

## ABSTRAK

**PERBEDAAN TEKANAN DARAH DAN *ARTERIAL STIFFNESS* SETELAH  
MINUM KOPI ARABIKA DAN ROBUSTA  
PADA PENDERITA HIPERTENSI TERKONTROL**

**Ford Ance A, Budi S. Pikir, Andrianto**

**Latar Belakang:** Kopi merupakan salah satu minuman yang paling sering dikonsumsi diseluruh dunia. Data mengenai perubahan tekanan darah akibat konsumsi kopi masih bertentangan. Peningkatan tekanan darah yang ditimbulkan kopi diperkirakan ditimbulkan efek *pressor* kafein yang efeknya terutama terhadap resistensi pembuluh darah. Kafein kemungkinan menyebabkan peningkatan *arterial stiffness*, dan berhubungan dengan morbiditas dan mortalitas kardiovaskuler.

**Tujuan:** Mengetahui perbedaan tekanan darah dan *arterial stiffness* setelah minum kopi arabika dan robusta pada penderita hipertensi terkontrol.

**Metode:** Penelitian eksperimental semu dengan subjek penelitian terdiri dari 24 pasien hipertensi terkontrol dan 24 subjek normotensi yang dikumpulkan secara *purposive sampling*. Tiap subjek diberikan  $\pm 10,6$  g kopi arabika atau robusta dalam 150 ml air dengan protokol *crossover* sebanyak dua kali dengan rentang waktu 5 hari. Penilaian *arterial stiffness* dengan ultrasonografi arteri karotis komunis menggunakan indeks *beta stiffness*. Tekanan darah dan *arterial stiffness* diukur sebelum pemberian kopi serta 30 menit dan 60 menit setelah pemberian kopi.

**Hasil:** Analisis dengan uji Friedman. Didapatkan perbedaan bermakna antara tekanan darah sistolik (TDS) awal, TDS 30 menit dan TDS 60 menit setelah minum kopi arabika (p 0,002) dan robusta (p 0,012) pada penderita hipertensi terkontrol. Didapatkan perbedaan bermakna antara tekanan darah diastolik (TDD) awal, TDD 30 menit dan TDD 60 menit setelah minum kopi arabika (p 0,004) dan robusta (p 0,025) pada penderita hipertensi terkontrol. Didapatkan perbedaan bermakna antara indeks *beta stiffness* awal, indeks *beta stiffness* 30 menit dan indeks *beta stiffness* 60 menit setelah minum kopi arabika (p 0,018) pada penderita hipertensi terkontrol. Tidak ada perbedaan bermakna antara indeks *beta stiffness* awal, indeks *beta stiffness* 30 menit dan indeks *beta stiffness* 60 menit setelah minum kopi robusta (p 0,104) pada penderita hipertensi terkontrol. Analisis dengan uji Wilcoxon atau *pair T-test* menunjukkan tidak ada perbedaan bermakna pada seluruh variabel sebelum dan setelah pemberian kopi arabika dan robusta pada penderita hipertensi terkontrol.

**Kesimpulan:** Didapatkan perbedaan bermakna tekanan darah dengan pemberian minuman kopi arabika atau robusta pada hipertensi terkontrol. Didapatkan perbedaan bermakna *arterial stiffness* dengan pemberian minuman kopi arabika pada hipertensi terkontrol. Tidak didapatkan perbedaan bermakna *arterial stiffness* dengan pemberian minuman kopi robusta pada hipertensi terkontrol. Tidak didapatkan perbedaan bermakna antara keseluruhan variabel sebelum dan setelah perlakuan antara kopi arabika dan robusta pada hipertensi terkontrol.

**Kata kunci:** Kafein, tekanan darah sistolik, tekanan darah diastolik, *arterial stiffness*.



**ABSTRACT****THE DIFFERENCE OF BLOOD PRESSURE AND ARTERIAL STIFFNESS  
AFTER INTAKE OF ARABICA AND ROBUSTA COFFEE  
IN CONTROLLED HYPERTENSION****Ford Ance A, Budi S. Pikir, Andrianto**

**Background:** Coffee are widely consumed on a daily basis. Studies on the effect of coffee on cardiovascular risk are not conclusive. The pressor effect of caffeine in coffee is predominantly due to its action on the resistance vessels rather than an increase in cardiac output. There is increasing interest in the potential mechanisms of caffeine that promote large artery stiffness, which associated with increased morbidity and mortality of cardiovascular disease.

**Aim:** To find out the difference of blood pressure and arterial stiffness after intake of arabica and robusta coffee in controlled hypertension

**Methods:** Quasi experimental study enrolling 24 controlled hypertension and 24 normotensive subjects that were collected by purposive sampling. Subjects received  $\pm 10,6$  gr caffeinated coffee in 150 ml water with crossover protocol on 2 separate days 5 days apart. Assessment of arterial stiffness by obtaining ultrasound 2D image of common carotid artery then calculated with beta stiffness index. Blood pressure and arterial stiffness was measured before oral administration of coffee and again at 30 to 60 minutes after the oral administration of coffee.

**Result:** The analysis using Friedman test. There was a significant difference between initial systolic blood pressure (SBP), SBP 30 minutes and SBP 60 minutes after the oral administration of arabica (p 0,002) and robusta coffee (p 0,012) in controlled hypertension. There was a significant difference between initial diastolic blood pressure (DBP), DBP 30 minutes and DBP 60 minutes after the oral administration of arabica (p 0,004) and robusta coffee (p 0,025) in controlled hypertension. There was a significant difference between initial beta stiffness index, beta stiffness index 30 minutes and beta stiffness index 60 minutes after the oral administration of arabica coffee (p 0,018) in controlled hypertension. There was no significant difference between initial beta stiffness index, beta stiffness index 30 minutes and beta stiffness index 60 minutes after the oral administration of robusta coffee (p 0,104) in controlled hypertension. Analysis using Wilcoxon or pair T-test showed no significant difference of all variables after intake of arabica and robusta coffee in controlled hypertension.

**Conclusion:** There was significant difference of blood pressure after intake of arabica or robusta coffee in controlled hypertension. There was significant differences of arterial stiffness after intake of arabica coffee in controlled hypertension. There was no significant difference of arterial stiffness after intake of robusta coffee in controlled hypertension. There was no significant difference of all variables after intake of arabica and robusta coffee in controlled hypertension.

**Keywords:** Caffeine, systolic blood pressure, diastolic blood pressure, arterial stiffness