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A Fasting-Based Intervention in a Woman with Long-Standing Type 2 Diabetes Mellitus: A Case Report of Glycaemic Improvement, Medication De-escalation and Functional Outcomes

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Abstract

Background: Long-standing type 2 diabetes mellitus (T2DM) can remain poorly controlled despite multiple antidiabetic medications. This case describes the clinical and laboratory changes observed in a woman with approximately 15 years of T2DM who participated in a fasting-based programme.

Case presentation: Before joining the programme, in early 2026, the 40-year-old woman had a reported baseline HbA1c of 16.1%, persistent hyperglycaemia despite multiple antidiabetic medications, fatigue, reduced mobility and several other symptoms. Insulin injections were reportedly being considered because adequate glycaemic control had been difficult to achieve.

Intervention: The programme primarily involved one meal a day (OMAD) on most days, with an occasional second eating occasion when she experienced low energy. Berberine, chromium and fenugreek seed extract standardised to trigonelline were also used.

Outcomes: An early follow-up report in March 2026 recorded an HbA1c of 11.1%, followed by 9.1% in November 2026. Fasting plasma glucose was 106.4 mg/dL in November. Reported body weight decreased from approximately 72 kg before joining to 68 kg. Antidiabetic medication was gradually reduced, with metformin 500 mg at night reported as the remaining medication by November 2026. The patient also described improvements in energy, mobility and several baseline symptoms.

Conclusion: This case documents improvements in several glycaemic, medication and patient-reported outcomes during a fasting-based programme that also included selected supplements.

Introduction

Type 2 diabetes mellitus is characterised by impaired insulin action, progressive pancreatic beta-cell dysfunction and disturbances in glucose regulation. Management commonly involves lifestyle interventions and glucose-lowering medications.

Fasting-based approaches have received increasing attention for their potential effects on body weight, insulin sensitivity and metabolic regulation. This case describes the changes observed in a woman with long-standing T2DM who participated in a fasting-based programme, with serial glycaemic measurements, medication changes and patient-reported functional outcomes documented over the observation period.

Case Presentation

A 40-year-old woman with an approximately 15-year history of T2DM participated in the fasting programme. Her pre-joining baseline HbA1c in early 2026 was 16.1%, indicating markedly uncontrolled diabetes. Despite taking multiple antidiabetic medications, her glucose levels remained significantly elevated, and insulin injections were reportedly being considered because adequate control had been difficult to achieve.

Her approximate body weight before joining was 72 kg. She reported fatigue, low energy, leg weakness, difficulty walking and climbing stairs, poor sleep, anxiety, irritability and reduced motivation. Other reported concerns included gastric acidity, constipation, frozen shoulder, knee pain, tingling in the left hand, hair fall and recurrent vaginal symptoms.

Baseline Glycaemic Status

The pre-joining baseline HbA1c in early 2026 was 16.1%. Earlier glucose measurements included fasting glucose of 267 mg/dL and postprandial glucose of 356.1 mg/dL.

An early follow-up report in March 2026 recorded an HbA1c of 11.1%. A subsequent laboratory assessment in November 2026 recorded an HbA1c of 9.1%, with an estimated average glucose of 214 mg/dL.

Assessment	**HbA1c**
Pre-joining baseline – Early 2026	16.1%
March 2026 follow-up	11.1%
November 2026	9.1%

The early change from the pre-joining baseline of 16.1% in early 2026 to 11.1% in the March 2026 report is presented as an observed laboratory finding.

Previous Antidiabetic Medication

At programme entry, the patient was taking multiple antidiabetic medications across three daily administrations, scheduled in the morning, afternoon and night. The documented medication ingredients included:

- Dapagliflozin
- Sitagliptin
- Metformin
- Glimepiride
- Pioglitazone

During the programme, medication was gradually reduced alongside glucose monitoring. By November 2026, the patient reported taking metformin 500 mg at night as her remaining antidiabetic medication.

Fasting-Based Intervention and Supplement Use

The principal fasting pattern was one meal a day (OMAD) on most days. On occasional days when the patient experienced low energy, she had a small additional eating occasion after 5:00 PM, resulting in a maximum of two eating occasions on those days.

The following supplements were also used during the programme:

Supplement	Dose	Use
Berberine	500 mg	Alternated with chromium during the first five months
Chromium	200 mcg	Alternated with berberine during the first five months
Fenugreek seed extract	250 mg per capsule	Standardised to 50% trigonelline; dosage adjusted from 1 to 3 capsules per day

Berberine and chromium were alternated during the first five months. Fenugreek seed extract was also introduced at 250 mg per capsule, standardised to 50% trigonelline, providing 125 mg of trigonelline per capsule. The daily dosage was adjusted from one to three capsules depending on the issues reported by the patient.

These supplements were included with the intention of supporting insulin sensitivity and insulin-signalling pathways. Berberine has been investigated for effects on glucose metabolism and insulin sensitivity; chromium has been studied in relation to insulin action; and trigonelline is a bioactive compound being investigated for potential metabolic effects. Their individual contributions to the outcomes in this case cannot be established.

