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Ginger in type 2 diabetes: a study on glycemia and HbA1c

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1. ABSTRACT

A clinical study evaluated whether 2 grams of ginger per day, taken for ten weeks, could modify glycemia, glycated hemoglobin, and blood fats in people with type 2 diabetes. The results indicate a favorable signal for glycemia and HbA1c, but not for most lipids.The authors' summary describes a randomized, double-blind, placebo-controlled study. In this type of research, random assignment reduces the risk that the groups are different from the start; double-blind means that neither participants nor researchers knew who was receiving ginger or the placebo. Fifty people with type 2 diabetes were assigned to either 2,000 mg of ginger daily in capsules or wheat flour capsules for ten weeks. At the end, data from 45 participants were analyzed. Compared to the placebo, the ginger group showed a greater reduction in fasting glycemia and HbA1c, which is the glycated hemoglobin that reflects average glucose exposure over the previous months. The mean changes were −26.30 versus +11.91 mg/dL for glycemia and −0.38 versus +0.22 percentage points for HbA1c, respectively. No significant differences emerged for triglycerides, total cholesterol, LDL cholesterol, or HDL cholesterol. The result supports the hypothesis of a possible short-term metabolic effect, but it does not prove that ginger prevents diabetes complications or replaces therapies and lifestyle changes.

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MISSION

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Through articles, reviews, in-depth analyses and expert contributions, the Journal champions evidence-based medicine and science, fostering a correct interpretation of scientific data and countering misinformation. Every piece of content is developed with the aim of translating the complexity of research into understandable, useful and applicable information, while keeping intact the principles of accuracy, transparency and scientific independence.

Free from political, industrial and commercial influence, the journal stands as an authoritative and independent editorial space, dedicated to promoting scientific culture, professional development and the growth of health awareness among the public.

2. WHAT THIS RESEARCH ANALYZED

For those living with type 2 diabetes, fasting glycemia and HbA1c describe different aspects of the same problem. The former captures blood glucose levels after fasting; the latter indicates average glucose exposure over time. The 2017 study by Makhdoomi Arzati and colleagues evaluated both parameters, along with triglycerides and cholesterol.The researchers randomly assigned 25 people to ginger and 25 to a placebo. The intervention group took four 500 mg capsules daily, for a total of 2 g per day. Blood samples were taken after 12-14 hours of fasting, both before and after ten weeks. Diet, physical activity, weight, and blood pressure were also monitored. This approach allows for verifying whether the observed change is consistent with the intervention, while remaining limited by the short duration.

3. WHAT RESULTS EMERGE FROM THE STUDY

The most significant result is an average improvement in both glycemic indicators in the group taking ginger compared to the placebo group. Fasting glycemia changed by –26.30 ± 35.27 mg/dL with ginger and by +11.91 ± 38.58 mg/dL with placebo; the difference was statistically significant, with P = 0.001. Simply put, the treated group experienced a greater average reduction, although individual values were variable.HbA1c also decreased more with ginger: –0.38 ± 0.35% compared to +0.22 ± 0.29% in the placebo group, with P < 0.0001. The LDL/HDL ratio, a comparison between higher and lower density cholesterol, also decreased. However, no significant differences emerged for triglycerides, total cholesterol, LDL, or HDL when considered individually. Therefore, the results do not show a uniform effect on the lipid profile.

4. WHY THIS STUDY IS RELEVANT

This research is relevant because it compares ginger with a placebo and observes an immediate parameter, glycemia, alongside a more stable indicator, HbA1c. The consistency between the two signals makes the hypothesis of a possible effect on glycemic control more interesting than a single isolated value.The study also highlights a useful point for a forward-looking interpretation: the possible effect did not automatically extend to all cardiometabolic markers. For the patient, this means that a laboratory change does not in itself equate to fewer complications, better quality of life, or a reduction in medication. Longer and larger-scale data are needed.

5. STUDY LIMITATIONS AND WHAT IT DOES NOT DEMONSTRATE

The main limitation is the small sample size: only 45 people were included in the final analysis. With small numbers, an average difference can be more easily influenced by individual characteristics and may not represent all people with type 2 diabetes. Furthermore, ten weeks are not enough to establish whether the effect persists in the long term.The study did not evaluate clinical events such as hospitalizations, cardiovascular complications, kidney damage, or the need to modify treatments. It also does not demonstrate that ginger acts through a precise biological mechanism, nor does it identify who responds best. The publication does not report detailed data on adverse events. Therefore, the results do not authorize the replacement of medications, personalized nutrition, physical activity, or clinical monitoring.

