

PENGARUH PAPARAN OBAT ANTI NYAMUK AEROSOL TERHADAP
EKSPRESI GEN *Extracellular Superoxide Dismutase* (EC-SOD) DARAH
TIKUS PUTIH STRAIN WISTAR (*Rattus norvegicus*)



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THE EFFECT OF AEROSOL MOSQUITO REPELLENT EXPOSURE ON EXTRACELLULAR SUPEROXIDE DISMUTASE GENE EXPRESSION IN ALBINO WISTAR (*Rattus novergicus*) RATS BLOOD

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ABSTRACT

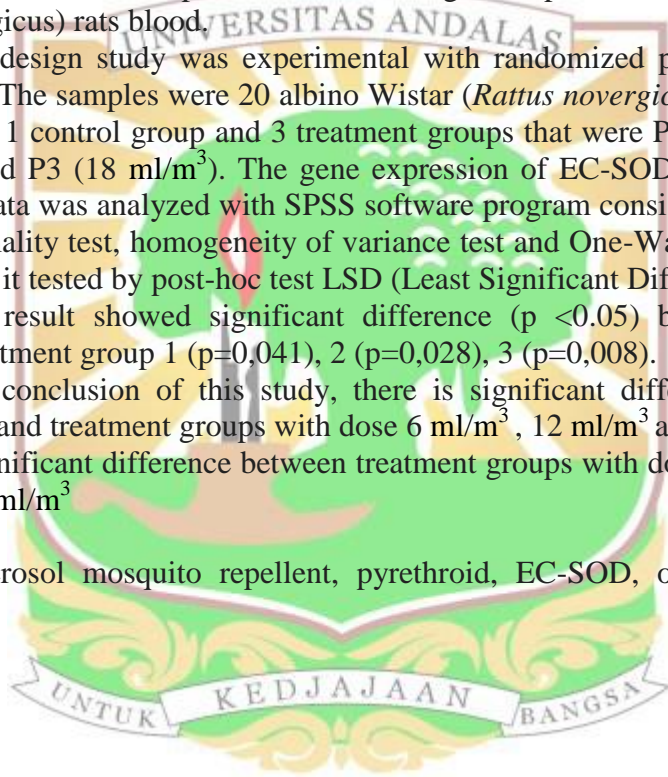
Aerosol mosquito repellent is one of insecticide widely used by people. Pyrethroid as an active ingredient in aerosol mosquito repellent turned out to cause a negative effect on health by producing oxidative stress. It requires the body's defense such as Extracellular Superoxide (EC-SOD) to against ROS. The objective of this study was to determine the effect of aerosol mosquito repellent exposure on extracellular superoxide dismutase gene expression in albino Wistar (*Rattus novergicus*) rats blood.

The design study was experimental with randomized post test control group design. The samples were 20 albino Wistar (*Rattus novergicus*) rats divided into 4 groups: 1 control group and 3 treatment groups that were P1 (6 ml/m³), P2 (12 ml/m³) and P3 (18 ml/m³). The gene expression of EC-SOD was examined using PCR. Data was analyzed with SPSS software program consisting of Shapiro Wilk for normality test, homogeneity of variance test and One-Way ANOVA test and in the end it tested by post-hoc test LSD (Least Significant Difference).

The result showed significant difference ($p < 0.05$) between control group and treatment group 1 ($p=0,041$), 2 ($p=0,028$), 3 ($p=0,008$).

The conclusion of this study, there is significant difference between control group and treatment groups with dose 6 ml/m³, 12 ml/m³ and 18 ml/m³ but there is no significant difference between treatment groups with dose 6 ml/m³, 12 ml/m³ and 18 ml/m³.

Keywords: aerosol mosquito repellent, pyrethroid, EC-SOD, oxidative stress, ROS, PCR.



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ABSTRAK

Obat anti nyamuk aerosol merupakan salah satu jenis insektisida yang banyak digunakan masyarakat. Bahan aktif piretroid dalam obat anti nyamuk aerosol ternyata menyebabkan dampak buruk bagi kesehatan dengan cara menimbulkan stres oksidatif. Hal ini tentu memerlukan pertahanan tubuh seperti *Extracellular Superoxide Dismutase* (EC-SOD) untuk melawan ROS. Penelitian ini bertujuan untuk mengetahui pengaruh paparan obat anti nyamuk aerosol terhadap ekspresi gen EC-SOD darah tikus putih strain Wistar (*Rattus novergicus*).

Penelitian ini merupakan penelitian eksperimental dengan rancangan *randomized post test control group design*. Sampel berjumlah 20 ekor tikus putih strain Wistar (*Rattus novergicus*) yang dibagi menjadi 4 kelompok yaitu kelompok kontrol, kelompok perlakuan 1 (6 ml/m^3), kelompok perlakuan 2 (12 ml/m^3) dan kelompok perlakuan 3 (18 ml/m^3). Ekspresi gen EC-SOD dilihat dengan pemeriksaan PCR. Analisa data menggunakan program SPSS software yang terdiri dari uji normalitas *Saphiro Wilk*, uji homogenitas varian dan uji *One-Way ANOVA* kemudian dilanjutkan dengan uji *post-hoc* LSD (*Least Significant Difference*).

Hasil penelitian adalah terdapat perbedaan bermakna ($p < 0,05$) antara kelompok kontrol dengan kelompok perlakuan 1 ($p = 0,041$), 2 ($p = 0,028$) dan 3 ($p = 0,008$).

Kesimpulan penelitian ini adalah terdapat perbedaan bermakna antara kelompok kontrol dengan kelompok yang diberi paparan dosis 6 ml/m^3 , 12 ml/m^3 dan 18 ml/m^3 tetapi tidak terdapat perbedaan bermakna antara kelompok yang diberi paparan dosis 6 ml/m^3 , 12 ml/m^3 dan 18 ml/m^3 .

Kata kunci: obat anti nyamuk aerosol, piretroid, EC-SOD, stres oksidatif, ROS, PCR.