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**THE MULTI-SYSTEMIC EFFECTS OF FASTING-MIMICKING
DIET IN TYPE 2 DIABETES: REVIEW OF MODERN RESEARCH**

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Type 2 diabetes (T2D) is a metabolic disorder characterized by chronic hyperglycemia, which is associated with high cardiovascular risk and organ-specific fat accumulation, such as myocardial and liver steatosis.

Lifestyle modification serves as the essential cornerstone of therapy for T2D, as it directly addresses the underlying metabolic dysfunction and low-grade inflammation that drive the disease's progression. As a case in point: Fasting-Mimicking Diet (FMD) – a 5-day plant-based, low calories, carbohydrates, and protein meal program. Following the fasting period, standard routine meals are resumed, therefore avoiding continuous caloric deprivation FMD was developed by Dr. Valter Longo, that was designed to trigger fasting benefits, such as autophagy and cellular repair while providing proper nutrition.

For individuals with T2D, studies suggest that FMD can improve glycemic control, promote weight loss, and lower HbA1c, which aligns with American Diabetes Association standards of care. For instance, in a recent study (Schoonakker M.P. et al., 2023), periodic FMD use as an adjunct to usual care in patients (n=100) with T2D, aged 18-75 years with a BMI > 27 kg/m², using only metformin and/or diet alone for glycemic control led to better glycemic management characterized by reduced HbA1c levels and a decrease need for glucose-lowering medication.

According to another study (Roos P.R. et al., 2025), 12 months of periodic (5 consecutive days a month) FMD cycles led to a significant reduction in myocardial triglyceride content in patients (n=100) with T2D, whereas the control group showed no significant improvement. This reduction is a vital clinical marker on the grounds that it indicates a favorable shift in cardiac metabolism, directly addressing myocardial steatosis – a condition that significantly raises the risk of cardiovascular complications, where the latter remain the primary cause of mortality in patients with T2D. Additionally, in another study (Van den Burg E.L. et al., 2025) indications of reduction in liver fat and fibrosis were obtained using MRI-biomarkers in patients doing periodic cycles for twelve months of FMD monthly as adjunct to usual care.

Moreover, regeneration of β -cells was observed on mouse models in a study (Cheng X.W et al., 2017) that showed how FMD can potentially promote reprogramming (Ngn3-driven), which restores insulin secretion and glucose hemostasis. This dietary intervention appears to trigger a regenerative potential, by consonantly lowering insulin-like growth factor 1 (IGF-1) levels and turning down the body's internal sensors for nutrients like PKA and mTOR. It is believed to be not just a result of standard weight loss, but of the specific metabolic environment created by FMD that helps reduce dangerous fat accumulation in the heart muscle and liver.

The collective evidence from these studies suggests FMD as an emerging new factor for cardiovascular risk reduction to significantly shift T2D managing and standards of care, moving toward a strategy that targets the root metabolic effects and facilitates actual physiological restoration.