

FOLATE-MATERNAL HEALTH RESEARCH PROGRAM

Department of Foods and Nutrition, The University of Georgia

Mission

To establish research evidence on which to base revised folate intake recommendations for women of reproductive age to optimize maternal health, fetal development and infant growth.

Background and Research Contributions

The vitamin folate is an essential nutrient concentrated in select food sources (e.g. green leafy vegetables, citrus, and peanuts) and in fortified foods and supplements as synthetic folic acid. Folate is essential for normal cell division, growth, and health maintenance throughout the lifespan. Folate is especially required for normal maternal health and fetal development. The brain and spinal cord (neural tube) develops during the first 28 days of gestation and requires adequate folate intake to prevent a neural tube defect (NTD). Research studies have definitively proven that increased folic acid intake taken prior to and during early pregnancy significantly reduces the risk of NTDs. Women of childbearing age are recommended to consume 400 µg of folic acid daily from supplements and/or fortified foods in addition to food folate. Folic acid fortification of enriched cereal grain has been mandatory in the US since 1998. Maternal obesity is considered as another risk factor for NTDs but the underlying mechanism is unknown.

Findings from our research indicate that folate metabolism is different in obese as compared with normal weight women and highlight a need for identifying mechanisms responsible for such obesity-associated differences and for considering body weight-adjusted folic acid intake recommendations.

- ❖ Obese women of childbearing age have lower serum folate concentrations and demonstrate a lower serum folate response to folic acid supplementation compared to normal weight women of childbearing age.
- ❖ Folic acid supplementation affects regulation of specific gene expression and this response to supplementation is distinctive in obese and normal weight women of childbearing age.

The folic acid content of most prenatal vitamins is two times or more higher than the recommended intake for pregnant women. Along with body weight-adjusted folic acid intake recommendation, research is needed to determine the impact of intakes of the higher doses of folic acid in prenatal supplements compared to recommended intakes.

Our team is currently conducting a folic acid supplementation study in pregnant women in collaboration with Athens Regional Medical Center. The study will provide insight on how maternal obesity and prenatal folic acid supplementation dose affect folate status, infant outcome and early growth.

Public Health Implications

- ❖ Findings from our research contribute to a solid body of evidence on which revised Institute of Medicine and US Public Health Service folic acid intake recommendations can be based, taking body weight and/or body composition into consideration.
- ❖ It is anticipated that revised folic acid intake recommendations will significantly reduce the incidence of NTDs-affected pregnancies in obese women and contribute to optimized growth and chronic disease reduction in offspring.

Resources for More Information

- Center for Disease Control and Prevention: <http://www.cdc.gov/ncbddd/folicacid/index.html>
- National Institutes of Health: <http://www.nlm.nih.gov/medlineplus/folicacid.html>
<http://ods.od.nih.gov/factsheets/Folate-HealthProfessional/>
- Folate and Obesity (UGA researchers): <https://www.youtube.com/watch?v=fzL7Q3UHNvs>

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Reviewed by FDN Extension and Outreach faculty.