

**PENGARUH SARI MARKISA UNGU (*Passiflora edulis*) TERHADAP
GAMBARAN HISTOPATOLOGI GLOMERULUS GINJAL TIKUS PUTIH (*Rattus
norvegicus*) MODEL DIABETES MELITUS TIPE 2**

ABSTRAK

Latar Belakang: DM mampu menimbulkan komplikasi yang dapat mempengaruhi beberapa sistem organ vital salah satunya ginjal. Kondisi hiperglikemia mengakibatkan stress oksidatif yang menyebabkan lesi pada glomerulus ginjal. Buah markisa ungu (*Passiflora edulis var edulis*) mempunyai kemampuan antiinflamasi dan antioksidasi yang berpotensi menghambat peningkatan stres oksidatif.

Tujuan: Mengetahui pengaruh sari markisa ungu (*Passiflora edulis var edulis*) terhadap gambaran histopatologi glomerulus ginjal tikus putih (*Rattus norvegicus*) model DM tipe 2.

Metode: Metode penelitian adalah eksperimental dengan *post test only with control group design*. Tiga puluh ekor tikus putih (*Rattus norvegicus*) dibagi dalam 5 kelompok. Kelompok A sebagai kontrol sehat, kelompok B, C, D dan E merupakan model DM melalui induksi aloksan 120 mg/kgBB. Kelompok C, D, dan E mendapatkan sari buah markisa ungu (*Passiflora edulis var edulis*) selama 21 hari dengan dosis 1,05 mL/200gBB, 2,1 mL/200gBB, dan 4,2 mL/200gBB.

Hasil: Rerata diameter panjang glomerulus kelompok A= $51,75 \pm 1,36 \mu\text{m}$, B= $51,60 \pm 4,49 \mu\text{m}$, C= $47,17 \pm 1,15 \mu\text{m}$, D= $44,24 \pm 1,15 \mu\text{m}$, dan E= $45,23 \pm 1,68 \mu\text{m}$. Rerata diameter pendek glomerulus kelompok A= $42,42 \pm 1,53 \mu\text{m}$, B= $41,89 \pm 3,66 \mu\text{m}$, C= $39,74 \pm 2,94 \mu\text{m}$, D= $38,66 \pm 1,37 \mu\text{m}$, dan E= $36,92 \pm 1,17 \mu\text{m}$. Uji *One Way ANOVA* pada diameter panjang glomerulus menunjukkan nilai $p=0,000$ ($p<0,05$), sedangkan pada diameter pendek glomerulus $p=0,009$ ($p<0,05$). Uji *post hoc LSD* menunjukkan hasil perbedaan rerata yang signifikan antara kelompok A dan B dengan kelompok C, D dan E.

Kesimpulan: Diameter glomerulus antara kelompok tikus C,D,E yang diberi sari buah markisa ungu memiliki diameter glomerulus yang lebih pendek dibandingkan dengan kelompok tikus galur Wistar yang hanya diinduksi dengan aloksan.

Kata kunci: DM, Diameter Glomerulus, Markisa Ungu, *Passiflora edulis var edulis*.

THE EFFECT OF PURPLE PASSION JUICE (*Passiflora edulis*) ON THE HISTOPATOLOGICAL PICTURE OF KIDNEYS GLOMERULUS OF WHITE Rats (*Rattus norvegicus*) TYPE 2 DIABETES MELLITUS MODEL

ABSTRACT

Background: Diabetes mellitus can cause complications that can affect several vital organ systems, one of the kidneys. Hyperglycemic conditions result in oxidative stress that causes lesions in the renal glomerulus. Purple passion fruit (*Passiflora edulis* var *edulis*) has anti-inflammatory and anti-oxidizing properties that have the potential to inhibit the increase in oxidative stress.

Aim: This study aim to know the effect of purple passion fruit juice (*Passiflora edulis* var *edulis*) on the histopathological picture of the glomerular kidney of white rats (*Rattus norvegicus*) in the type 2 diabetes mellitus model.

Methods: The method was experimental study with post test only with control group design. Twenty five males white rats were randomly assigned to 5 groups. Group A as healthy control group, group B, C, D, and E as DM group through induction of 120 mg/kgBW alloxan. Group C,D, and E were orally administered with purple passion fruit juice at dosage of 1,05 mL/200gBW, 2,1 mL/200gBW, and 4,2 mL/200gBW consecutively for 21 days.

Result: The mean glomerular length diameter of group A = $51.75 \pm 1.36 \mu\text{m}$, B = $51.60 \pm 4.49 \mu\text{m}$, C = $47.17 \pm 1.15 \mu\text{m}$, D = $44.24 \pm 1.15 \mu\text{m}$, and E = $45.23 \pm 1.68 \mu\text{m}$. Mean short diameter of group A = $42.42 \pm 1.53 \mu\text{m}$, B = $41.89 \pm 3.66 \mu\text{m}$, C = $39.74 \pm 2.94 \mu\text{m}$, D = $38.66 \pm 1, 37 \mu\text{m}$, and E = $36.92 \pm 1.17 \mu\text{m}$. One Way ANOVA test on the long diameter of the glomerulus showed the value of $p = 0.000$ ($p < 0.05$), while in the short dimension the glomerulus was $p = 0.009$ ($p < 0.05$). The post hoc LSD test showed a significant difference in mean between groups A and B with groups C, D and E.

Conclusions: Glomerular diameter between groups of C, D, E rats fed with purple passion fruit juice had a shorter glomerular diameter compared to the group of Wistar rats which were only induced with alloxan.

Keywords: DM, Glomerular Diameter, Purple Passion Fruit, *Passiflora edulis* var *edulis*.