

ABSTRAK

Peningkatan kadar gula darah menjadi salah satu pertanda terhadap gejala penyakit diabetes melitus. Diabetes melitus dapat menyebabkan gangguan reproduksi terutama pada sel-sel testis. Tujuan penelitian ini adalah untuk mengetahui efektivitas ekstrak daun insulin, ekstrak buah mengkudu, beserta kombinasi kedua ekstrak terhadap penurunan kadar gula darah serta melihat pengaruh terhadap peningkatan jumlah spermatogenik pada mencit (*Mus Musculus*) diabetes. Penelitian menggunakan 36 ekor mencit jantan dengan 12 kelompok perlakuan yaitu kontrol (K0) diberi makan dan minum normal, kontrol negatif (K-) diinduksi aloksan 120 mg/gBB dan diberi makan dan minum normal dan kontrol positif (K+) diinduksi aloksan 120 mg/gBB + metformin dosis 1,3 mg/20gBB. Serta 9 perlakuan perawatan yaitu perlakuan dengan menggunakan dosis ekstrak daun insulin 250 mg/kg, ekstrak daun insulin 300 mg/kg, ekstrak daun insulin 350 mg/kg, ekstrak buah mengkudu 100 mg/kg, ekstrak buah mengkudu 125 mg/kg, ekstrak buah mengkudu 150 mg/kg, kombinasi ekstrak daun insulin 125 mg/kg + ekstrak buah mengkudu 50 mg/kg, kombinasi ekstrak daun insulin 150 mg/kg + ekstrak buah mengkudu 62,5 mg/kg, dan kombinasi ekstrak daun insulin 175 mg/kg + ekstrak buah mengkudu 75 mg/kg. Data gula darah diperoleh melalui pembuluh darah ekor (vena lateralis) menggunakan jarum suntik kemudian darah dicek menggunakan alat merek Accu-Chek. Data dianalisis menggunakan uji Shapiro-Wilk, dilanjutkan dengan uji post hoc *LSD*. Hasil analisis menunjukkan bahwa kombinasi ekstrak daun insulin (*Smalanthus sonchifolius*) dosis 150 mg/kgBB/hari + ekstrak buah mengkudu (*Morinda citrifolia L*) dosis 62,5 mg/kgBB/hari memiliki efektivitas paling baik terhadap penurunan kadar gula darah pada mencit (*Mus muscullus*) diabetes apabila dibandingkan dengan kelompok perlakuan lainnya. Data sel spermatogenik diperoleh melalui pengamatan preparat jaringan testis dengan pewarnaan HE. Data dianalisis menggunakan uji Shapiro-Wilk, dilanjutkan dengan uji Duncan. Hasil analisis menunjukkan bahwa pemberian ekstrak daun insulin (*Smalanthus sonchifolius*), ekstrak buah mengkudu (*Morinda citrifolia L*) berpengaruh terhadap peningkatan jumlah sel Spermatogenik (*Spermatogonium*, *Spermatocyte*, *Spermatids*) pada mencit (*Mus muscullus*) diabetes. Namun pemberian kombinasi ekstrak daun insulin (*Smalanthus sonchifolius*) dosis 125 mg/kgBB/hari +

ekstrak buah mengkudu (*Morinda citrifolia L*) dosis 50 mg/kgBB/hari memiliki efektivitas paling baik terhadap peningkatan jumlah sel Spermatogenik (*Spermatogonium, Spermatoocyte, Spermatisds*) pada mencit (*Mus musculus*) diabetes dibandingkan dengan kelompok perlakuan lainnya.

ABSTRACT

Increased blood sugar levels are one sign of the symptoms of diabetes mellitus. Diabetes mellitus can cause reproductive disorders, especially in testicular cells. The purpose of this study was to determine the effectiveness of insulin leaf extract, noni fruit extract, and the combination of the two extracts on reducing blood sugar levels and to see the effect on increasing spermatogenic counts in diabetic mice (*Mus Musculus*). The study used 36 male mice with 12 treatment groups: control (K0) was fed and watered normally, negative control (K-) was induced by alloxan 120 mg/gBW and was fed normally and positive control (K+) was induced by alloxan 120 mg/gBW + metformin dose 1.3 mg/20gBW. As well as 9 treatment treatments, namely treatment using a dose of insulin leaf extract 250 mg/kg, insulin leaf extract 300 mg/kg, insulin leaf extract 350 mg/kg, noni fruit extract 100 mg/kg, noni fruit extract 125 mg/kg, noni fruit extract 150 mg/kg, combination insulin leaf extract 125 mg/kg + noni fruit extract 50 mg/kg, combination insulin leaf extract 150 mg/kg + noni fruit extract du 62.5 mg/kg, and a combination of insulin leaf extract 175 mg/kg + noni fruit extract 75 mg/kg. Blood sugar data were obtained through the tail vein (lateral vein) using a syringe and then the blood was checked using an Accu-Chek brand tool. Data were analyzed using the Shapiro-Wilk test, followed by the LSD post hoc test. The results of the analysis showed that the combination of insulin leaf extract (*Smallanthus sonchifolius*) dose of 150 mg/kgBW/day + noni fruit extract (*Morinda citrifolia* L) dose of 62.5 mg/kgBW/day had the best effectiveness for reducing blood sugar levels in diabetic mice (*Mus muscullus*) when compared to other treatment groups. Spermatogenic cell data were obtained by observing testicular tissue preparations with HE staining. Data were analyzed using the Shapiro-Wilk test, followed by Duncan's test. The results of the analysis showed that administration of insulin leaf extract (*Smallanthus sonchifolius*), noni fruit extract (*Morinda citrifolia* L) had an effect on increasing the number of spermatogenic cells (*Spermatogonium*, *Spermatocyte*, *Spermatids*) in diabetic mice (*Mus muscullus*). However, administration of a combination of insulin leaf extract (*Smallanthus sonchifolius*) dose of 125 mg/kgBW/day + noni fruit extract (*Morinda citrifolia* L) dose of 50 mg/kgBW/day had the best effectiveness on increasing the number of spermatogenic cells

(*Spermatogonium, Spermatoocyte, Spermatids*) in diabetic mice (*Mus musculus*) compared to other treatment groups.