Increased cell viability and proliferation in post-hypoxic hippocampal tissue culture treated with Acalypha indica root extract

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Abstrak

Latar belakang: Studi ini dilakukan untuk mempelajari pengaruh pemberian ekstrak akar Acalypha indica Linn terhadap viabilitas relatif dan proliferasi sel sebagai parameter neurogenesis pada kultur jaringan hipokampus tikus pascahipoksia.
Metode: Studi eksperimental in vitro pada 24 kultur primer jaringan sel saraf tikus Sprague Dowley dewasa yang dipajankan terhadap hipoksia dengan gas 5% O2/5% CO2/N2 seimbang selama 24 jam. Pascahipoksia, ekstrak Acalypha indica Linn ditambahkan pada 3 kelompok perlakuan, masing-masing dengan dosis 10, 15, dan 20 mg/mL, sedangkan pada kelompok kontrol tidak ditambahkan apapun. Setiap kelompok terdiri atas 6 sampel. Setelah inkubasi selama 90 jam, viabilitas relatif sel diukur dengan 3-(4,5-dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT), proliferasi sel diukur dengan 5-bromo2â??-deoxy-uridine (BrdU). Data dianalisis dengan menggunakan tes parametrik one way ANOVA yang dilanjutkan dengan analisis post-hoc.
Hasil: Viabilitas relatif sel pada kultur jaringan hipokampus tikus pascahipoksia dengan pemberian ekstrak akar kucing pada dosis 10, 15, dan 20 mg/mL lebih tinggi secara bermakna dibandingkan dengan kontrol (176,95%, 220,62%, 386,02% vs. 100%). Proliferasi sel pada kultur jaringan hipokampus tikus pascahipoksia dengan pemberian ekstrak akar kucing pada dosis 10, 15, dan 20 mg/mL lebih tinggi secara bermakna dibandingkan dengan kontrol (0,132; 0,117; 0,114 vs. 0,096).
Kesimpulan: Ekstrak Acalypha indica Linn dapat meningkatkan viabilitas relatif dan proliferasi sel pascahipoksia in vitro pada dosis 10, 15, dan 20 mg/mL. (Med J Indones 2011; 20:94-9)
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Abstract
Background: This research was done to study the infl uence of Acalypha indica Linn root extract towards relative cell viability and proliferation as parameters of neurogenesis in post-hypoxic hippocampal tissue culture.
Methods Experimental in vitro study using 24 primary neuronal cell cultures obtained from adult Sprague Dawley rat exposed to hypoxia with 5% O2/5% CO2/N2 balance gas for 24 hours. Post-hypoxia, Acalypha indica Linn root extract was added at doses of 10, 15, and 20 mg/mL to 3 treatment groups. No treatment was given to the control group. Each group consists of 6 samples. After 90 hours of incubation, relative cell viability was measured by using 3-(4,5- dimethylthiazol-2-yl)-2,5-diphenyltetrazolium bromide (MTT) examination, and cell proliferation was measured by using 5-bromo2â??-deoxy-uridine (BrdU) for cell proliferation. Data was analyzed using one way ANOVA parametric tests, then further analyzed with post-hoc analysis.
Results: The relative cell viability of rat hippocampal tissue culture treated with Acalypha indica Linn root extract with dose of 10, 15, and 20 mg/mL was signifi cantly higher than control (176.95%, 220.62%, and 386.02% vs. 100%). Cell proliferation of rat hippocampal tissue culture treated with Acalypha indica Linn

root extract with dose of 10, 15, and 20 mg/mL was signifi cantly higher than control (0.132, 0.117, 0.114 vs 0.096).
Conclusion: Acalypha indica Linn root extract with doses of 10, 15, and 20 mg/mL can increase relative cell viability and proliferation in post-hypoxic hippocampal tissue culture. (Med J Indones 2011; 20:94-9)