

## Pengaruh fasting-mimicking diet terhadap kadar glukosa darah dan kadar insulin pada tikus model hiperglikemia = Effects of fasting-mimicking diet on blood glucose levels and insulin levels in hyperglycemic rat model

Farah Nabilah, author

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### Abstrak

Hiperglikemia ditandai dengan adanya peningkatan kadar glukosa dalam darah yang melebihi normal. Fasting-mimicking diet (FMD) merupakan alternatif pengobatan yang dilakukan dengan mengubah pola hidup pada penderita diabetes melitus tipe 2. Penelitian ini bertujuan untuk mengetahui pengaruh pemberian FMD terhadap kadar glukosa darah, berat badan, dan kadar insulin pada tikus hiperglikemia. Penelitian ini dilakukan terhadap tikus jantan galur Sprague-Dawley yang dibagi menjadi 4 kelompok perlakuan ( $n = 16$ ), yaitu kelompok hiperglikemia (HFD-STZ 35 mg/kgBB dan CMC Na 0,5%), kelompok metformin (HFD-STZ 35 mg/kgBB dan metformin 250 mg/kgBB), kelompok FMD (HFD-STZ 35 mg/kgBB dan FMD), dan kelompok ND (CMC Na 0,5%). Tikus diukur kadar glukosa darah puasa (GDP) dan berat badan pada tiap minggu perlakuan dan dikorbankan pada akhir perlakuan. Terdapat penurunan kadar GDP setelah pemberian FMD, walaupun tidak terdapat perbedaan signifikan antara pra-perlakuan dengan minggu ke-4 perlakuan pada kelompok FMD ( $p > 0,05$ ). Pemberian FMD tidak memberikan perbedaan yang signifikan pada rata-rata berat badan tikus pada minggu pra-perlakuan dan minggu ke-4 perlakuan ( $p > 0,05$ ). Pemberian FMD cenderung dapat menurunkan kadar insulin sehingga mendekati kadar insulin kelompok ND, serta menunjukkan perbedaan signifikan antara kelompok metformin dengan kelompok FMD dan ND ( $p < 0,05$ ). Sebagai kesimpulan, pemberian FMD dapat menurunkan kadar GDP, cenderung menurunkan kadar insulin, namun tidak secara signifikan menurunkan berat badan pada tikus model hiperglikemia.

.....Hyperglycemia is characterized by an increase in blood glucose levels that exceeds normal. Fasting-mimicking diet (FMD) is an alternative treatment that is carried out by changing the lifestyle of people with type 2 diabetes mellitus. This study aims to determine the effect of giving FMD on blood glucose levels, body weight, and insulin levels in hyperglycemic rats. This study was conducted on male rats of the Sprague-Dawley strain, which were divided into 4 treatment groups ( $n = 16$ ), namely the hyperglycemia group (HFD-STZ 35 mg/kgBW and CMC Na 0.5%), metformin group (HFD-STZ 35 mg /kgBW and metformin 250 mg/kgBW), the FMD group (HFD-STZ 35 mg/kgBW and FMD), and the ND group (CMC Na 0,5%). Rats were measured for fasting blood glucose levels (GDP) and body weight each week of treatment and sacrificed at the end of the treatment. There was a decrease in GDP levels after FMD administration, although there was no significant difference between pre-treatment and the 4th week of treatment in the FMD group ( $p > 0.05$ ). Giving FMD did not cause a significant difference in the average body weight of rats in the pre-treatment week and the 4th week of treatment ( $p > 0.05$ ). Administration of FMD tended to reduce insulin levels so that they were close to insulin levels in the ND group, and showed a significant difference between the metformin group and the FMD and ND groups ( $p < 0.05$ ). In conclusion, FMD administration can reduce GDP levels, tends to reduce insulin levels, but does not significantly reduce body weight in hyperglycemic rat models.