

## Abstract

**Background:** Gut microbiome modulation is a novel therapeutic strategy for Type-2 Diabetes Mellitus (T2DM). This study aims to evaluate the efficacy of a novel probiotic supplement in improving glycemic control and insulin sensitivity in T2DM patients.

**Methods:** A randomized, controlled trial was conducted involving 100 T2DM patients. The study was divided into two groups: the intervention group received the probiotic supplement, and the control group received a placebo. The primary outcome was the change in HbA1c levels over 12 weeks. Secondary outcomes included changes in fasting glucose, insulin resistance (measured by HOMA-IR), and body mass index (BMI).

**Results:** The probiotic group showed a significant reduction in HbA1c levels compared to the placebo group ( $p < 0.05$ ). Additionally, there was a significant decrease in fasting glucose and HOMA-IR in the probiotic group. No significant changes were observed in BMI between the two groups.

**Conclusion:** The novel probiotic supplement effectively improves glycemic control and insulin sensitivity in T2DM patients. Further research is needed to explore the long-term effects and mechanisms of action.

**Keywords:** Gut microbiome, probiotic, Type-2 Diabetes Mellitus, glycemic control, insulin sensitivity.

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**Received:** 01-Jan-2024, Manuscript No: jdce-24-135739, **Editor Assigned:** 04-Jan-2024, pre QC No: jdce-24-135739 (PQ), **Reviewed:** 18-Jan-2024, QC No: jdce-24-135739, **Revised:** 22-Jan-2024, Manuscript No: jdce-24-135739 (R), **Published:** 29-Jan-2024, DOI: 10.4172/jdce.1000225

**Citation:** Tomasz C (2024) Gut Microbiome Modulation as a Novel Therapeutic Strategy for Type-2 Diabetes Mellitus. J Diabetes Clin Prac 7: 225.

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