

Efek Pemberian Ekstrak Etanol *Centella Asiatica L.* terhadap Kadar Tumor Necrosis Factor-Alpha pada Jantung dan Ginjal Tikus Sprague-Dawley Tua = Effects of *Centella Asiatica L.* ethanolic extract administration on Tumor Necrosis Factor-Alpha Concentration in Hearts and Kidneys of Aged Sprague-Dawley Rats

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Abstrak

Pendahuluan: Saat ini, dunia secara global termasuk Indonesia tengah mengalami tren pesat peningkatan populasi lansia. Hal ini dapat menjadi tantangan kesehatan besar karena penuaan meningkatkan kerentanan terjadinya penyakit degeneratif. Sayangnya, agen antipenuaan seperti suplemen vitamin masih sulit terjangkau secara biaya atau diperoleh secara luas. *Centella asiatica L.* (CA) adalah tanaman herbal tradisional yang dilaporkan memiliki efek antiinflamasi dan antioksidan poten dalam banyak studi. Namun, studi yang meneliti efek CA dalam konteks penuaan masih sangat terbatas. **Tujuan:** Studi ini meneliti efek pemberian ekstrak etanol CA terhadap kadar TNF- pada jantung dan ginjal tikus Sprague-Dawley tua. **Metode:** Tikus Sprague Dawley jantan usia 8-12 minggu dan 20-24 bulan dibagi menjadi empat kelompok uji: kontrol positif (vitamin E 6 IU), kontrol negatif (air ad libitum), CA 300 (CA 300 mg/kgBB), dan kontrol muda (tikus usia 8-12 minggu dengan air ad libitum). Setelah 28 hari perlakuan, tikus diterminasi. Organ jantung dan ginjal setiap tikus diambil dan melewati pengukuran kadar TNF- dengan metode enzyme-linked immunosorbent assay (ELISA). **Hasil:** Pada kelompok CA 300, terdapat penurunan kadar TNF- jantung secara signifikan ($p = 0,023$) disertai penurunan kadar TNF- ginjal secara tidak signifikan ($p = 0,574$). Namun, kadar TNF- ginjal pada kelompok yang diberikan CA tetap paling rendah dibandingkan kelompok lainnya. **Kesimpulan:** Pemberian ekstrak etanol CA menurunkan kadar TNF- jantung secara signifikan pada tikus Sprague-Dawley tua namun tidak berpengaruh terhadap kadar TNF- ginjal. Diperlukan penelitian lebih lanjut untuk menyelidiki efek CA sebagai agen antipenuaan.

.....**Introduction:** Currently, the world including Indonesia are experiencing a trend of rapid growth in aging population. This poses a major challenge to healthcare due to increasing incidence of degenerative diseases. In spite of this, preventive antiaging agents such as vitamin supplements are not widely available nor affordable. *Centella asiatica L.* (CA), a traditional herbal plant native to Southeast Asia, has been widely studied and demonstrated potent anti-inflammatory and antioxidant effects in clinical studies. However, studies examining effects of CA in aging population are very limited. **Objective:** This study investigates effects of CA treatment on aged Sprague-Dawley rats. **Methods:** Male Sprague-Dawley rats aged 8-12 weeks and 20-24 months were split into four experimental groups: positive control (vitamin E 6 IU), negative control (water ad libitum), CA 300 (CA 300 mg/kgBW), and young control (young rats given water ad libitum). After 28 days of treatment, the rats underwent termination with kidneys and hearts harvested. TNF- concentration were determined using enzyme-linked immunosorbent assay (ELISA) method. **Results:** In the CA 300 group, there was a significant decrease in heart TNF- levels ($p = 0,023$) accompanied by an insignificant decrease in kidney TNF- levels ($p = 0,574$). However, renal TNF- levels in the group given with CA is still the lowest among all groups. **Conclusion:** The administration of CA ethanolic extract on aged Sprague-Dawley rats significantly reduced heart TNF- level and had no effect on the kidney TNF-

level. Further research and exploration needs to be made to investigate the effects of CA as an antiaging agent