Does myo-inositol supplementation reduce the rate of gestational diabetes in pregnant women with a family history of type 2 diabetes?

Yes. In this 2-year, prospective, randomized, open-label, placebo-controlled trial, women who took myo-inositol (2 g daily) had a lower incidence of gestational diabetes mellitus (GDM), compared with those allocated to placebo (6% vs 15.3%, respectively; \( P = .04 \)). They also experienced a statistically significant reduction in the rate of fetal macrosomia.

Inositol has generated increasing attention as a treatment for conditions related to pregnancy, including polycystic ovary syndrome \(^1\) and neural tube defects. \(^2,3\) In this study, pregnant women with a family history of type 2 diabetes were randomly allocated to:

- folic acid alone (400 µg daily)—placebo group
- folic acid plus myo-inositol (400 µg and 4 g daily, respectively)—treatment group.

The goal was to determine whether the addition of myo-inositol could prevent GDM and macrosomia. Because the study was conducted in Italy, GDM was diagnosed using

**WHAT THIS EVIDENCE MEANS FOR PRACTICE**

Current standards for identifying GDM include appropriate screening. Methods for prevention of GDM including dietary counseling and advice on an exercise program to reduce fetal macrosomia, but no interventions, to date, have effectively controlled GDM.

The concept of using a dietary supplement to prevent GDM is intriguing, and the results of this trial, coupled with a second recent report on the beneficial effects of myo-inositol to prevent GDM, \(^10\) are promising. However, the many concerns raised here—especially the use of IADPSG criteria—make it difficult to apply these findings to traditional diagnostic criteria for US practitioners. Follow-up, large-scale trials are needed to determine how effective this supplement is in preventing GDM and whether its effects translate into benefits for women at increased risk of developing diabetes. The routine use of myo-inositol in patients with a family history of type 2 diabetes should await further studies, including the aforementioned trials.

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**EXPERT COMMENTARY**

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recommendations from the International Association of Diabetes and Pregnancy Study Groups (IADPSG).4

Of the 197 women who completed the study, those given myo-inositol had a lower incidence of GDM than those given placebo: 6 of 99 women in the treatment group developed GDM, compared with 15 of 98 in the placebo group (P = .04). None of the women in the treatment group gave birth to a macrosomic infant (>4,000 g), compared with seven women in the placebo group (P = .007). However, other adverse outcomes, such as cesarean delivery, gestational hypertension, shoulder dystocia, preterm delivery, and fetal respiratory distress syndrome occurred at similar frequencies in the two groups.

Strengths and limitations of the study

Investigators conducted a prospective, randomized, placebo-controlled trial, one of the first moderately sized trials to examine the therapeutic effects of myo-inositol in pregnant women who had a family history of type 2 diabetes (in one or both parents). This study builds upon a previous report from the same investigators of the positive effects of myo-inositol in reducing insulin resistance in a smaller group of women (n = 69) with GDM.5

Another strength is that the investigators focused on a compound, inositol, readily found in foods, which suggests that women could derive benefits from a diet fortified with this supplement.

However, there are several concerns, also touched upon in a previous commentary about this study,6 which include:

• Only white women were included in the study. (As an ethnic group, white women have a lower risk of GDM.)

• All of the women enrolled in this trial had a prepregnancy body mass index within the normal range. Women who have a family history of type 2 diabetes who are also obese are a significant population to study.

• More work is needed to understand the mechanism of action of myo-inositol to help determine the optimal concentration to administer and the route of administration (ie, in pill form or as part of a diet plan).

Another important point: Investigators used IADPSG criteria to diagnose GDM; these criteria tend to identify significantly more cases of diabetes than the Carpenter and Coustan criteria, which are currently used in the United States.7,8 Indeed, a National Institutes of Health expert panel recommended continuing use of the Carpenter and Coustan criteria to diagnose GDM in the United States until more data are collected to show correlation between changing the diagnostic threshold and improved fetal and maternal outcomes.9

References


