

## Effect of probiotic *Lactobacillus plantarum* ktbs2 on serum total oxidant and antioxidant, oxidative stress index and some biochemical parameters in induced diabetic rats

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### Abstract

This study aimed to investigate the effect of probiotic *Lactobacillus plantarum* isolated from traditional Semnan cheese on serum total oxidant and antioxidant status, oxidative stress index and some biochemical parameters in streptozotocin-induced diabetic rats. Twenty-four male Wistar rats were randomly divided into four groups (six rats in each group) including; negative control, positive control (diabetic control), probiotic control and diabetic rats received *Lactobacillus plantarum* suspension at a dose of  $10^8$  CFU / ml by gavage. *Lactobacillus plantarum* bacteria identification was performed by mMRS culture and isolation of single colonies and the use of specific biochemical tests and molecular identification of lactobacilli based on the amplification of 16s rRNA gen using polymerase chain reaction (PCR). Hyperglycemia was induced in 12 male rats by intraperitoneal injection of streptozotocin (65mg/kg) (diabetic untreated, and diabetic-probiotic groups). The healthy and diabetic rats treated by probiotic in groups 3 and 4 received probiotic on the 6<sup>th</sup> day of the study (five days after STZ injection). Fasting blood sugar (FBS) was monitored on days 0 (primary blood glucose), 6 and 21 of the experiment, and serum lipid profile and total oxidant, and antioxidant parameters and oxidative stress index of the rats were measured at the end of the experiment. The results of this study showed that *Lactobacillus plantarum* suspension at a dose of  $10^8$  CFU / ml doses in treated diabetic rats significantly decreased ( $P<0.05$ ) fasting blood glucose, triglyceride, total oxidant parameter and the oxidative stress index compared to the control group. For the first, the results of this study indicated that probiotic *lactobacillus plantarum* isolated from Semnan traditional cheese had the potential to reduce hyperglycemia, dyslipidemia and oxidative stress in streptozotocin-induced diabetic rats.

**Key words:** Diabetes, *Lactobacillus.plantarum*, Blood glucose, lipid profile, oxidative stress

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