PENGARUH DIET KETOGENIK JANGKA PANJANG TERHADAP KADAR *INSULIN-LIKE GROWTH FACTOR*-1 (IGF-1) SERUM PADA MENCIT (*Mus musculus*)

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ABSTRAK

Latar Belakang: Prevalensi kanker dan obesitas masih terus meningkat di seluruh dunia. *Insulin-Like Growth Factor-1* (IGF-1) merupakan salah satu faktor pemicu proliferasi kanker dan peningkatannya berkaitan dengan inflamasi kronis pada obesitas. Diet ketogenik menjadi salah satu gaya hidup dan dikembangkan sebagai salah satu terapi kanker dan obesitas. Tujuan dari studi ini adalah untuk menganalisis pengaruh diet ketogenik jangka panjang dalam menurunkan kadar IGF-1 serum pada mencit.
Metode: Studi ini merupakan studi experimental dengan *post-test only control group design*. Sebanyak 12 mencit jantan (20-30 g) usia 2-3 bulan dibagi menjadi 2 kelompok secara acak yaitu K1 (n=6, diet standard) dan K2 (n=6, diet ketogenik), mendapatkan diet selama 8 minggu *ad libitum*. Kadar IGF-1 serum diukur setelah perlakuan menggunakan *Enzyme-Linked Immunosorbent Assay* (ELISA). Berat badan diukur sebelum dan setelah perlakuan. Data dianalisis dengan uji normalitas *Shapiro-Wilk Test*, perbedaan antar kelompok apabila berdistribusi normal dianalisis dengan *Independent T-test*, dan apabila tidak berdistibusi normal dengan *Mann-Whitney Test*. Analisis data dilakukan menggunakan *Statistic Package for Social Science* (SPSS) versi 16.
Hasil: Perubahan (Δ) berat badan pada K1 (11,500±7,036) g dan K2 (-2,000±5,060) g dengan p=0,008. Kadar IGF-1 serum pada K1 (138,693±23,858) ng/mL dan K2 (104,705±25,458) ng/mL dengan p=0,038.
Simpulan: Hasil studi menunjukkan bahwa diet ketogenik jangka panjang selama 8 minggu menurunkan kadar IGF-1 serum dan berat badan.

Kata Kunci: *IGF-1, diet ketogenik, jangka panjang, mencit*

THE EFFECT OF LONG-TERM KETOGENIC DIET ON SERUM INSULIN-LIKE GROWTH FACTOR (IGF-1) LEVELS IN MICE

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ABSTRACT

Introduction: Cancer and obesity prevalence are still increasing in worldwide. Insulin-Like Growth Factor-1 (IGF-1) is one of the factors in cancer proliferation and its increase is associated with chronic inflammation in obesity. The ketogenic diet is known to be a trend and recently developed as therapy of cancer and obesity. The aim of this study was to analyze the effect of long-term ketogenic diet exposure on decreasing serum IGF-1 levels in mice.

Methods: This study was true experimental study with post-test only control group design. Twelve male mice (20-30 g) aged 2-3 months, randomly divided into K1 (n=6, standard diet) and K2 (n=6, ketogenic diet) were given diet for 8 weeks *ad libitum*. Serum IGF-1 levels were measured on post-intervention using Enzyme-Linked Immunosorbent Assay (ELISA). Body weight baseline and post-intervention were also measured. Data were analyzed for normality test using Shapiro-Wilk Test, mean difference were analyzed using Independent T-test for normal distribution, and Mann-Whitney Test for abnormal distribution. Data analysis were performed using Statistic Package for Social Science (SPSS) version 16.

Results: Difference (Δ) of body weight on K1 (11,500±7,036) g and K2 (-2,000±5,060) g with p=0,008. Serum IGF-1 levels on K1 (138,693±23,858) ng/mL and K2 (104,705±25,458) ng/mL with p=0,038.

Conclusion: This study results showed that long-term ketogenic diet for 8 weeks decreases serum IGF-1 levels and body weight.

Keywords: *IGF-1, ketogenic diet, long-term, mice*