

THE RELATIONSHIP BETWEEN GLYCEMIC VARIABILITY AND GLYCEMIC LOAD/GLYCEMIC INDEX IN PATIENTS WITH TYPE 2 DIABETES

**Alikhanova Nodira Mirshavkatovna
Isamukhamedova Istiora Sandjarovna
Abboskhugaeva Lola Saydganiodgaevna**

The International Diabetes Federation has recognized the importance of regulating prandial glucose and the need to mitigate acute postprandial plasma glucose spikes, making it essential to target postprandial hyperglycemia. However, long-term dietary adherence remains both a crucial and challenging task. Therefore, developing a patient-oriented diet that takes into account individual preferences and is based on a traditional national diet, with the substitution of high-GI foods, can enable better control of glycemic variability.

To study changes in glycemic variability when consuming various national dishes, a comparative analysis was conducted on the glycemic variability of dishes prepared in the standard way and their modified versions. In this case, the mean fasting blood glucose levels and the sum of the mean blood glucose levels after 1 and 2 hours following the intake of standard plov and modified plov were compared. Standard plov was defined as plov prepared from processed (polished) “Lazer” variety rice.

The first modification involved consuming a salad of raw vegetables (onions, lettuce leaves, various herbs, tomatoes, and cucumbers) prior to the intake of the standard plov. The second modification involved replacing the processed rice with “Devzira” variety rice, which has a lower glycemic index and glycemic load.

The mean fasting blood glucose levels in the three groups were comparable (differences were not statistically significant) and were 8.43, 8.52, and 9.01 mmol/L, respectively. The sums of the mean blood glucose levels after 1 and 2 hours in the compared groups were 11.28, 10.31, and 9.58 mmol/L; and 11.61, 8.74, and 8.54 mmol/L, respectively.

In the first modification, the difference between the mean fasting blood glucose and the level 1 hour after intake was statistically significant ($p \leq 0.01$), amounting to 21.06%. An even more significant and statistically reliable difference ($p \leq 0.001$) of –24.66% was observed when comparing the mean blood glucose levels 2 hours after the intake of standard and modified plov. Furthermore, a comparative analysis between the mean fasting blood glucose and the level 2 hours after the meal in the first modification group showed that the values were virtually identical—8.52 and 8.74 mmol/L, respectively. In other words, after 2 hours, the levels were comparable to the fasting

levels. A similar pattern was observed in the comparative analysis between the standard plov and the second modification.

Thus, the inclusion of soluble fiber from a salad (first modification) or the replacement of high-GI rice with a lower-GI variety that also contains fiber (second modification) helps to achieve better blood glucose control, which is reflected in the parameters of glycemic variability.

1. Basiri R, Cheskin LJ. Enhancing the Impact of Individualized Nutrition Therapy with Real-Time Continuous Glucose Monitoring Feedback in Overweight and Obese Individuals with Prediabetes. *Nutrients*. 2024 Nov 22;16(23):4005.

2. Basiri R, Cheskin LJ. Personalized Nutrition Therapy without Weight Loss Counseling Produces Weight Loss in Individuals with Prediabetes Who Are Overweight/Obese: A Randomized Controlled Trial. *Nutrients*. 2024 Jul 11;16(14):2218.

3. Cichosz SL, Kronborg T, Laugesen E, Hangaard S, Fleischer J, Hansen TK, Jensen MH, Poulsen PL, Vestergaard P. From Stability to Variability: Classification of Healthy Individuals, Prediabetes, and Type 2 Diabetes Using Glycemic Variability Indices from Continuous Glucose Monitoring Data. *Diabetes Technol Ther*. 2025 Jan;27(1):34-44.

4. Jenkins, D.J. · Kendall, C.W. · McKeown-Eyssen, G. Effect of a low-glycemic index or a high-cereal fiber diet on type 2 diabetes: a randomized trial. *JAMA*. Dec 17 2008; 300:2742-2753;

5. Swami V, Yadav SK, Saxena P, Sharma A, Dash CK, Gupta A. Study of Glycemic Variability in Well-controlled Type 2 Diabetic Patients Using Continuous Glucose Monitoring System. *J Assoc Physicians India*. 2024 Jan;72(1):18-21.