

## **FULL ABSTRACT**

The Role Plain Kefir Probiotics on Glycemic Status and Antioxidants, Immune Response of Hyperglycemia Wistar Rats Streptozotocin Induced (Study in Animal Model).

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The dissertation is written in Indonesian.

This study investigated the effect of plain kefir on glycemic, antioxidants, immune response and pancreatic  $\beta$  cell regeneration of hyperglycemia Wistar Rats induced by Streptozotocin. Kefir supplementation 3.6 cc / day affect significantly on blood glucose, antioxidants, lipid peroxidation, and pancreatic  $\beta$ -cells. Statistical analysis showed reduce of glucose ( $p < 0.001$ ), MDA ( $p < 0.001$ ) level of proinflammatory cytokines (IL1, IL6) ( $p < 0.001$ ), except of controls. Antioxidant showed increase of catalase, GPx ( $p < 0.001$ ) and SOD ( $p < 0.05$ ). Similarly, there was increased of IL10 ( $p < 0.05$ ) and the normal cells pancreatic ( $p < 0.001$ ), except of control. TNF- $\alpha$  reduced no significant ( $p < 0.05$ ), except of control. Anova test showed MDA and IL10 were the most contributed to the pancreatic  $\beta$ -cells regeneration by 91.0% and 9% determined by TNF- $\alpha$ , antioxidants, blood glucose, and body weight. In conclusion, Kefir is significantly reduced of glucose lipid peroxide, level of cytokines (IL1, IL6) and enhanced IL10, antioxidants capacity and normal pancreatic  $\beta$  cell expression. Insulin and kefir descriptively reduced TNF- $\alpha$  level.

Keywords: probiotic, plain kefir, hyperglycemia,  $\beta$  cell regeneration, proinflammatory cytokines