Ankara Med J, 2016;16(2):225-31
DOI: 10.17098/amj.70285

# The Use of Herbal Supplements in Pregnancy
## Gebelikte Bitkisel Ürünlerin Kullanımı

Melahat Yıldırım[1], Raziye Desdicioğlu[1], Halil Kara[2], Ayşe Filiz Yavuz Avşar[1]

[1]Ankara Yıldırım Beyazıt University, Department of Obstetrics and Gynecology
[2]Ankara Yıldırım Beyazıt University, Department of Pharmacology

**Abstract**
The use of herbal products is becoming a more popular way of treating diseases due to the assumption of being natural, safe, and thereby harmless, relative to other prescribed medicines. However, most of these herbal substances have not been thoroughly evaluated so far. The overwhelming increase in interest to traditional and complementary medicine amongst pregnant women rises the safety concerns related to this treatment options in pregnancy.
In this review, we put the most commonly used herbs in pregnancy in the spotlight and gave particular attention to their potential adverse reactions and teratogenic effects.
**Key words:** Herbal medicine, pregnancy, adverse effects, safety

**Öz**
Bitkisel ürünlerin kullanımı bu ürünlerin güvenilir, ve diğer reçete edilen ilaçlara göre daha zararsız olduğu varsayıldığından hastalıkların tedavisinde artan bir popülariteye sahip olmaktadır. Bununla beraber, şimdiye kadar bu bitkisel ürünlerin büyük bir kısmı etraflıca incelenmemiştir. Gebe kadınlardaki bu geleneksel ve tamamlayıcı tıbba olan aşırı ilgi, bu tedavi seçeneğinin gebelikte kullanımı ve güvenilirliği ile ilgili endişeleri de artırmıştır.
Bu derlemede, gebelikte sıklıkla kullanılan bitkileri mercek altına aldık ve özellikle de bu bitkilerin potansiyel ters reaksiyonları ve teratojenik etkilerine dikkat çektik.
**Anahtar kelimeler:** Bitkisel ilaç, gebelik, advers etki, güvenlik

**Correspondence / Yazışma Adresi:**
Dr. Melahat Yıldırım
Ankara Yıldırım Beyazıt University, Department of Obstetrics and Gynecology, Bilkent, Ankara / Turkey
**e-mail:** melahatyildrim@yahoo.com
**Date of submission:** 17.01.2016
**Date of admission:** 25.04.2016

## Introduction

The use of natural health products, especially herbal supplements is becoming a more popular way of treating disease all over the world.[1] According to the 2002 National Health Interview Survey in the United States, an estimated 38 million US adults per year use herbal medicines [2] and the use of herbal supplements is more prominent among women. [2] This demand is likely to be due to the assumption of being natural, safe, and thereby harmless relative to other prescribed medicines.[3] However, most of these herbal substances have not been thoroughly evaluated, concerning whether they are safe and free from adverse effects or not. According to the World Health Organization, approximately 80% of the people around the world use a variety of herbal medicines in order to prevent or treat the certain diseases and improve the general well-being.[4] In another study, it is reported that about half of reproductive aged women (48.9%) use herbal medicine for any

reason.[5] Therefore, it is possible that a great number of women will conceive, while they are using herbal remedies.

The prevalence of the use of herbal medicine amongst pregnant women is reported to be between 18% and 56 % during pregnancy and it varies across different geographical areas as in 22.3% to 82.3% in the Middle East region.[6-9]

The fear that prescribed medications may pose a significant hazard to a fetus during gestation may lead pregnant women to opt for presumably safe and harmless natural herbal medicines during pregnancy.[9,10] Aside from being preferable by pregnant women, traditional and complementary medicines are also of common practice among health-care providers in developed countries.[11] However, many pregnant women begin the use of herbal health products without the advice or guidance of a health-care professional.[12] Concerns related to the use of herbal remedies during pregnancy are particularly due to inadequate data regarding their potential teratogenic or adverse effects on pregnancies. Therefore, throughout questioning of the expectant mother regarding the use of herbal supplements becomes extremely crucial during prenatal visits in order to identify adverse effects and the drug interactions of these natural products.
The most commonly used herbs during pregnancy may vary from region to region, as peppermint, ginger, thyme chamomile, sage, aniseeds, fenugreek, green tea, and garlic are popular natural supplements around middle east region,[9] raspberry, fennel, and St. John's wort are most commonly used herbs in Australia, Norway, and Tuscany, [13] and the most common reasons for use herbs are the treatment of gastrointestinal complaints such as nausea, vomiting, bloating, and stomach aches followed by cold and flu symptoms.[13,14]

The overwhelming increase in interest to traditional and complementary medicine amongst pregnant women rises the safety concerns related to this treatment option in pregnancy.

In this review, we have put the spotlight on the most commonly used herbs in pregnancy and tried to shed light on their potential adverse reactions and teratogenic effects.

