



## The effects of magnesium and vitamin E co-supplementation on parameters of glucose homeostasis and lipid profiles in patients with gestational diabetes

Gestational diabetes mellitus (GDM) is defined as carbohydrates intolerance which first recognized at second or third trimester of pregnancy<sup>1</sup>. Magnesium and vitamin E are known to exert multiple beneficial effects, such as anti-glycemic and anti-lipidemic properties;<sup>2,3</sup> there is evidence demonstrating that magnesium is required more during pregnancy<sup>4</sup>, in addition, hypomagnesemia might lead to impaired glucose tolerance<sup>5</sup>, and few studies have reported low circulating levels of magnesium and vitamin E in women with GDM<sup>6,7</sup>. Data on the effects of magnesium and vitamin E co-supplementation on metabolic status of patients with GDM are limited.

In a recently published paper, Maktabi et al. *Lipids in Health and Disease* (2018), which aimed to evaluate the effects of magnesium and vitamin E co-supplementation on metabolic status of patients with GDM. They conducted a randomized, double-blinded, placebo controlled clinical trial, registered in the Iranian website for registration of clinical trials, in a total number of 60 women with GDM, aged 18–40 years and non-diabetic before pregnancy, diagnosed using American Diabetes Association guidelines<sup>8</sup> from December 2017 through March 2018. To decrease the effects of potential confounders, stratified randomization was performed at the beginning of the study for all participants according to age and BMI. Then, participants in each block were randomly allocated into two treatment groups to take either 250 mg/day magnesium oxide and 400 IU/day vitamin E or placebo (n = 30 each group) for 6 weeks<sup>9</sup>. The primary outcomes were fasting plasma glucose (FPG), insulin, homeostasis model of assessment-insulin resistance (HOMA-IR), and quantitative insulin sensitivity check index (QUICKI), while the secondary outcomes were triglycerides, very low density lipoprotein-cholesterol (VLDL-cholesterol), total cholesterol, low density lipoprotein-cholesterol (LDL-cholesterol), high density lipoprotein-cholesterol (HDL-cholesterol), and Total-/HDL-cholesterol ratio<sup>9</sup>.

The results were; subjects who received magnesium plus vitamin E supplements had significantly lower FPG (P = 0.002), serum insulin levels (P = 0.02) and HOMA-IR (P = 0.01), and higher QUICKI (P = 0.002) compared with placebo. In addition, magnesium plus vitamin E supplementation resulted in a significant reduction in serum triglycerides (P < 0.001), VLDL-cholesterol (P < 0.001), total-cholesterol (P = 0.004), LDL-cholesterol (P = 0.03) and total-/HDL-cholesterol ratio (P < 0.001) rather than placebo group. Magnesium and vitamin E co-supplementation did not affect HDL-cholesterol levels (P = 0.68)<sup>9</sup>.

In conclusion; magnesium and vitamin E co-supplementation for 6 weeks in women with GDM significantly lowered serum FPG, insulin levels and HOMA-IR, and led to a significant rise in QUICKI. It also improved lipid profiles but did not affect HDL-cholesterol levels. More trials with larger sample size would be needed to confirm our findings in future.

## References:

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