dan peningkatan regenerasi sel glia pasca stroke iskemik. Efek terapeutik meningkat seiring peningkatan dosis ekstrak.
Kesimpulan: Ekstrak daun ungu (*Graptophyllum pictum*) berpengaruh dalam meningkatkan regenerasi sel glia dan menurunkan kerusakan jaringan otak pada tikus model stroke iskemik melalui mekanisme antioksidan. Tanaman daun ungu berpotensi digunakan sebagai terapi tambahan berbasis herbal untuk penanganan stroke.

Kata kunci: stroke iskemik, astrogliosis, GFAP, neurophil spongiosis, ekstrak daun ungu (*Graptophyllum pictum)*

THE EFFECT OF PURPLE LEAF EXTRACT (Graptophyllum pictum (L.) Griff) ON GLIA CELL REGENERATION IN STROKE MODEL RATS USING THE IMMUNOHISTOCHEMICAL METHOD

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ABSTRACT

***Background**: Ischemic stroke is a leading cause of death in Indonesia and causes brain tissue damage through oxidative stress, inflammation, and neuronal cell death. One biomarker of brain damage is Glial Fibrillary Acidic Protein (GFAP), which increases in response to astrogliosis. Graptophyllum pictum (L.) Griff is an herbal plant containing flavonoids, tannins, and saponins, which act as antioxidants, potentially reducing oxidative stress and supporting glial cell regeneration after ischemic stroke.*
***Objective**: To analyze the effect of purple leaf extract on glial cell regeneration and neurophil spongiosis in the brain tissue of Rattus norvegicus Sprague Dawley rats induced by ischemic stroke.*
***Methods**: This study used a true experimental design with a post-test only control group. Male Sprague Dawley rats were induced with stroke using the Middle Cerebral Artery Occlusion (MCAO) method. The treatment group was given several doses of purple leaf extract, while the control group received no therapy. After the treatment period, brains were removed for hematoxylin-eosin histology to assess neurophil spongiosis and GFAP immunohistochemistry to assess reactive astrocyte expression as an indicator of glial cell regeneration.*
***Results**: The group of mice given purple leaf extract showed a decrease in the degree of neurophil spongiosis and decreased GFAP expression compared to the control group, indicating a reduced inflammatory process and increased glial cell regeneration after ischemic stroke. The therapeutic effect increased with increasing extract dose.*
***Conclusion**: Purple leaf extract (Graptophyllum pictum) is effective in enhancing glial cell regeneration and reducing brain tissue damage in a rat model of ischemic stroke through an antioxidant mechanism. Purple leaf has the potential to be used as an adjunct herbal-based therapy for stroke treatment.*

***Keywords**: ischemic stroke, astrogliosis, GFAP, neutrophilic spongiosis, purple leaf extract (Graptophyllum pictum)*