Glycaemic Monitoring and Progress

Home glucose readings showed a gradual change in reported morning glucose averages over the monitoring period.

Monitoring period	Mean morning glucose
July 2026	228.3 mg/dL
August 2026	219.0 mg/dL
September 2026	211.6 mg/dL
October–November 2026	176.4 mg/dL

The reported mean evening glucose in July 2026 was 113.9 mg/dL. The timing of home glucose measurements was not standardised, so these values are presented descriptively.

In November 2026, laboratory testing recorded fasting plasma glucose of 106.4 mg/dL, fasting insulin of 3.78 µIU/mL, C-peptide of 1.55 ng/mL and a reported HOMA-IR of 0.99.

Laboratory Findings

The November 2026 laboratory assessment showed the following findings:

Parameter	November 2026
HbA1c	9.1%
Estimated average glucose	214 mg/dL
Fasting plasma glucose	106.4 mg/dL
Fasting insulin	3.78 µIU/mL
C-peptide	1.55 ng/mL
HOMA-IR	0.99
TSH	2.463
Vitamin D	63.8 ng/mL
Vitamin B12	808 pg/mL

Lipid Profile

Parameter	February 2026	November 2026
HDL cholesterol	48.4 mg/dL	74 mg/dL
LDL cholesterol	136.82 mg/dL	139 mg/dL
Triglycerides	103.9 mg/dL	87 mg/dL

Renal and Liver Parameters

November 2026 renal measurements included serum creatinine of 0.74 mg/dL, eGFR of 104 mL/min/1.73 m², blood urea nitrogen of 10.92 mg/dL and uric acid of 3.28 mg/dL.

Liver measurements included AST of 13.1 U/L, ALT of 10.3 U/L, GGT of 13.3 U/L, total bilirubin of 0.44 mg/dL, albumin of 3.84 g/dL and total protein of 6.75 g/dL.

Weight Change

Assessment	Approximate weight
Pre-joining – Early 2026	72 kg
November 2026	68 kg

The patient recorded an approximate reduction of 4 kg during the observation period.

Patient-Reported Functional and Symptomatic Outcomes

During follow-up, the patient reported improvements in several areas:

- **Mobility:** Walking on level ground became easier, and stair climbing improved from a step-by-step pattern to better functional movement.
- **Energy and activity:** She reported improved energy and the ability to complete approximately 12,000 steps during morning activity.
- **Musculoskeletal symptoms:** Knee pain reduced. Frozen shoulder symptoms initially improved, although some discomfort subsequently recurred.
- **Mood and motivation:** She reported improvements in irritability, anger, motivation and general well-being.
- **Gastrointestinal symptoms:** Constipation was reported to have improved.
- **Other symptoms:** She reported reduced left-hand tingling and a reduction in recurrent vaginal symptoms, including a period of approximately one month without recurrence.

These outcomes were based on patient-reported experiences during follow-up.

Discussion

This case documents changes in glycaemic measurements, body weight, medication use and patient-reported functional outcomes in a woman with long-standing T2DM and a markedly elevated pre-joining baseline HbA1c of 16.1% in early 2026.

The fasting pattern was predominantly OMAD, with an occasional second eating occasion. Berberine and chromium were alternated during the first five months, and fenugreek seed extract standardised to 50% trigonelline was also introduced. The trigonelline dosage was adjusted from one to three capsules daily according to the issues reported by the patient. These supplements have been investigated for potential effects on glucose metabolism and insulin signalling.

The reduction in HbA1c from the pre-joining baseline of 16.1% in early 2026 to 9.1% in November 2026, together with the improvement in fasting plasma glucose and the reported reduction in medication, represents a clinically relevant change. Nevertheless, an HbA1c of 9.1% indicates that glycaemic control remained above the usual treatment target. The patient should therefore not be described as having achieved diabetes remission.

The patient also reported improvements in energy, mobility and several symptoms that had affected daily activities.

Conclusion

This case describes a woman with approximately 15 years of T2DM and a pre-joining baseline HbA1c of 16.1% in early 2026 who experienced improvements in glycaemic measurements, body weight, medication requirements and self-reported functional outcomes during a fasting-based programme that included OMAD, berberine, chromium and fenugreek seed extract standardised to trigonelline.

By November 2026, HbA1c had reduced to 9.1%, fasting plasma glucose was 106.4 mg/dL, body weight had decreased by approximately 4 kg, and the reported antidiabetic medication regimen had reduced to metformin 500 mg at night.

The findings are encouraging and warrant further systematic evaluation to understand the effects of fasting-based interventions and associated metabolic supplements in people with long-standing T2DM.

References

1. de Cabo R, Mattson MP. Effects of intermittent fasting on health, aging, and disease. *New England Journal of Medicine*. 2019;381:2541–2551. https://doi.org/10.1056/NEJMra1905136
2. American Diabetes Association Professional Practice Committee. Standards of Care in Diabetes—2026. *Diabetes Care*. 2026. https://diabetesjournals.org/care/issue/49/Supplement_1