

INTISARI

Latar belakang: Obesitas merupakan masalah kesehatan dunia dan faktor resiko penyakit kronis lainnya. Pada pria obesitas, tubuh akan menghasilkan estrogen lebih banyak yang dijumpai oleh peningkatan kadar aromatase yang memiliki dampak buruk pada fertilitas. Peningkatan kadar aromatase dipicu oleh kondisi inflamasi kronis pada obesitas. Penggunaan inhibitor aromatase merupakan terapi yang umum digunakan pada pria dengan estrogen tinggi. Akan tetapi, penggunaannya banyak diteliti memiliki banyak efek samping, seperti gangguan profil lipid yang berujung pada gangguan kardiovaskular. Ekstrak *Urtica dioica* memiliki aksi multifaset yang banyak diteliti memiliki efek anti-inflamasi, antioksidan dan hipolipidemik. Penelitian terkait pengaruh *Urtica dioica* terhadap kadar enzim aromatase dan profil lipid belum pernah diteliti sebelumnya.

Tujuan: Penelitian ini bertujuan untuk menganalisis pengaruh ekstrak jelatang liar (*Urtica dioica*) terhadap kadar aromatase adiposa viseral dan profil lipid pada tikus *Sprague dawley* jantan obesitas serta mencari hubungan antar ketiganya termasuk kandungan total flavonoid dalam *Urtica dioica*.

Metode: Penelitian ini menggunakan 30 tikus yang dibagi menjadi 5 kelompok, yakni kontrol sehat (K1), kontrol obesitas (K2), obesitas+ekstrak 125mg/kgBB (D1), obesitas+ekstrak 250 mg/kgBB (D2) dan obesitas+ekstrak 500 mg/kgBB (D3). Induksi obesitas dilakukan selama 6 minggu dengan pemberian diet tinggi lemak dan fruktosa dan intervensi *Urtica dioica* selama 4 minggu. Pemeriksaan profil lipid dilakukan sebelum dan sesudah intervensi jelatang liar (*Urtica dioica*) dan pemeriksaan kadar aromatase dilakukan dengan rancangan *post only with control design* dengan menggunakan ELISA. Uji statistik menggunakan *one way ANOVA/Kruskall-Wallis* dilanjutkan *post-hoc LSD/Mann Whitney*. Uji *spearman* digunakan untuk mencari korelasi antar variabel. Nilai $p < 0,05$ dianggap signifikan secara statistik.

Hasil: Semua kelompok intervensi jelatang liar (*Urtica dioica*) memiliki kadar aromatase adiposa viseral yang lebih rendah dibandingkan kontrol obesitas ($p < 0,001$). Profil lipid semua kelompok intervensi mengalami perbaikan yang ditandai dengan penurunan rata-rata TG, TC dan LDL, serta peningkatan kadar HDL serum ($p < 0,05$). Terdapat hubungan yang signifikan antara besar total flavonoid dengan aromatase dan profil lipid. Selain itu, terdapat hubungan positif antara Aromatase dengan TG, TC dan LDL dan hubungan negatif terhadap HDL.

Kesimpulan: Pemberian ekstrak jelatang liar (*Urtica dioica*) menghasilkan kadar aromatase adiposa viseral yang lebih rendah dibandingkan kontrol obesitas dan dapat memperbaiki profil lipid. Selain itu, terdapat hubungan antara total flavonoid dengan aromatase dan profil lipid serta terdapat hubungan antara aromatase dan profil lipid.

Kata Kunci: *Urtica dioica*, Obesitas, Aromatase, Profil Lipid

ABSTRACT

Background: Obesity is a global health problem and a risk factor for other chronic diseases. In obese men, the body produces more estrogen, which is mediated by an increase in aromatase levels, leading to adverse effects on fertility. The increase in aromatase levels is triggered by chronic inflammation in obesity. Aromatase inhibitors are commonly used therapy in men with high estrogen levels. However, their use has been extensively studied for various side effects, such as disturbances in lipid profiles that can lead to cardiovascular disorders. *Urtica dioica* extract has been extensively studied for its multifaceted actions, including anti-inflammatory, antioxidant, and hypolipidemic effects. However, its effects on aromatase enzyme levels and lipid profiles have not been studied before.

Objective: This study aims to analyze the influence of wild stinging nettle (*Urtica dioica*) extract on visceral adipose aromatase levels and lipid profiles in obese male Sprague Dawley rats and to explore the relationships among these factors, including the total flavonoid content.

Methods: The study used 30 rats divided into 5 groups: healthy control (K1), obese control (K2), obese + 125 mg/kgBW extract (D1), obese + 250 mg/kgBW extract (D2), and obese + 500 mg/kgBW extract (D3). Obesity induction was conducted for 6 weeks using a high-fat and fructose diet, and *Urtica dioica* intervention was administered for 4 weeks. Lipid profiles were examined before and after wild stinging nettle (*Urtica dioica*) intervention, and aromatase levels were assessed using a post-only design with control design and ELISA kit. Statistical analysis was performed using one-way ANOVA/Kruskall-Wallis followed by post-hoc LSD/Mann Whitney test. Spearman correlation was used to explore relationships between variables. A p-value <0.05 was considered statistically significant.

Results: All wild stinging nettle (*Urtica dioica*) intervention groups showed significantly lower visceral adipose aromatase levels compared to the obese control group ($p < 0.001$). The lipid profiles in all intervention groups improved, characterized by a decrease in mean TG, TC, and LDL levels, and an increase in serum HDL levels ($p < 0.05$). There was a significant relationship between total flavonoid content and aromatase and lipid profiles. Additionally, there was a positive correlation between aromatase and TG, TC, and LDL levels, and a negative correlation with HDL levels.

Conclusion: Administration of wild stinging nettle extract (*Urtica dioica*) resulted in lower visceral adipose aromatase levels compared to obese controls and improved lipid profiles. Furthermore, there were correlations between total flavonoid content, aromatase, and lipid profiles, as well as between aromatase and lipid profiles.

Keywords: *Urtica dioica*, Obesity, Aromatase, Lipid Profile.