

## ABSTRACT

### ***THE EFFECT OF VITAMIN C ON BLOOD GLUCOSE CONCENTRATION IN MICE (*Mus musculus*) EXPOSED TO CIGARETTE SMOKE***

By:

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*Cigarette smoke produces compounds Reactive Oxygen Species (ROS) causes oxidative stress, which can trigger the inflammatory process that led to a disruption of insulin sensitivity. Impaired insulin sensitivity will result in an increase in blood glucose concentration. Vitamin C as an antioxidant essential for the body can reduce oxidative damage from ROS. This study aims to look at the effect of vitamin C on blood glucose concentration in mice (*Mus musculus*) were exposed to cigarette smoke.*

*This type of research was experimental design with Randomized Post Test Only Control Group Design. The subjects were white mice (*Mus musculus*) as many as 21 male males who have met the inclusion and exclusion criteria. The mice were divided into three groups, namely the negative control group (P1), a group that was exposed to smoke without being given vitamin C (P2), and the cigarette smoke exposed group + Vitamin C 0.4 mg/gramBB 2 hours before exposure (P3). Exposure to cigarette smoke carried out for 10 minutes/day. Mice were adapted for 7 days, then given treatment for 14 days. On day 15 the mice were fasted for 8 hours. Blood glucose concentration were observed in mice using a glucometer (mg/dl). Data were analyzed using One-Way ANOVA followed by post-hoc LSD test.*

*Test Results One-Way ANOVA showed significant difference among the three treatment groups with a significance level ( $p$ ) 0.000 ( $p < 0.05$ ) The results of post-hoc LSD test showed significant differences between the P1-P2 ( $p = 0.000$ ), P1-P3 ( $p = 0.013$ ), and P2-P3 ( $p = 0.000$ ).*

*Conclusion of research is vitamin C can stabilize fasting blood glucose concentration in mice caused by exposure to cigarette smoke.*

**Keywords:** *cigarette smoke, ROS, vitamin C, blood glucose concentration*

## ABSTRAK

### PENGARUH VITAMIN C TERHADAP KADAR GLUKOSA DARAH

#### MENCIT (*Mus musculus*) YANG DIPAPAR ASAP ROKOK

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Asap rokok menghasilkan senyawa *Reactive Oxygen Species* (ROS) penyebab stres oksidatif, sehingga dapat memicu proses inflamasi yang mengawali terjadinya gangguan sensitivitas insulin. Gangguan sensitivitas insulin akan berdampak pada peningkatan kadar glukosa darah. Vitamin C sebagai antioksidan esensial bagi tubuh dapat mengurangi kerusakan oksidatif akibat ROS. Penelitian ini bertujuan untuk melihat pengaruh vitamin C terhadap kadar glukosa darah mencit (*Mus musculus*) yang dipapar dengan asap rokok.

Jenis penelitian ini adalah eksperimental dengan menggunakan rancangan *Randomized Post Test Only Control Group Design*. Subjek penelitian adalah mencit putih (*Mus musculus*) jantan sebanyak 21 ekor yang telah memenuhi kriteria inklusi dan eksklusi. Mencit dibagi menjadi tiga kelompok, yaitu kelompok kontrol negatif (P1), kelompok yang dipapar asap rokok tanpa diberi vitamin C (P2), dan kelompok yang dipapar asap rokok + vitamin C 0,4 mg/gramBB 2 jam sebelum pemaparan (P3). Pemaparan asap rokok dilakukan selama 10 menit/hari. Mencit diadaptasikan selama 7 hari, selanjutnya diberikan perlakuan selama 14 hari. Pada hari ke 15 mencit dipuasakan selama 8 jam. Kadar glukosa darah mencit diukur menggunakan glukometer (mg/dl). Data yang diperoleh dianalisis menggunakan uji *One-Way Anova* diikuti uji *Pos-hoc* LSD.

Hasil Uji *One-Way Anova* menunjukkan terdapat perbedaan yang bermakna antara ketiga kelompok perlakuan dengan tingkat signifikansi ( $p$ ) 0,000 ( $p < 0,05$ ). Hasil uji *Pos-hoc* LSD menunjukkan adanya perbedaan yang bermakna antara P1-P2 ( $p = 0,000$ ), P1-P3 ( $p = 0,013$ ), dan P2-P3 ( $p = 0,000$ ).

Kesimpulan penelitian adalah vitamin C dapat menstabilkan kadar glukosa darah puasa mencit akibat paparan asap rokok.

Kata kunci: asap rokok, ROS, vitamin C, kadar glukosa darah