



Gut Microbiota Product, Acetate, modulates lipid peroxidation in Streptozotocin-induced Diabetics in Male Mice

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DOI: <https://doi.org/10.5281/zenodo.21194329>

Abstract

Diabetes mellitus is characterized by hyperglycemia, insulin resistance, and dyslipidemia. This metabolic alteration significantly contributes to oxidative stress and lipid peroxidation. The aim of this study was to investigate the potential effects of sodium acetate on lipid peroxidation and lipid metabolism in a streptozotocin-induced diabetic rat model. Diabetic rats were treated with sodium acetate, and the levels of blood glucose, insulin, HOMA-IR (insulin resistance index), total cholesterol, triglycerides, and high-density lipoprotein (HDL) cholesterol were measured, along with malondialdehyde (MDA), a marker of lipid peroxidation. The result of this study showed that sodium acetate treatment significantly reduced fasting blood glucose and HOMA-IR, indicating improved insulin sensitivity. In addition, sodium acetate significantly decreased total cholesterol and triglyceride levels while increasing HDL cholesterol which indicate improvements in lipid metabolism in diabetes. MDA levels were also significantly lower in sodium acetate-treated rats, indicating reduced lipid peroxidation and oxidative stress. In conclusion, sodium acetate may be a promising therapeutic agent for improving glucose metabolism and lipid metabolism, while also mitigating oxidative stress and boosting anti-oxidant status in diabetes mellitus.