

# Efek kombinasi ekstrak etanol akar *acalypha indica* dan herba *centella asiatica* pada beberapa parameter biokimia dan histopatologi ginjal tikus spraque dawley pascahipoksia = The effect of the combination ethanolic extract of *acalypha indica* root and herbaceous *centella asiatica* on some biochemical parameters and hystopathology analysis in spraque dawley rat kidney post hypoxic

Nurfitri, author

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## Abstrak

Latar Belakang: Hipoksia kronik merupakan salah satu penyebab penyakit ginjal antara lain akibat iskemia kronik, anemia serta peningkatan pembentukan Reactive Oxygen Species (ROS) di dalam sel. Penggunaan obat jangka panjang untuk mengurangi faktor risiko hipoksia pada ginjal yaitu Angiotensin-Converting Enzyme inhibitors dan Angiotensin Receptor Blockers akan menimbulkan efek samping yang berat. Pemberian kombinasi ekstrak air akar *Acalypha indica* 250 mg/KgBB (AI250) dan herba *Centella asiatica* 150 mg/kgBB (CA150) menunjukkan efek neuroterapi sel neuron pada tikus Spraque Dawley pascahipoksia. Atas dasar penelitian tersebut akan dibuktikan manfaat kombinasi ekstrak etanol (akar AI+ herba CA) dan/atau ekstrak tunggalnya dalam memperbaiki kerusakan ginjal tikus Spraque Dawley pascahipoksia melalui mekanisme antioksidan.

Metode: 28 ekor tikus Sprague Dawley jantan yang dibagi ke dalam 7 kelompok yaitu normal; hipoksia+air; hipoksia+kombinasi1; hipoksia+kombinasi2; hipoksia+tunggal1; hipoksia+tunggal2; hipoksia+vit C. Induksi hipoksia dilakukan selama 7 hari dalam hypoxic chamber diisi O<sub>2</sub> 10 % dan N<sub>2</sub> 90 % bertekanan 1 atm. Pada hari ke-8 pascareoksigenasi 1 jam masing-masing kelompok diberi perlakuan air; (AI200+CA150); (AI250+CA100); AI250; CA150 dan vitamin C peroral selama 7 hari. Pada akhir studi hewan coba diterminasi menggunakan eter. Darah dan organ ginjal diambil untuk pemeriksaan kadar MDA, ekspresi relatif mRNA HIF-1, kadar kreatinin dan urea plasma serta pemeriksaan histopatologi.

Hasil: Pemberian ekstrak etanol kombinasi (AI250+CA100) dapat menurunkan kadar MDA ginjal dan plasma secara bermakna dibandingkan kontrol hipoksia ( $p=0,001$  dan  $p=0,021$ ) dan ekstrak etanol AI 250 ( $p=0,003$  dan  $0,043$ ). Pada kombinasi ekstrak AI250+CA100 terjadi penurunan ekspresi relatif mRNA HIF-1 ( $p=0,014$ ). (AI250+CA100), penurunan kadar urea plasma ( $p=0,001$ ) dan perbaikan lesi intra- glomerulus  $p=0,013$ .

Kesimpulan: Kombinasi ekstrak etanol (AI250+CA100) dan tunggal (AI250) memiliki aktivitas antioksidan terbaik sehingga dapat mencegah kerusakan ginjal pascahipoksia, secara biokimiawi dan gambaran histopatologinya.

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Background: The Chronically hypoxia can be caused by chronic ischemia, anemia and increased formation of Reactive Oxygen Species (ROS) in the cell. Existing treatments for long term in order to reduce the risk factors in kidney hypoxia (Angiotensin Converting Enzyme inhibitor and Angiotensin Receptor Blockers)

can cause severe side effects. Using combination of water extract of the root of *Acalypha indica* 250 mg/kgBB (AI250) and herbaceous *Centella asiatica* 150 mg/kgBB (CA150) showed the effect of neuronal cell neurotherapy in Sprague Dawley Rat post-hypoxic. On the basis of this studies will be proven benefits of the ethanolic extract in combination and single of the Root of *Acalypha indica* and Herbaceous *Centella asiatica* Supplementation in repairing at Sprague Dawley rat kidney damage post-hypoxic through an antioxidant mechanism.

**Method:** 28 Male Sprague-Dawley rats were divided into 7 groups: normal control; hypoxia + water control; hypoxia + combination 1; hypoxia + combination 2; hypoxia + single 1; hypoxia + single 2; hypoxia + vitamin C. Induction of hypoxic for 7 days in a hypoxic chamber filled with 10% O<sub>2</sub> and 90% N<sub>2</sub> pressure of 1 atm. On the 8 th day pasca reoxygenation for 1 hour, each group were treated by water; (AI200 + CA150); (AI250 + CA100); AI250; CA150 and vitamin C orally for 7 days. At the end of the test animal studies using ether terminated. Blood and kidneys were taken for examination MDA levels, the relative mRNA expression of HIF-1, plasma urea and plasma creatinine levels and histopathology.

**Result:** Combination of ethanolic extract (AI200+CA150) decreased MDA levels kidney tissue and plasma were significantly compared with the control ( $p = 0,001$  dan  $p = 0.003$ ) and ethanolic extract AI 250 ( $p = 0.016$  and  $0.043$ ), AI250 + CA100 decreased relative mRNA expression HIF-1 ( $p = 0.014$ ). The combination of extracts (AI250 + CA100) decreased plasma urea levels ( $p = 0.001$ ) and the repair of intra-glomerular lesions  $p = 0.013$ .

**Conclusion:** the combination (AI250+CA100) and single (AI250) administration has the best antioxidant activity, thus preventing kidney damage post hypoxic by biochemical parameters and histopathology.