

THE EFFECTIVENESS OF MORINGA (*Moringa oleifera*) LEAVES EXTRACT ON INSULIN RESISTANCE IN MICE (*Mus musculus*) OBESITY MODEL

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ABSTRACT

*Insulin resistance is a degenerative condition produced by chronic metabolic disorders in obesity. Adipose tissue in obesity secretes proinflammatory cytokines that cause low-grade chronic inflammation both locally and systemically which will cause insulin resistance. The purpose of this study is to determine the effectiveness of Moringa leaves extract (*Moringa oleifera*) on insulin resistance in mice (*Mus musculus*) obesity model.*

*The research method was true experimental with only posttest with control group design. The test animals used mice (*Mus musculus*), consisting of negative control, positive control, DK 150, and DK300 groups. Insulin resistance model was performed by giving high fat diet (HFD) and 25% fructose. Body weight weighing is done three days once, glucose tolerance test (GTT) in week 9 and insulin tolerance test (ITT) in week 10. The data obtained were analyzed Two Way Anova with $\alpha = 0,05$ statically.*

*Phytochemical test result of Moringa (*Moringa oleifera*) leaves extract showed the presence of flavonoids with an extract yield value of 53.00%. Body weight measurement data showed that the positive control group, DK150 and DK300 were obese. The result of the GTT test showed that the DK150 and DK300 groups were significantly different from the positive group ($p < 0,05$). While the ITT tests result in the DK300 group were significantly different from the positive group ($p < 0,05$). The administration of Moringa leaves extract (*Moringa oleifera*) gives the effect of improving insulin sensitivity in mice, mainly in the DK300 group, which is a dose of 675 mg/ml.*

The flavonoids contained in moringa leaves extract act as antioxidants, thereby enhancing the defense of pancreatic β -cells, which ultimately reduces insulin resistance. Further research can be conducted to prove the expression of genes related to insulin signal transduction, such as GLUT4.

Keywords: *Insulin Resistance, Moringa Leaves, Insulin Tolerance Test, Glucose Tolerance test, High fat Diet*