

GINGER SYRUP AS AN ANTIEMETIC IN EARLY PREGNANCY

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Context • *Ginger (Zingiber officinale) has been used to ameliorate symptoms of nausea. A beverage containing ginger in a syrup may be easier to consume than a capsule or solid food.*

Objective • *To determine if ginger syrup mixed in water is an effective remedy for the relief of nausea and vomiting in the first trimester of pregnancy.*

Design • *Double-blind, placebo-controlled, randomized clinical trial.*

Setting • *Subjects were enrolled from the University of South Florida department of obstetrics and gynecology private practice office.*

Patients • *26 subjects in the first trimester of pregnancy.*

Intervention • *Subjects ingested 1 tablespoon of commercially prepared study syrup (or placebo) in 4 to 8 ounces of hot or cold water 4 times daily.*

Main Outcome Measures • *Duration and severity of nausea and vomiting over a 2-week period measured on a 10-point scale.*

Results • *After 9 days, 10 of the 13 (77%) subjects receiving ginger had at least a 4-point improvement on the nausea scale. Only 2 of the 10 (20%) remaining subjects in the placebo group had the same improvement. Conversely, no woman in the ginger group, but 7 (70%) of the women in the placebo group, had a 2-point or less improvement on the nausea scale. Eight of the 12 (67%) women in the ginger group who were vomiting daily at the beginning of the treatment stopped vomiting by day 6. Only 2 of the 10 (20%) women in the placebo group who were vomiting stopped by day 6.*

Conclusion • *The ingestion of 1 g of ginger in syrup in a divided dose daily may be useful in some patients experiencing nausea and vomiting in the first trimester of pregnancy. (Altern Ther Health Med. 2002;8(5):89-91)*

Nausea, with or without emesis in the first trimester of pregnancy occurs in 60 to 80 percent of women. In addition to affecting the day-to-day function of the patient and her quality of life, persistent nausea and vomiting (hyperemesis gravidarum) may result in insufficient nutritional intake, weight loss and ketonemia. Some of the more common current treatment modalities include prescribed antiemetics, over-the-counter antiemetics, herbal remedies such as ginger, vitamin supplements such as vitamin B₆, and acupressure.¹

Ginger root (*Zingiber officinale*), in various forms, is recommended as an effective antiemetic in popular lay writings. Ginger in capsule form has been reported to decrease nausea and vomiting associated with surgery and anesthesia, chemotherapy, and seasickness.²⁻⁴ Although publication bias cannot be ruled out, no adverse events were reported in any of these studies.

Only 2 studies in the peer-reviewed English-language literature appear to be related to the use of ginger in pregnancy. Fischer-Rasmussen et al enrolled 27 first trimester pregnant women with hyperemesis gravidarum in a randomized, double-blind, crossover study.⁵ A significant reduction in the incidence of nausea occurred in women taking capsules containing 250 mg of ginger 4 times a day compared to the control group, which took a placebo capsule containing 250 mg of lactose 4 times a day. Vutyavanich et al studied the effect of the same remedy in 70 pregnant women with nausea and vomiting before 17 weeks gestation over 4 days in a double-masked design study.⁶ Similar efficacy with improvement in nausea symptoms was found.

The purpose of our study was to assess the acceptance and clinical value of a commercially prepared ginger syrup drink for the treatment of nausea and vomiting in early pregnancy.

MATERIALS AND METHODS

This randomized double-blind study took place during a 6-month period in calendar year 1999. Patients in the first trimester of pregnancy were invited to enter the study if they had complaints of nausea with and without vomiting either at a planned or ad hoc obstetric visit and were not taking a prescribed or over-the-counter antiemetic. Subjects were

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randomized to the placebo group or the study group by computer-generated numbers matching the numbers on identical-appearing bottles of ginger or placebo syrup. Each tablespoon of study syrup contained 250 mg ginger (including 1 mg pungent compounds from ginger rhizome juice, 1 mg of 20% pungent compounds, and 5% zingiberene obtained via a carbon dioxide supercritical extract of dried ginger rhizome), honey, and water. The placebo syrup contained water, honey, and lemon oil. The ginger syrup is prepared and sold by New Chapter, Inc (Brattleboro, Vt). The company also prepared the placebo syrup and provided both syrups to us free of charge.

