

ABSTRAK

Latar Belakang: Preeklamsia merupakan komplikasi kehamilan yang ditandai oleh hipertensi dan disfungsi organ setelah usia kehamilan 20 minggu serta berkontribusi besar terhadap tingginya angka kematian ibu. Stres oksidatif akibat peningkatan *Reactive Oxygen Species* (ROS) berperan penting dalam patogenesis preeklamsia. *Black garlic* memiliki kandungan antioksidan yang tinggi dan berpotensi menurunkan stres oksidatif serta tekanan darah.

Tujuan: Menganalisis pengaruh pemberian ekstrak *black garlic* terhadap kadar ROS dan tekanan darah pada tikus hamil model preeklamsia.

Metode: Penelitian ini menggunakan tikus Wistar hamil berusia 8-12 minggu dengan berat 150-200 gr (n=15) yang dibagi menjadi 3 kelompok: Normal (N), Preeklamsia (PE), dan Preeklamsia + *Black Garlic* (PE+BG). Preeklamsia diinduksi dengan pemberian L-NAME (50 mg/kgBB/hari, i.p) pada hari ke 12-18 kehamilan. Kelompok intervensi diberikan ekstrak *black garlic* dengan merek "Garlic" berbentuk kapsul dengan dosis 400 mg/kgBB/hari yang diberikan peroral mulai hari ke 5-18. Tekanan darah sistolik dan diastolik diukur pada hari ke 5, 11, 15, dan 19 sedangkan kadar ROS serum diukur pada hari ke 5, 11, dan 19 menggunakan ELISA. Data dianalisis menggunakan uji One-way ANOVA (dilanjutkan uji *post hoc*) atau Kruskal-Wallis.

Hasil: Induksi L-NAME efektif memicu peningkatan tekanan darah dan proteinuria pada tikus. Pada hari ke-15 dan ke-19, tekanan darah sistolik dan diastolik kelompok PE meningkat signifikan dibandingkan kelompok normal ($p < 0,05$). Pemberian ekstrak *black garlic* menurunkan tekanan darah pada kelompok PE+BG hingga mendekati level normal ($p < 0,05$). Namun, pemberian ekstrak *black garlic* tidak dapat menurunkan kadar *Reactive Oxygen Species* (ROS) ($p > 0,05$).

Kesimpulan: Ekstrak *black garlic* efektif dalam menurunkan tekanan darah, namun tidak terbukti menurunkan ROS pada tikus hamil model preeklamsia.

Kata kunci: *Black garlic*, preeklamsia, *Reactive Oxygen Species* (ROS), tekanan darah, L-NAME.

ABSTRACT

Background: *Preeclampsia is a pregnancy complication characterized by hypertension and organ dysfunction after 20 weeks of gestation, contributing significantly to high maternal mortality rates. Oxidative stress due to increased Reactive Oxygen Species (ROS) plays an important role in the pathogenesis of preeclampsia. Black garlic has high antioxidant activity and holds potential to reduce oxidative stress and blood pressure.*

Objective: *To analyze the effect of black garlic extract on ROS levels and blood pressure in a pregnant rat model of preeclampsia.*

Method : *This study used 15 pregnant Wistar rats (8-12 week-old, weighed 150-200 gr) which were divided into three groups: Normal (N), Preeclampsia (PE), and Preeclampsia + Black Garlic (PE+BG). The preeclampsia was induced by intraperitoneal administration of L-NAME (50 mg/kg body weight/day) from gestational day 12 to 18. The intervention group received oral Black garlic extract (brand "Garlic" in capsule form) at a dose of 400 mg/kg body weight/day from gestational day 5 to 18. Systolic and diastolic blood pressure was measured on days 5, 11, 15, and 19, while reactive oxygen species (ROS) levels were measured on days 5, 11, and 19 using ELISA. Statistical analysis was performed using One-way ANOVA followed by post hoc tests, or Kruskal–Wallis test when data were not normally distributed.*

Results: *Induction with L-NAME successfully increased blood pressure and caused proteinuria in pregnant rats. On days 15 and 19, systolic and diastolic blood pressure in the PE group were significantly higher than the normal group ($p < 0.05$). Administration of black garlic extract reduced blood pressure in the PE+BG group to the levels approaching those of the normal group ($p < 0.05$). Black garlic administration was not proven to reduce ROS levels.*

Conclusion : *Black garlic extract effectively reduces blood pressure. However, under the current study condition, it does not reduce ROS level in preeclampsia rat model.*

Keywords: *Black garlic, preeclampsia, Reactive Oxygen Species (ROS), blood pressure, L-NAME*