

PENGARUH PEMBERIAN TELUR OMEGA-3 TERHADAP KADAR KOLESTEROL TOTAL DARAH PADA TIKUS DIET TINGGI LEMAK

ABSTRAK

Latar Belakang: Diet tinggi lemak merupakan faktor utama yang berperan dalam terjadinya gangguan metabolisme lipid melalui peningkatan sintesis dan akumulasi kolesterol dalam sirkulasi darah. Hiperkolesterolemia salah satu gangguan metabolisme lipid dengan prevalensi tinggi yang meningkatkan risiko penyakit kardiovaskular. Telur omega-3 dikembangkan sebagai pangan fungsional karena mengandung asam lemak tak jenuh ganda, terutama *eikosapentaenoat* (EPA) dan *dokosaheksaenoat* (DHA), yang berpotensi memodulasi metabolisme lipid.

Tujuan: Penelitian ini bertujuan untuk mengetahui pengaruh pemberian telur omega-3 terhadap kadar kolesterol total darah pada tikus diet tinggi lemak.

Metode: Penelitian ini menggunakan desain *true experimental* dengan pendekatan *posttest only with control group design*. Sampel sebanyak 15 tikus putih jantan (*Rattus norvegicus*) galur Wistar, usia 8-12 minggu, berat 180-200 gram. Tikus dikelompokkan menjadi 3: kelompok diet standar (K1), kelompok diet tinggi lemak (K2), kelompok diet tinggi lemak, dan intervensi telur omega-3 (K3). Pemberian telur omega-3 diberikan selama 14 hari secara *intraperitoneal*, kemudian sampel darah tikus dianalisis kadar kolesterol menggunakan metode CHOD-PAP.

Hasil: Hasil analisis menunjukkan perbedaan bermakna kadar kolesterol total antar kelompok penelitian ($p=0,041$). Uji *post hoc Mann-Whitney* menunjukkan perbedaan signifikan antara kelompok K3 dan K2 ($p=0,012$). Kelompok diet tinggi lemak dengan intervensi telur omega-3 menunjukkan penurunan rerata kadar kolesterol total dibandingkan kelompok diet tinggi lemak tanpa intervensi.

Kesimpulan: Pemberian telur omega-3 pada tikus yang diinduksi diet tinggi lemak mampu menurunkan kadar kolesterol total darah dan menunjukkan perbedaan bermakna dibandingkan tikus diet tinggi lemak tanpa intervensi.

Kata kunci: diet tinggi lemak; kolesterol total; *Rattus norvegicus*; telur omega-3.

THE EFFECT OF OMEGA-3 EGG SUPPLEMENTATION ON BLOOD TOTAL CHOLESTEROL LEVELS IN HIGH FATTY DIET RATS

ABSTRACT

Background: A high-fat diet is a major contributing factor to lipid metabolism disorders through increased cholesterol synthesis and accumulation in the bloodstream. Hypercholesterolemia is one of the most prevalent lipid metabolism disorders and significantly increases the risk of cardiovascular disease. Omega-3 eggs have been developed as a functional food because they contain polyunsaturated fatty acids, particularly eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), which have the potential to modulate lipid metabolism.

Objective: This study aimed to determine the effect of omega-3 egg administration on total blood cholesterol levels in rats fed a high-fat diet.

Methods: This study used a true experimental design with a posttest-only control group approach. The samples consisted of 15 male Wistar rats (*Rattus norvegicus*), aged 8–12 weeks and weighing 180–200 grams. The rats were grouped into three categories: standard diet group (K1), high-fat diet group without intervention (K2), and high-fat diet group with omega-3 egg intervention (K3). Omega-3 eggs were administered for 14 days, intraperitoneally. At the end of the intervention period, rat blood samples were analyzed for total cholesterol levels using the CHOD-PAP enzymatic method.

Results: The analysis shows a significant difference in total cholesterol levels among the study groups ($p=0.041$). Mann-Whitney post-hoc testing indicates a significant difference between groups K3 and K2 ($p=0.012$). Rats on a high-fat diet with omega-3 egg intervention have lower mean cholesterol levels compared to rats on a high-fat diet without intervention.

Conclusion: Omega-3 egg administration in rats induced with a high-fat diet reduces total blood cholesterol levels and is significantly different from rats on a high-fat diet without intervention.

Keywords: high-fat diet; omega-3 eggs; *Rattus norvegicus*; total cholesterol