

Kajian efek antioksidan kombinasi ekstrak etanol *acalypha indica* dan *centella asiatica* pada fungsi hati tikus spraque dawley pascahipoksia sistemik = Study on the effects of antioxidant in combination extract ethanol *acalypha indica* and *centella asiatica* toward the liver function of spraque dawley rats on post hypoxia systemic

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Abstrak

Latar Belakang: Hipoksia adalah keadaan defisiensi suplai oksigen ke dalam sel atau jaringan akibat gagalnya sistem respirasi yang membawa oksigen sehingga mengakibatkan kerusakan jaringan. Hati merupakan organ yang sensitif terhadap hipoksia. Keadaan hipoksia dapat menyebabkan kerusakan hati yang mendasari beberapa kondisi patologis jaringan seperti ischemic hepatitis, cirrhosis hepatis. Tanaman *Acalypha indica* (AI) dan *Centella asiatica* (CA) telah terbukti memiliki efek antioksidan dan dapat melindungi banyak organ dari kondisi hipoksia. Pada penelitian ini menganalisis pengaruh pemberian kombinasi ekstrak etanol AI dan CA pada pascahipoksia sistemik terhadap fungsi hati, stres oksidatif dan aktivitas antioksidan organ hati.

Metode: Dua puluh delapan tikus Spraque-Dawley dibagi secara acak menjadi 7 kelompok. Kelompok kontrol adalah perlakuan tanpa hipoksia, perlakuan enam kelompok lainnya pascahipoksia 7 hari diberikan zat uji sebagai berikut: air, kombinasi dosis 1 dan 2, dosis tunggal AI, dosis tunggal CA dan dosis tunggal vitamin C selama 7 hari. Aktivitas ALT dan AST, kadar MDA, rasio GSH/GSSG dan aktivitas SOD dianalisis dengan statistik menggunakan uji ANOVA yang dilanjutkan multiple comparisons Post Hoc dengan uji Least Significant Difference (LSD) untuk mengetahui kelompok mana yang berbeda, dimana perbedaan dianggap bermakna secara statistik bila $p < 0.05$.

Hasil: Tidak ada perbedaan aktivitas ALT dan AST yang bermakna pada semua kelompok. Kadar MDA meningkat pada kelompok pascahipoksia 7 hari dibanding kontrol. Kelompok kombinasi 1 memiliki MDA yang rendah, rasio GSH/GSSG dan aktivitas SOD yang meningkat dibanding dengan kelompok pascahipoksia 7 hari.

Kesimpulan: Pemberian zat uji kombinasi 1 memiliki efek perlindungan pada hati tikus terhadap pascahipoksia 7 hari melalui mekanisme stres oksidatif dan antioksidan.

.....Background: Hypoxia occurs due to the deficiency of oxygen supply to the cells or tissue caused by the failure of the respiratory system that carries oxygen result in cell or tissue damage. Liver is an organ that has sensitive reaction to hypoxia. Hypoxia may cause liver damage underlying the condition of several pathological tissues, such as; ischemic hepatic, cirrhosis hepatic. *Acalypha indica* (AI) and *Centella asiatica* (CA) have been proved to have antioxidant effects and may protect many organs from hypoxic conditions. This study analysed the effect of ethanol extract combination of AI and CA on post-hypoxia toward liver function, oxidative stress and antioxidant activity of the liver.

Method: Twenty-eight Spraque-Dawley rats divided randomly into 7 groups. Controlled group was treated without hypoxia while the six other groups on 7 days-post-hypoxia were given with such substance test as follows: water, dose combination of 1 and 2, single dose of AI, single dose of CA, and single dose of vitamin C. Activities of ALT and AST, MDA, GSH / GSSG ratio and SOD activity were analyzed

statistically using ANOVA test followed by Post Hoc multiple comparison by the Least Significant Difference (LSD) to determine which groups was different, where the difference was considered statistically significant at $p < 0.05$.

Result: There is no significant difference in the activity of ALT and AST in all groups. MDA levels increased in the 7 days-posthypoxia group compared to the controlled one. The group combination 1 has lower MDA and increasing GSH/GSSG ratio and SOD activity compared with the 7 days-posthypoxia group.

Conclusion: The substance of combination 1 test has a protective effect on the rats' liver on 7 days-posthypoxia through oxidative stress and antioxidant mechanisms.