

KADAR AST, ALT, DAN HISTOPATOLOGI HATI TIKUS YANG DIBERIKAN INTERVENSI DOSIS BERTINGKAT KEFIR SUSU KAMBING DENGAN PENAMBAHAN MADU

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Abstrak

Diabetes melitus tipe 2 merupakan penyakit metabolik kronis yang ditandai oleh hiperglikemia akibat resistensi insulin dan disfungsi sel beta pankreas, yang memicu kerusakan hepatoseluler melalui stres oksidatif dan akumulasi lipid intrahepatik. Penelitian ini bertujuan menganalisis pengaruh dosis bertingkat kefir susu kambing dengan penambahan madu randu terhadap kadar AST, ALT, dan gambaran histopatologi hati pada tikus model diabetes melitus tipe 2. Desain penelitian berupa true experimental dengan rancangan randomized pre-post test control group, menggunakan 30 ekor tikus Sprague Dawley jantan yang diinduksi high fat diet dan streptozotocin 40 mg/kg BB, terbagi dalam lima kelompok: kontrol sehat (KS), kontrol negatif (KN), dan tiga kelompok perlakuan dosis 2,7 (P1), 3,6 (P2), serta 4,5 mL/200 g BB/hari (P3) selama 14 hari. Hasil menunjukkan perbedaan signifikan kadar AST dan ALT sebelum dan sesudah intervensi ($p=0,000$). Kelompok P2 dan P3 mencapai kadar AST setara KS, sedangkan P3 mencapai kadar ALT yang tidak berbeda bermakna dengan KS ($p=0,078$). Penurunan steatosis yang bermakna secara statistik hanya ditemukan pada P3 ($p<0,001$). Efek hepatoprotektif bersifat dose-dependent, dengan dosis 4,5 mL/200 g BB/hari sebagai dosis paling optimal dalam memulihkan fungsi dan struktur hati pada tikus model diabetes melitus tipe 2.

Kata Kunci: Diabetes Melitus Tipe 2, Hati, Histopatologi, Kefir Susu Kambing, Madu

AST, ALT LEVELS, AND LIVER HISTOPATHOLOGY IN RATS RECEIVING GRADED DOSE INTERVENTIONS OF GOAT MILK HONEY KEFIR

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Abstract

Type 2 diabetes mellitus is a chronic metabolic disorder characterized by hyperglycemia resulting from insulin resistance and pancreatic beta cell dysfunction, which can induce hepatocellular damage through oxidative stress and lipid accumulation. This study aimed to evaluate the effect of graded dose goat milk kefir with randu honey supplementation on aspartate aminotransferase (AST), alanine aminotransferase (ALT) levels, and liver histopathology in a type 2 diabetes mellitus rat model. A true experimental design with a randomized pre-post test control group was employed using 30 male Sprague Dawley rats divided into five groups: a healthy control (KS), a negative control (KN), and three intervention groups receiving doses of 2.7 mL (P1), 3.6 mL (P2), and 4.5 mL/200 g BW/day (P3) for 14 days, following high-fat diet and streptozotocin (40 mg/kg BW) induction. Results demonstrated a significant difference in AST and ALT levels before and after intervention ($p=0.000$). Post intervention, P2 and P3 achieved AST levels comparable to KS, while P3 achieved ALT levels statistically equivalent to KS ($p=0.078$). Significant reduction in hepatic steatosis was observed exclusively in P3 ($p<0.001$ vs KN). Hepatoprotective effects were dose-dependent, with 4.5 mL/200 g BW/day as the optimal dose in restoring liver function and hepatic architecture in type 2 diabetes mellitus rat model.

Keywords: Goat Milk Kefir, Honey, Histopathology, Liver, Type 2 Diabetes Mellitus