Patients were instructed to drink 1 tablespoon of syrup mixed in 4 to 8 ounces of hot or cold water 4 times a day. Both groups received verbal and printed information with a list of recommendations on dietary changes to decrease nausea. Each subject kept a daily diary for the first 2 weeks to record the number of syrup drinks ingested and the degree of nausea and vomiting. A numerical scale of 1 through 10 was used to quantify the level of nausea, number of vomiting episodes, and the patient's perspective of her daily functioning related to her symptoms. If the patient decided the syrup drink was not effective, a medication of the physician's choice was prescribed. All subjects were provided care in person at least once during the intervention, and a phone contact was made 2 weeks after initiating the intervention. A statistical analysis was not applied because of the small numbers of patients in each group.

The study was approved by the University of South Florida Investigational Review Board. The subjects received and signed written informed consent.

RESULTS

Twenty-six women were enrolled with 14 patients in the study group and 12 in the placebo group. One woman in the placebo group did not take the study drink because her nausea resolved. The age range of 24 to 37 years was similar in both groups as was parity (.5 to .8) and gestational age (7 to 11 weeks). All of the subjects delivered viable infants at term without major complications.

The remaining subjects reported they initially took the syrup drink as directed. Two women at 9 and 10 weeks gestation in the 11-women placebo group stopped the study on days 7 and 11 because of no improvement; they were prescribed antiemetics. One woman in the ginger arm stopped the study on day 5 because she could not tolerate the taste of the drink. No other patient indicated she could distinguish the taste of ginger. Another woman in the ginger arm stopped the study on day 10 when her symptoms resolved.

Ten of the 13 (77%) subjects who received ginger had at least a 4-point improvement on the nausea scale by day 9. Only 2 of the 10 (20%) remaining subjects in the placebo group had the same improvement. Conversely, no woman in the ginger group, but 7 (70%) of the women in the placebo group, had a 2-point or less improvement on the nausea scale at both 9 and 14 days.

Eight of the 12 (67%) women in the ginger group who were vomiting daily at the beginning of the treatment stopped vomiting by day 6. Only 2 of the 10 (20%) women in the placebo group who originally were vomiting stopped by day 6.

Most women in both groups maintained their weight or gained weight. Three (21%) women in the ginger group lost between .57 and 1 kg at their 4-week follow-up visit, and 4 women (40%) in the placebo group had weight losses between .34 and .9 kg in the same time interval.

COMMENT

Ginger is the rhizome of *Zingiber officinale*. It has been used as a folk remedy for nausea and vomiting, motion sickness, and dyspepsia. Common dosages range from .5 to 2 g of the powdered rhizome in capsules or in the form of dry extracts or tea, chopped rhizome, or as fresh ginger root. In many cultures, ginger, fresh sliced or grated, sugared, and pickled is eaten as part of a meal. Importantly, it has been calculated⁶ that the amount of ginger used as an ingredient in prepared food can be as much as 30 g. Thus, there is an opportunity for confusion between the use of ginger as a food substance and as a treatment modality. Because ginger is a dietary supplement, there is no United States federal regulation regarding its use.

Nausea and vomiting of pregnancy spontaneously resolves in most women by week 14 of gestation. Therefore, the efficacy of any one treatment must take that fact into consideration. The subjects in this study were between 7 and 11 weeks of gestation. The overall trend in this study suggests that 250 mg of ginger in a syrup mixed in hot or cold water 4 times daily may be effective in ameliorating nausea in the first trimester of pregnancy. However, there were inadequate numbers of patients in this study to verify this point statistically.

Thus, a major weakness of this study is the small number of patients we were able to attract over a 6-month period. We had difficulty in recruiting patients because of repeatedly voiced reluctance to ingest a "foreign substance" and the perceived theoretical potential for teratogenicity. In contrast, many of the women who did participate did so because they considered ginger to be a "natural" remedy as opposed to a prescribed medication.

