



## NECROSIS FACTOR- $\alpha$ (TNF- $\alpha$ ) PADA PASIEN STROKE ISKEMIK AKUT

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### ABSTRAK

Kopi adalah salah satu minuman yang paling banyak dikonsumsi di seluruh dunia. Banyak penelitian menunjukkan bahwa konsumsi kopi bermanfaat mencegah terjadinya stroke. Kopi mengandung beberapa seperti kafein, trigonelline, asam chlorogenic, kahweol, dan cafestol, yang diketahui sebagai antioksidan. Stroke berkaitan dengan kerusakan sel yang disebabkan oleh stres oksidatif yang berlebihan. Spesies oksigen reaktif adalah penyebab utama kerusakan oksidatif dan inflamasi. Respons inflamasi yang teraktivasi menstimulasi sinyal NF- $\kappa$ B dan menginisiasi peningkatan ekspresi TNF- $\alpha$ , yang menyebabkan perburukan *outcome* stroke. Tujuan penelitian ini membuktikan adanya penurunan kadar TNF- $\alpha$  setelah pemberian kopi pada pasien stroke iskemik akut. Desain penelitian ini adalah kuasi eksperimental non randomisasi grup kontrol. Semua pasien yang didiagnosa stroke iskemik akut yang dikelola di RSUP Dr Sardjito Yogyakarta, RSA UGM dan RSPAU Dr. S. Hardjolukito dipilih yang memenuhi kriteria inklusi dan eksklusi yang dikehendaki peneliti dan relevan dengan tujuan penelitian (*purposive sampling*). Untuk menegakkan diagnosis stroke iskemik, pasien dilakukan pemeriksaan CT Scan kepala. Subjek yang memenuhi kriteria inklusi dan eksklusi dimasukkan dalam penelitian. Subjek dilakukan pemberian kopi arabika 30 mg dalam air 150 ml yang diminum setiap pagi setelah makan selama 5 hari berturut-turut, dan pada hari pertama dan hari kelima dilakukan pemeriksaan kadar TNF- $\alpha$ . Didapatkan hasil subjek penelitian adalah pasien stroke iskemik akut yang masuk rumah sakit dari bulan September 2021 yang memenuhi kriteria inklusi yaitu berjumlah 40 subjek, terdiri dari subjek laki-laki lebih banyak pada kelompok kopi (68,4%), sedangkan pada kelompok kontrol jumlah subjek perempuan lebih banyak (52,4%). Median TNF- $\alpha$  setelah intervensi pada kelompok kopi adalah 3,54 dengan rentang 2,11-4,78; sedangkan pada kelompok kontrol adalah 4,59 dengan rentang 3,46-7,30; dengan  $p = 0,014$  ( $p < 0,05$ ), berarti terdapat perbedaan yang bermakna pada kadar TNF- $\alpha$  setelah intervensi antara kelompok kopi dibandingkan dengan kelompok kontrol. Pada analisis multivariat didapatkan hanya intervensi kopi yang berpengaruh secara signifikan terhadap penurunan kadar TNF- $\alpha$  dengan koefisien regresi -3,305 (95% CI -6,59-(-0,02);  $p = 0,049$ ). Sedangkan jenis kelamin tidak signifikan terhadap penurunan kadar TNF- $\alpha$  dengan koefisien regresi -0,179 (95% CI -3,49 - 3,14;  $p = 0,913$ ). Simpulan pada penelitian ini terbukti bahwa terdapat pengaruh antara pemberian kopi dengan penurunan kadar TNF- $\alpha$  pada pasien stroke iskemik akut.

Kata kunci: kandungan kopi, antioksidan, stres oksidatif, inflamasi, *Tumor Necrosis Factor- $\alpha$*  (TNF- $\alpha$ ), perburukan *outcome* stroke.

## **THE EFFECT OF COFFEE DRINKING ON REDUCING THE LEVELS OF TUMOR NECROSIS FACTOR- $\alpha$ (TNF- $\alpha$ ) IN ACUTE ISCHEMIC STROKE PATIENTS**

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### **ABSTRACT**

Coffee is one of the most consumed beverages worldwide. Many studies show that coffee consumption is beneficial in preventing stroke. Coffee contains some such as caffeine, trigonelline, chlorogenic acid, kahweol, and cafestol, which are known to be antioxidants. Stroke is associated with cell damage caused by excessive oxidative stress. Reactive oxygen species are a major cause of oxidative damage and inflammation. The activated inflammatory response stimulates NF- $\kappa$ B signaling and initiates increased expression of TNF- $\alpha$ , leading to a worsening of stroke outcome. The Objective this study, to prove a decrease in TNF- $\alpha$  levels after drinking coffee in acute ischemic stroke patients. The design of this study was a quasi-experimental non-randomized control group. All patients diagnosed with acute ischemic stroke were hospitalized at RSUP Dr Sardjito Yogyakarta, RSA UGM and RSPAU Dr. S. Hardjolukito were selected who met the inclusion and exclusion criteria desired by the researcher and were relevant to the research objectives (purposive sampling). To confirm the diagnosis of ischemic stroke, the patient underwent a head CT scan. Subjects who met the inclusion and exclusion criteria were included in the study. Subjects were given 30 mg of Arabica coffee in 150 ml of water which was drunk every morning after breakfast for 5 consecutive days, and on the first and fifth day, TNF- $\alpha$  levels were examined. The results of this study, subjects were acute ischemic stroke patients who were admitted to the hospital from September 2021 who met the inclusion criteria totaling 40 subjects, with more male subjects in the coffee group (68.4%), while in the control group the number of female subjects was more (52.4%). The median TNF- $\alpha$  after the intervention in the coffee group was 3.54 with a range of 2.1 to 4.78; while in the control group is 4.59 with a range of 3.46 to 7.30; with  $p = 0.014$  ( $p < 0.05$ ), it means that there is a significant difference in TNF- $\alpha$  levels after the intervention between the coffee group compared to the control group. In multivariate analysis, it was found that only the coffee giving intervention had a significant effect on decreasing TNF- $\alpha$  levels with a regression coefficient of -3.305 (95% CI -6.59 to -0.02;  $p = 0.049$ ). While sex was not significant for the decrease in TNF- $\alpha$  levels with a regression coefficient of -0.179 (95% CI -3.49 to 3.14;  $p = 0.913$ ). Conclusion in this study, it was proven that there was an effect between giving coffee and decreasing TNF- $\alpha$  levels in acute ischemic stroke patients.

**Keywords:** coffee content, antioxidants, oxidative stress, inflammation, Tumor Necrosis Factor- $\alpha$  (TNF- $\alpha$ ), worsening stroke outcome.