

**FAKULTAS KEDOKTERAN  
UNIVERSITAS PEMBANGUNAN NASIONAL “VETERAN” JAKARTA**

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**PENGARUH PEMBERIAN EKSTRAK BUAH KELOR (*Moringa oleifera* fruits)  
TERHADAP KADAR ENZIM KATALASE HEPAR TIKUS (*Rattus norvegicus*)  
GALUR Sprague Dawley MODEL OBESITAS**

**ABSTRAK**

**Pendahuluan**

Obesitas merupakan faktor risiko utama untuk *Non-Alcoholic Fatty Liver Disease* (NAFLD) yang ditandai oleh peningkatan stres oksidatif. Buah kelor (*Moringa oleifera* fruits) kaya akan antioksidan seperti flavonoid yang berpotensi meningkatkan pertahanan antioksidan endogen, termasuk enzim katalase.

**Tujuan**

Penelitian ini bertujuan untuk mengetahui pengaruh pemberian ekstrak buah kelor terhadap kadar enzim katalase hepar pada tikus model obesitas.

**Metode**

Penelitian eksperimental murni dengan desain post-test only control group menggunakan 30 ekor tikus jantan galur Sprague Dawley. Obesitas diinduksi menggunakan diet tinggi lemak selama 49 hari. Tikus dibagi menjadi lima kelompok: kontrol normal (K1), kontrol negatif (K2), kontrol positif (K3: obesitas + vitamin C 15 mg/kgBB/hari), perlakuan 1 (K4: obesitas + ekstrak buah kelor 500 mg/kgBB sekali sehari), dan perlakuan 2 (K5: obesitas + ekstrak buah kelor 500 mg/kgBB dua kali sehari). Perlakuan diberikan selama 14 hari. Kadar katalase hepar diukur menggunakan spektrofotometer UV pada panjang gelombang 240 nm. Data dianalisis dengan uji *One Way* ANOVA dan Post Hoc Tukey.

**Hasil**

Kadar enzim katalase hepar tertinggi terdapat pada kelompok kontrol negatif (K2: 0,353 ng/mL), diikuti K4 (0,206 ng/mL), K5 (0,175 ng/mL), K1 (0,144 ng/mL), dan terendah pada K3 (0,116 ng/mL). Uji statistik menunjukkan perbedaan signifikan antar kelompok ( $p < 0,05$ ). Ekstrak buah kelor dosis 500 mg/kgBB (sekali atau dua kali sehari) menurunkan kadar enzim katalase hepar secara signifikan dibandingkan kontrol negatif ( $p < 0,05$ ). Tidak terdapat perbedaan signifikan antara kelompok perlakuan 1 dan 2 ( $p > 0,05$ ). Vitamin C lebih efektif menurunkan kadar enzim katalase dibandingkan ekstrak buah kelor.

**Kesimpulan**

Ekstrak buah kelor berpengaruh terhadap penurunan kadar enzim katalase hepar pada tikus model obesitas, mengindikasikan potensinya dalam mengurangi stres oksidatif. Efektivitasnya setara antara pemberian sekali dan dua kali sehari, meskipun vitamin C menunjukkan efek yang lebih kuat.

**Kata Kunci**

Enzim Katalase, *Moringa oleifera* fruits, NAFLD, Obesitas, Stres Oksidatif, Tikus Sprague Dawley.

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**THE EFFECT OF ADMINISTERING ((*Moringa oleifera* fruits) EXTRACT ON  
THE CONCENTRATION OF LIVER CATALASE ENZYME IN RATS (*Rattus  
norvegicus*) OF THE SPRAGUE DAWLEY STRAIN IN OBESITY MODEL**

***Introduction***

Obesity is a major risk factor for Non-Alcoholic Fatty Liver Disease (NAFLD), characterized by increased oxidative stress. Moringa fruit (*Moringa oleifera* fruits) is rich in antioxidants such as flavonoids, which may enhance endogenous antioxidant defenses, including the catalase enzyme.

***Objective***

This study aims to determine the effect of Moringa fruit extract on hepatic catalase enzyme concentration in obese rat models.

***Method***

A true experimental study with a post-test only control group design used 30 male Sprague Dawley rats. Obesity was induced using a high-fat diet for 49 days. Rats were divided into five groups: normal control (K1), negative control (K2), positive control (K3: obesity + vitamin C 15 mg/kgBW/day), treatment 1 (K4: obesity + Moringa fruit extract 500 mg/kgBW once daily), and treatment 2 (K5: obesity + Moringa fruit extract 500 mg/kgBW twice daily). Treatment was administered for 14 days. Hepatic catalase concentration was measured using a UV spectrophotometer at a wavelength of 240 nm. Data were analyzed using One Way ANOVA and Post Hoc Tukey tests.

***Result***

The highest hepatic catalase concentration was found in the negative control group (K2: 0.353 ng/mL), followed by K4 (0.206 ng/mL), K5 (0.175 ng/mL), K1 (0.144 ng/mL), and the lowest in K3 (0.116 ng/mL). Statistical analysis showed significant differences between groups ( $p < 0.05$ ). Moringa fruit extract at 500 mg/kgBW (once or twice daily) significantly reduced hepatic catalase concentration compared to the negative control ( $p < 0.05$ ). There was no significant difference between treatment groups 1 and 2 ( $p > 0.05$ ). Vitamin C was more effective in reducing catalase concentration than Moringa fruit extract.

***Conclusion***

Moringa fruit extract influences the reduction of hepatic catalase concentration in obese rats, suggesting its potential role in mitigating oxidative stress. Its effectiveness is comparable between once-daily and twice-daily administration, although vitamin C demonstrated a stronger effect.

***Keywords***

Catalase Enzyme, *Moringa oleifera* fruits, NAFLD, Obesity, Oxidative Stress, Sprague Dawley Rats.