Concerns written about the possible association of adverse effects from ginger have not always contained evidence-based data. The German Commission E states that ginger is contraindicated in pregnancy, but does not provide a reference or data to support this opinion.⁷ Moreover, a recent review of the clinical and pharmacological literature found no supporting data when ginger is taken at a dose of 1 g per day.³ The *British Herbal Compendium* lists ginger as a remedy for vomiting of pregnancy along with other indications.⁸ There is no contraindication to ginger during pregnancy in the *Pharmacopoeia of the People's Republic of China*.⁹

Other reported actions associated with ginger do not appear to be contraindications for its use in pregnancy. An effect

of ginger on in vitro antiplatelet activity with inhibition of thromboxane synthetase activity has been reported with human aliquots. A similar in vivo effect was found in association with dosing of 5 g of raw ginger a day for at least 1 week.¹⁰ Backon opined that ginger could theoretically affect testosterone receptor binding and sex steroid differentiation of the fetal brain, but provided no published supporting data.¹¹ In 2 separate in vitro studies, compounds found in the rhizome juice of ginger were found to exhibit both mutagenic and antimutagenic activities and characteristics.^{12,13}

The United States Pharmacopoeia (USP) has published an information monograph on ginger root.¹⁴ They conclude there is insufficient documentation with lack of sufficient clinical research to support its proposed benefits for nausea and vomiting, but harmful effects have not been reported. The numbers of patients in our preliminary study are too small to confirm or deny adverse associations.

In conclusion, 1 g of ginger in syrup or capsules^{5,6} ingested daily in divided doses appears to be a reasonable and safe option in the treatment of nausea in early pregnancy. Further clinical trials are warranted to affirm this benefit.

References

1. Murphy PA. Alternative therapies for nausea and vomiting of pregnancy. *Obstet Gynecol.* 1998;91:149-155.
2. Ernst E, Pittler MH. Efficacy of ginger for nausea and vomiting: a systematic review of randomized clinical trials. *Brit J Anaesth.* 2000;84:367-371.
3. Fulder S, Tenne M. Ginger as an anti-nausea remedy in pregnancy: the issue of safety. *HerbalGram.* 1996;38:47-50.
4. Meyer K. *Zingiber officinale* used to prevent 8-MOP associated nausea. *Dermatol Nurs.* 1995;7:242-244.
5. Fischer-Rasmussen W, Kjaer SK, Dahl C, Asping U. Ginger treatment of hyperemesis gravidarum. *Eur J Obstet Gynecol Reprod Biol.* 1990;38:19-24.
6. Vutyavanich T, Kraissarin T, Ruangsri R-A. Ginger for nausea and vomiting in pregnancy: randomized, double-masked, placebo-controlled trial. *Obstet Gynecol.* 2001;97:577-582.
7. Blumenthal M, ed. *The Complete German Commission E Monographs: Therapeutic Guide to Herbal Medicines.* Austin, Tex: American Botanical Council; 1998.
8. Bradley RR, ed. *British Herbal Compendium.* Vol 1. Bournemouth, UK: British Herbal Medicine Assoc; 1992.
9. Tu G, ed. *Pharmacopoeia of the People's Republic of China* [in English]. Beijing, People's Republic of China: Guangdong Science and Technology Press; 1992.
10. Srivastava KC. Effect of onion and ginger consumption on platelet thromboxane production in humans. *Prost Leukot Essent Fatty Acids.* 1989;35:183-185.
11. Backon J. Ginger in preventing nausea and vomiting of pregnancy: A caveat due to its thromboxane synthetase activity and effect on testosterone binding [letter]. *Eur J Obstet Gynecol Reprod Biol.* 1991;42:163-164.
12. Nakamura H, Yamamoto T. Mutagen and anti-mutagen in ginger. *Zingiber officinale.* *Mutat Res.* 1982;103:119-126.
13. Kada T, Morita K, Inoue T. Anti-mutagenic action of vegetable factors on the mutagenic principle of tryptophan pyrolysate. *Mutat Res.* 1978;53:351-353.
14. United States Pharmacopoeia. *Ginger Information Monograph.* Rockville, Md: United States Pharmacopoeia; 1998.