

# The efficacy of probiotic supplementation on glycemic control, lipid profile, inflammation biomarkers and body weight changes among type 2 diabetes patients

## Abstract

**Background:** The World Health Organization in 2002 defined probiotics as living organisms in which can be found in food and dietary supplements that upon ingestion can improve the health of the host. Gut dysbiosis contributes to the pathogenesis of DM. Studies found that gut microbiota plays a role in the development and progression of type 1 and type 2 diabetes mellitus (DM) and its complications. This study was designed to assess the effect of supplementation of multispecies of probiotic on Fasting plasma glucose level, lipid profile, inflammation biomarkers and body weight changes among type 2 diabetics.


**Participants and Methods:** 65 type 2 diabetes patients divided into 2 groups T (trial) and C (control) or placebo. The T group received daily one capsule of 14 species of probiotic and C group received capsules filled with roasted ground chickpea. Fasting blood glucose, Serum Tumor Necrosis Factor alpha (TNF- $\alpha$ ) and C- Reactive Protein (CRP), HDL-C, LDL-C, TG ,TC levels and BMI were measured at beginning and the end of the study which lasted for 10 weeks.

**Results and discussion:** Fasting plasma glucose significantly reduced in the probiotic group compared to the control group respectively,  $131.1 \pm 10.1$  vs  $146.5 \pm 10.3$  ( $p < 0.05$ ). Furthermore, a significant reduction was also evident TC in the trial group ( $184 \pm 31$  vs  $199 \pm 21$ ) in the control group and the difference was significant  $p < 0.05$ ). The group which received probiotic also showed significant reduction in TG ( $p < 0.05$ ) compare to control group ( $128 \pm 23$  vs  $141 \pm 32$  respectively). Also, the LDL value, significantly reduced in the probiotic compared to the control group  $123 \pm 27$  and  $149 \pm 31$  ( $p < 0.05$ ). Probiotic supplementation significantly increased HDL  $41.3 \pm 13$  vs  $29.8 \pm 12.6$  ( $p < 0.05$ ), We found significant differences in the serum levels of inflammatory markers at the end of the study. Probiotic supplementation decreases CRP (mg/dL) levels and TNF-a (pg/ml) ( $\pm 1.68$   $3.33$  vs  $3.6 \pm 2.31$  and  $5.4 \pm 5.1$  vs  $5.6 \pm 7.8$  respectively) and the difference was statistically significant ( $p < 0.05$ ). Probiotics reduced BMI of participants in trial group ( $27.6 \pm 5.2$  vs  $33.8 \pm 10.1$ ) and the difference was significant ( $p < 0.05$ ).

**Conclusion:** The results of this study showed that the probiotic supplementations could be an effective and beneficial way to improve glucose level, lipid profile, inflammation biomarkers and body weight in type 2 diabetics.

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**Citation:** Louay Labban, The efficacy of probiotic supplementation on glycemic control, lipid profile, inflammation biomarkers and body weight changes among type 2 diabetes patients. Endocrinol Metab Vol.6 No.S1.

**Received:** February 15, 2022; **Accepted:** February 21, 2022; **Published:** February 25, 2022

## Biography

Louay Labban is a research scholar. She is currently pursuing her Ph.D. from University of Kalamoon, Syria.