

**PENGARUH SERAT BEBERAPA TANAMAN UMBI DAN RIMPANG DALAM  
PAKAN BERLEMAK TINGGI TERHADAP JARINGAN ADIPOSA PUTIH DAN  
KADAR LIPID PLASMA MENCIT PUTIH**

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## ABSTRAK

Obesitas merupakan penyakit degeneratif dengan prevalensi tinggi di seluruh dunia, termasuk di Indonesia. Penelitian ini bertujuan untuk mengetahui pengaruh serat umbi dan rimpang terhadap obesitas dan hiperkolesterolemia pada mencit yang diberi pakan berlemak tinggi. Penelitian ini telah dilaksanakan dari bulan April 2021 hingga Agustus 2021 di laboratorium Fisiologi Hewan, Jurusan Biologi, FMIPA, Universitas Andalas. Penelitian ini menggunakan metode eksperimental dengan rancangan acak lengkap (RAL) enam perlakuan dan empat kali ulangan dan perlakuan dilakukan selama 12 minggu. Perlakuan berupa Pakan Normal (PN), Pakan Berlemak Tinggi (PBT), Pakan Berlemak Tinggi ditambah 25% masing-masing serat Garut (*Marantha arundinacea*), Ganyong (*Canna edulis*), Talas Mentawai (*Colocasia esculenta*) dan Bengkoang (*Pachyrhizus erosus*). Berat jaringan adiposa putih, kadar kolesterol total, HDL, LDL dan trigliserida diukur diakhir perlakuan. Hasil penelitian menunjukkan berbagai jenis serat mampu menekan peningkatan bobot jaringan adiposa putih, mencegah hipertrofi sel adiposa putih. Serat *P. erosus* dalam pakan berlemak tinggi paling efektif menurunkan bobot jaringan adiposa putih, sedangkan serat *C. edulis* efektif dalam menurunkan luas sel jaringan adiposa putih. Berbagai macam serat tersebut juga dapat mencegah peningkatan kadar kolesterol total, LDL dan trigliserida pada mencit yang diberi pakan berlemak tinggi. Serat *C. edulis* efektif dalam menurunkan kadar kolesterol, serat *C. esculenta* efektif dalam menurunkan trigliserida, serat *M. arundinacea* efektif dalam menurunkan LDL dan serat *P. erosus* memberikan pengaruh signifikan dalam meningkatkan kadar HDL. Hasil ini mengindikasikan bahwa berbagai macam serat tanaman umbi dan rimpang berpotensi sebagai salah satu upaya dalam mengatasi obesitas dan hiperkolesterol.

**Kata Kunci :** hipertrofi sel, jaringan adiposa putih, kolesterol, serat, obesitas.



## ABSTRACT

Obesity is a degenerative disease with a high prevalence worldwide, including in Indonesia. This study aimed to determine the effect of fiber extracted from tubers and rhizomes on obesity and hypercholesterolemia in mice fed with high-fat diet. This research has been carried out from April 2021 to August 2021 in the Animal Physiology Laboratory, Department of Biology, Faculty of Mathematics and Natural Science, Andalas University. This study used an experimental method with a completely randomized design (CRD) with six treatments and four replications and the treatment was carried out for 12 weeks. The treatments were Normal Feed (PN), High-fat Diet (HFD), High-fat Diet plus 25% of fiber *Marantha arundinacea*, *Canna edulis*, *Colacasia esculenta* and *Pachyrizus erosus* respectively. White adipose tissue weight, total cholesterol, HDL, LDL and triglycerides were measured at the end of the treatment. The results showed that various types of fiber were able to suppress the increase in white adipose tissue weight and prevent white adipose cell hypertrophy. *P. erosus* fiber in high-fat diet was the most effective in reducing white adipose tissue weight, while *C. edulis* fiber was effective in reducing white adipose tissue cell area. The various kinds of fiber could also prevent the increase in total cholesterol, LDL and triglyceride levels in mice fed with high-fat diet. *C. edulis* fiber was effective in lowering cholesterol levels, *C. esculenta* fiber was effective in lowering triglycerides, *M. arundinacea* fiber was effective in lowering LDL and *P. erosus* fiber had a significant effect in increasing HDL levels. These results indicate that various kinds of fiber have the potential as preventive supplements to overcome obesity and hypercholesterolemia.

**Keywords :** *cell hypertrophy, white adipose tissue, cholesterol, fiber, obesity.*