6. INDEPENDENT CONFIRMING EVIDENCE

Another randomized, double-blind, placebo-controlled study evaluated 70 adults with type 2 diabetes for 12 weeks. With 1,600 mg of ginger daily, Arablou and colleagues observed significant improvements in fasting glycemia, HbA1c, insulin, and the HOMA index, an estimate of insulin resistance. This supports the shift from increased blood glucose availability to a possible modification of the insulin response, but it does not prove the cellular mechanism nor a long-term clinical benefit [1].Two more recent statistical summaries aggregated placebo-controlled trials. Chen and colleagues included 13 studies and 837 participants, estimating an average reduction in fasting glycemia of 16.27 mg/dL and HbA1c of 0.41 percentage points; Li and colleagues reported results in the same direction. These analyses reinforce the consistency of the signal, but the intervals between studies were highly variable: the I^2 heterogeneity was greater than 85% for glycemia and HbA1c. The overall confirmation is therefore moderate for consistency, but low for certainty and generalizability [2][3].

7. CONFLICTING EVIDENCE

A systematic review with meta-analysis published in 2024 examined randomized trials in people with type 2 diabetes and found no statistically significant effect of ginger on either fasting glycemia or HbA1c. This conclusion contrasts with the signal from the Makhdoomi Arzati study and other syntheses, indicating that the estimate depends on the selection of studies, statistical methods, and the heterogeneity of the protocols [4].A randomized trial in people with type 2 diabetes also measured the NF-kB factor, a protein involved in the activation of inflammatory signals. After oral ginger supplementation, its average reduction was not statistically significant; neither body mass index nor waist circumference changed significantly. This is an indirect discrepancy: it does not directly concern HbA1c, but it shows that any metabolic effects are not necessarily accompanied by measurable changes in all biological markers [5].

8. QUADRO COMPARATIVO E SINTESI DELLE EVIDENZE

Comparison between independent publications and the results of the 2017 study by Makhdoomi Arzati and colleagues.

Quadro comparativo

Publication	Modello e numerosità	Main result	Relationship to the study
Arablou et al., 2014 [1]	Double-blind RCT; 70 adults with type 2 diabetes	Significant reductions in glycemia, HbA1c, insulin, and HOMA compared to placebo	Direct confirmation of the glycemic signal
Chen et al., 2026 [2]	Meta-analysis of 13 RCTs; 837 participants	Mean reduction in glycemia and HbA1c, with high heterogeneity	Quantitative confirmation, with limited certainty
Li et al., 2026 [3]	Meta-analysis of 13 RCTs; 837 participants	Mean reductions in glycemia, HbA1c, and triglycerides	Confirmation of direction, not independent of included trials
Schumacher et al., 2024 [4]	Systematic review and meta-analysis of RCTs	No statistically significant effect on glycemia or HbA1c	Directly discordant evidence
Ebrahimzadeh Attari et al., 2019 [5]	Double-blind, placebo-controlled RCT; sample size not available in the consulted summary	No significant change in NF-kB, BMI, or waist circumference	Indirect discordance on related markers

9. SINTESI EDITORIALE E CONCLUSIONI

EDITORIAL CONCLUSION

The 2017 study by Makhdoomi Arzati and colleagues observed that 2 g of ginger daily for ten weeks was associated, compared to a placebo, with a greater reduction in fasting glycemia and HbA1c in 45 analyzed participants with type 2 diabetes. This finding is biologically and clinically interesting because it concerns both the current glycemic value and the average glucose exposure over time. However, the sample size was small, the observation period was short, and most lipid profile parameters did not improve significantly. Other trials and some meta-analysis studies show compatible results, but a recent review did not confirm a significant overall effect. The most rigorous interpretation is therefore as follows: ginger may have a complementary role in the metabolic control of some individuals, but the evidence remains heterogeneous and does not demonstrate benefits regarding complications. It is not an autonomous therapy and must not replace the clinical management of diabetes.

Aggiornato al 25/11/2026. Questo contenuto riflette una sintesi divulgativa delle evidenze scientifiche al momento della pubblicazione e non sostituisce il parere medico.

10. TRANSPARENCY AND SCIENTIFIC RESPONSIBILITY

Artificial Intelligence was used solely as a tool for editorial and documentary support. All content, interpretations, bibliographic citations and conclusions have been verified, reviewed and approved by the author, who assumes full scientific responsibility for them.

The manuscript was also subjected to independent peer review prior to publication.

To ensure the greatest transparency, the complete history of the article, including the dates of submission, revision, acceptance and publication, as well as information on the peer review process, is available on the dedicated Article History page.

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