

ABSTRACT

The Effect of Giving Black Garlic Extract (*Allium sativum*) on Histopathological Picture of Hippocampus CA2-3 Area of Male White Rats (*Rattus novergicus*) Induced by Alcohol Binge Drinking Model

By

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Background: Black garlic (*Allium sativum*) is a herbal medicine high in antioxidants. Black garlic contains the antioxidants S-allylcysteine (SAC) and S-allylmercaptocysteine (SAMC), allyl sulphides and diallyl polysulphides, and flavonoids. Black garlic has been shown to have a protective effect on the liver with an effective dose of 800 mg/kgBW. This study aims to determine the effect of giving black garlic extract at a dose of 800 g/kgBW on the histopathological appearance of the hippocampus in alcohol-induced male white rats (*Rattus novergicus*) with the binge drinking model.

Method: This research is a true experimental study using a posttest-only control group design. There were 30 rats divided into 3 groups: negative control (K1) with formula milk induction, positive control (K2) with alcohol induction by binge drinking method, treatment (P) with alcohol induction by binge drinking method together with 800g/kgBB of black garlic extract. Histopathological findings of the hippocampus were taken from the number of pyramidal cells in CA2-3. Data were tested statistically with One-Way ANOVA and Post Hoc LSD.

Results: Based on the results of the One-Way ANOVA statistical test, the p-value is 0,000. The statistical test was then continued with LSD Post Hoc test, there was a significant difference between K2 and K1, and P.

Conclusion: There is an influence of alcohol-induced binge drinking method on neurodegeneration of the hippocampus and there is an effect of giving black garlic extract at a dose of 800g/kgBW on histopathological findings of hippocampus area CA2-3 of alcohol-induced male white rats (*Rattus novergicus*) with the binge drinking model.

Keywords : Black garlic, binge drinking, hippocampus, neurodegeneration

ABSTRAK

PENGARUH PEMBERIAN EKSTRAK BAWANG HITAM (*Allium sativum*) TERHADAP GAMBARAN HISTOPATOLOGI HIPPOCAMPUS PADA AREA CA2-3 TIKUS PUTIH JANTAN (*Rattus novergicus*) YANG DIINDUKSI ALKOHOL MODEL *BINGE DRINKING*

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Latar Belakang : Bawang hitam (*Allium sativum*) merupakan salah satu obat-obatan herbal yang tinggi antioksidan. Bawang hitam mengandung antioksidan *S-allylcysteine* (SAC) dan *S-allylmercaptocysteine* (SAMC), *allyl sulphides* dan *diallyl polisulphides*, serta flavonoid. Bawang hitam telah terbukti memiliki efek hepatoprotektif dengan dosis efektif 800mg/kgBB. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian ekstrak bawang hitam dengan dosis 800g/kgBB terhadap gambaran histopatologi *hippocampus* tikus putih jantan (*Rattus novergicus*) yang diinduksi alkohol dengan model *binge drinking*.

Metode: Penelitian ini merupakan penelitian true eksperimental menggunakan *posttest only control group design*. Terdapat 30 tikus yang dibagi menjadi 3 kelompok: kontrol negatif (K1) dengan induksi susu formula, kontrol positif (K2) dengan induksi alkohol metode *binge drinking*, perlakuan (P) dengan induksi alkohol metode *binge drinking* bersamaan bawang hitam 800g/kgBB. Gambaran histopatologi *hippocampus* diambil data jumlah sel piramidal pada CA2-3. Data dilakukan uji statistik dengan *One-Way ANOVA* dan *Post Hoc LSD*.

Hasil: Berdasarkan hasil uji statistik *One-Way ANOVA* didapatkan nilai $p=0,000$ kemudian dilanjutkan uji *Post Hoc LSD* terdapat perbedaan signifikan K2 dengan K1 dan P.

Kesimpulan: Terdapat pengaruh induksi alkohol metode *binge drinking* dengan neurodegenerasi *hippocampus* dan terdapat pengaruh pemberian ekstrak bawang hitam dengan dosis 800g/kgBB terhadap gambaran histopatologi *hippocampus* pada area CA2-3 tikus putih jantan (*Rattus novergicus*) yang diinduksi alkohol dengan model *binge drinking*.

Kata kunci: Bawang hitam, *binge drinking*, *hippocampus*, neurodegenerasi