

ABSTRACT

SINGLE DOSE ACUTE TOXICITY TEST OF ROBUSTA COFFEE (*Coffea canephora*) EXTRACT ON ADRENAL GLANDS HISTOPATHOLOGICAL STRUCTURE OF WHITE RAT (*Rattus norvegicus*) Sprague-Dawley STRAIN USING OECD GUIDELINE NO.432

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Background: Coffee is one of the most widely consumed drinks by people worldwide. Coffee consumption is known to provide many benefits, but if consumed in excess, it can have harmful effects on the body, such as stimulating stress and causing damage to the adrenal glands. This study aims to determine the effect of a single dose acute toxicity test of robusta coffee extract (*Coffea canephora*) on adrenal glands histopathological structure of white rats (*Rattus norvegicus*) Sprague-Dawley strain using OECD guideline No. 423.

Methods: This research is quasi-experimental with a post-test only control group design. The study was conducted based on OECD guidelines No.423 using 18 rats divided into 6 groups: K (CMC-Na 1%); Groups that treated with robusta coffee extract P1 (2000 mg/kgBW); P2 (300 mg/kgBW); P3 (50 mg/kgBW); P4 (5 mg/kgBW); and P5 (5000 mg/kgBW). Histopathology of the adrenal glands was assessed by measuring the area of the medulla and the thickness of the adrenal cortex.

Result: The LD₅₀ value of robusta coffee extract is 2500 mg/kgBW. Observations were made on 3 groups: K, P1, and P5. The results of the mean area of the medulla adrenal are K=0,784 mm²; P1=1,539 mm²; P5=1,529 mm². One Way ANOVA test obtained p=0,048. The results of the average thickness of the cortex adrenal are K=913,44 μm; P1=1023,30 μm, P5=1180,82 μm. One Way ANOVA test obtained p=0,010.

Conclusion: There is an effect of a single dose acute toxicity test of robusta coffee extract (*Coffea canephora*) on adrenal glands histopathological structure of white rat (*Rattus norvegicus*) Sprague-Dawley strain using OECD guideline no. 423.

Keywords: Acute toxicity test, Adrenal gland histopathology, OECD No.423, Robusta coffee.

ABSTRAK

UJI TOKSISITAS AKUT DOSIS TUNGGAL EKSTRAK KOPI ROBUSTA (*Coffea canephora*) TERHADAP GAMBARAN HISTOPATOLOGI KELENJAR ADRENAL TIKUS PUTIH (*Rattus norvegicus*) GALUR Sprague-Dawley MENGGUNAKAN *GUIDELINE* UJI OECD NO. 423

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Latar Belakang: Kopi merupakan salah satu minuman yang banyak dikonsumsi masyarakat di seluruh dunia. Konsumsi kopi dikenal dapat memberikan banyak manfaat, tetapi apabila dikonsumsi secara berlebihan kopi dapat memberikan efek buruk bagi tubuh, seperti dapat merangsang terjadinya stres sehingga menyebabkan kerusakan pada kelenjar adrenal. Penelitian ini dilakukan untuk mengetahui pengaruh uji toksisitas akut dosis tunggal ekstrak kopi robusta (*Coffea canephora*) terhadap gambaran histopatologi kelenjar adrenal tikus putih (*Rattus norvegicus*) galur Sprague-Dawley menggunakan *guideline* uji OECD No.423.

Metode: Penelitian ini adalah *quasi experimental* dengan rancangan *post-test only control group design*. Penelitian ini dilakukan sesuai *guideline* OECD No.423 dengan menggunakan 18 ekor tikus yang terbagi dalam 6 kelompok: K (CMC-Na 1%); Perlakuan ekstrak kopi robusta P1 (2000 mg/kgBB); P2 (300 mg/kgBB); P3 (50 mg/kgBB); P4 (5 mg/kgBB); dan P5 (5000 mg/kgBB). Histopatologi kelenjar adrenal dinilai dengan mengukur luas area medula dan ketebalan korteks adrenal.

Hasil: Nilai LD₅₀ dari ekstrak kopi robusta yaitu 2500 mg/kgBB. Selanjutnya dilakukan pengamatan terhadap 3 kelompok yaitu K, P1, dan P5. Hasil rerata luas area medula yaitu K=0,784 mm²; P1=1,539 mm²; P5=1,529 mm². Uji *One Way ANOVA* didapatkan p=0,048. Hasil rerata ketebalan korteks yaitu K=913,44 μm; P1=1023,30 μm, P5=1180.82 μm. Uji *One Way ANOVA* didapatkan p=0,010.

Kesimpulan: Terdapat pengaruh uji toksisitas akut dosis tunggal ekstrak kopi robusta (*Coffea canephora*) terhadap gambaran histopatologi kelenjar adrenal tikus putih (*Rattus norvegicus*) galur Sprague-Dawley menggunakan *guideline* uji OECD No.423.

Kata Kunci: Histopatologi kelenjar adrenal, Kopi robusta, OECD No.423, Uji toksisitas akut.