

PENGARUH DAGING DENGAN KANDUNGAN ASAM LAURAT (C12:0) YANG TINGGI TERHADAP BOBOT BADAN, BIOKIMIA DARAH, DAN EKSPRESI GEN METABOLISME LEMAK PADA TIKUS OBESITAS

INTISARI

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Penelitian ini bertujuan untuk mengetahui pengaruh pemberian daging broiler dengan kandungan asam laurat yang tinggi terhadap bobot badan, biokimia darah, dan ekspresi gen terkait metabolisme lemak pada tikus obesitas. Total sebanyak 25 ekor tikus *Sprague Dawley* jantan dibagi menjadi 5 perlakuan ($n=5$ ekor/perlakuan), yaitu tikus non obesitas (NC), tikus obesitas (OC), tikus obesitas + 0,2 g daging rendah asam laurat (LLA), tikus obesitas + 0,2 g daging tinggi asam laurat (MLA), tikus obesitas + 0,4 g daging tinggi asam laurat (HLA). Perlakuan pakan diberikan selama 8 minggu pemeliharaan. Hasil penelitian menunjukkan bahwa kelompok HLA mengalami penurunan konsumsi pakan ($P=0,037$) hingga 8,18% pada tikus obesitas dibandingkan kelompok kontrol (NC) dan memiliki kadar trigliserida paling rendah dibanding perlakuan lainnya ($P=0,001$). Total kolesterol, kadar *high density lipoprotein* (HDL) dan *low density lipoprotein* (LDL) darah tidak berbeda nyata antar perlakuan ($P>0,05$). Ekspresi gen lipolisis seperti *peroxisome proliferator-activated receptor alpha* (*ppara*) dan *carnitine palmitoyltransferase* tipe 1a (*cpt1a*) meningkat ($P<0,001$), sedangkan ekspresi gen-gen lipogenesis seperti *sterol regulatory element-binding protein 1c* (*srebp1c*) ($P=0,004$), *acetyl-coa carboxylase 1* (*acc1*) ($P<0,001$), dan *fatty acid synthase* (*fas*) ($P=0,001$) mengalami penurunan signifikan dengan pemberian daging HLA. Ekspresi gen *3-hydroxy-3-methylglutaryl-coa reductase* (*hmgcr*) yang terkait metabolisme kolesterol juga menurun ($P<0,001$) dengan intervensi daging HLA dibanding kelompok kontrol. Berdasarkan hasil penelitian, pemberian daging HLA selama 8 minggu pada tikus obesitas dapat memperbaiki metabolisme lemak dan ekspresi gen terkait, sehingga berpotensi menjadi strategi efektif untuk mengendalikan tingkat obesitas.

Kata kunci: Asam laurat, Obesitas, Biokimia darah, Metabolisme lemak, Daging

THE EFFECT OF HIGH LAURIC ACID (C12:0) CONTENT IN MEAT ON BODY WEIGHT, BLOOD BIOCHEMISTRY, AND FAT METABOLISM GENE EXPRESSION IN OBESE RATS

ABSTRACT

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This study aimed to investigate the effects of feeding high-lauric-acid meat on body weight, blood biochemistry, and gene expression related to lipid metabolism in obese rats. A total of 25 male Sprague-Dawley rats were divided into five treatment groups ($n=5$ rats/treatment): non-obese rats (NC), obese control rats (OC), obese rats + 0.2 g low-lauric acid meat (LLA), obese rats + 0.2 g high-lauric acid meat (MLA), and obese rats + 0.4 g high-lauric acid meat (HLA). The dietary treatments were given for 8 weeks. The results showed that the HLA group reduced food intake ($P=0.037$), decreasing by 8.18% compared to the control group (NC), and had the lowest triglyceride levels among all groups ($P=0.001$). Total cholesterol, high-density lipoprotein (HDL), and low-density lipoprotein (LDL) levels did not differ significantly among all treatments ($P>0.05$). The expression of lipolysis-related genes, such as *peroxisome proliferator-activated receptor alpha* (*ppara*) and *carnitine palmitoyltransferase type 1a* (*cpt1a*), was significantly upregulated ($P<0.001$), while the expression of lipogenesis-related genes, including *sterol regulatory element-binding protein 1c* (*srebp1c*) ($P=0.004$), *acetyl-coa carboxylase 1* (*acc1*) ($P<0.001$), and *fatty acid synthase* (*fas*) ($P=0.001$), was significantly downregulated following the administration of HLA meat. Additionally, the expression of *3-hydroxy-3-methylglutaryl-coa reductase* (*hmgcr*), a gene involved in cholesterol metabolism, was significantly reduced ($P<0.001$) in the HLA meat intervention group compared to the control group. Based on these findings, the administration of HLA meat over an 8-week period effectively improved lipid metabolism in obese rats.

Keywords: Lauric acid, Obesity, Blood biochemistry, Lipid metabolism, Meat