## The Use of Specific Herbal Medicine Products in Pregnancy

### Ginger

Hyperemesis gravidarum (HG) is severe and intractable vomiting during pregnancy, which can cause dehydration, electrolyte disturbances, and possible fetal damage.[15] Even the presence of persistent vomiting, many expectant mothers choose not to use conventional medicine owing to the fear of possible teratogenic side effects to the fetus. In these circumstances, ginger (Zingiber officinale Roscoe) may represent an alternative way of treatment for HG.[16] The effect of ginger is via local gastrointestinal anti-cholinergic and antihistaminic actions. There is a conflicting evidence regarding the use of ginger in HG.[17,18] High doses of concentrated ginger may increase bleeding risk by decreasing platelet aggregation, and also increase stomach acid production.[17] The ingestion of oral ginger may cause an increase in gastro-duodenal motility in some patients.[19] There is conflicting findings regarding the benefits of ginger treatment in HG comparing to vitamin B treatments . One study showed a significant advantage of ginger treatment over

vitamin B6 treatment in pregnant women with HG.[20] However, in another study, ginger failed to significantly decrease nausea and vomiting symptoms when compared to vitamin B6.[21] When it comes to comparing the effectiveness of ginger with dimenhydrinate in patients with HG, ginger treatment relieved the nausea and vomiting symptoms as effective as dimenhydrinate did.[22] Although ginger treatment is considered a harmless and possibly effective alternative option for women suffering from nausea and vomiting, one of the old studies argued that ginger treatment could be related to spontaneous abortions in ginger user pregnant women[23] and it was found to be associated with an increased risk of belching.[24] However, other studies did not support this argument.

**Echinacea**

Echinacea (Echinacea angustifolia, Echinacea purpurea) is one of the most widely used herbal supplements across the world. It is commonly used for its immunostimulatory, anti-inflammatory, antibacterial and antiviral effects and the prevention and treatment of common infections, such as common cold, flu and lower respiratory tract infections.[25, 26]A prospective controlled study completed by the Motherisk Program in Canada demonstrated that use of echinacea during the first trimester particularly during organogenesis is not associated with increased risk for major malformations. [26] In another study, it was proved that no significant differences of major or minor birth defect, pregnancy outcome, delivery method, maternal weight gain, gestational age, infant birth weight and of fetal distress rate were observed among the echinacea using pregnant women and non-users.[26] In addition, echinacea does not seem to cause any serious risks for drug interactions in humans.[27]

**Chamomile**

Chamomile, a beautiful white flower, (Matricaria recutita) is usually used for its calming and relaxing effects. A recent study consisted of 392 pregnant women showed that the higher incidence of threatening miscarriages and preterm labours was observed among regular chamomile users during their pregnancies and the study of Moussally et al. supported these findings.[28,29] Another study acclaimed that chamomile may also contain coumarins which may exert an anticoagulant effect in pregnant women.[30] Furthermore, an excessive use of chamomile has to be considered potentially harmful in pregnancy due to its contraction-inducing properties.[31] In recent study, regular users of chamomile showed a higher risk of low birth weight infants when compared with non-users in the study.[32] Chamomile should not be used during pregnancy due to not only aforementioned reasons, but also to its possible menstruation and abortion stimulating effects.[33]

**Peppermint**

Peppermint leaf and oil are used for traditional medicines as flavoring agents, and in cosmetic and pharmaceutical products. This herb has been used since antiquity to treat a variety of diseases such as gastrointestinal (GI) disorders, common cold and respiratory conditions, muscle pain, and headache during pregnancy.[34] It can be considered an antiseptic, antipruritic, antispasmodic, antiemetic stimulant.[35] Although peppermint together with ginger can be used for relieving nausea and vomiting in pregnancy,

excessive usage is found to be related to induce uterine bleeding in early pregnancy thus it is contraindicated during organogenesis and accepted as unsafe during pregnancy.[36]

**Fenugreek**

Fenugreek is particularly used in middle east region.[37] It should be consumed with caution due to its hypoglycemic effect during pregnancy, it can stimulates oxytocin secretion causing uterine contractions and fastens labor process.[38] Fenugreek can be helpful in inducing childbirth. Fenugreek should not be used during the first trimester.

**Garlic**

Garlic (Allium sativum) has antibacterial and antifungal properties and it supports maternal immune system during pregnancy.[39] A randomized controlled study showed that taking garlic during pregnancy can help reducing the risk of pre-eclampsia during pregnancy.[39] The studies failed to demonstrate the increased risk of spontaneous abortions or major or minor malformations in fetuses.[40]

**Dates**

Dates are excellent source of carbohydrates, fiber, glucose, iron, potassium, copper, manganese, and magnesium. Dates have effects on oxytocin receptors and induce earlier uterine contractions and improve response to syntocino.[41] Data regarding the usage of dates basically belong to third trimester of gestations.[41] There is no data regarding the usage of dates during the first trimester in pregnancies. Pregnant women with the consumption of date fruit in the third trimester of pregnancy especially in the last 4 weeks before labor were found significantly less need for induction and augmentation of labor.[41]

**Almond Oil**

Almond oil contains high levels of oleic and linoleic acids and in some formulations, traces of arachidonic acid which may cause the production of prostaglandins known to induce uterine contractions are found.[42] Since almond oil is frequently used for preventing or reducing stretch marks, rubbing the skin with this product may increase its skin penetration and trigger the uterine contractions. Another study found that regular almond oil users were at a higher risk of preterm birth when compared with non-users in the study.[32] Recent study advocated that a 15-minute massage applied with almond oil during pregnancy reduced the development of striae gravidarum. Therefore, pregnant women should be informed about the positive effects of massaging applied with almond oil early during their pregnancy.[43]

**Licorice**

Licorice (Glycyrrhiza glabra) is used to treat liver illness, lung ailments, dyspepsia, bronchitis, rheumatoid arthritis etc. However, licorice can cause hypochalemia, fluid retention, and hypertension.[44] Maternal intake of licorice has been associated with adverse maternal and fetal outcomes.[45] In the study of Choi et al. they found that the rate of stillbirths among pregnant women who took licorice for the treatment of cough and cold was significantly higher compared to control group.[45] However, the authors failed to demonstrate that there was increase in major malformations in the licorice user group.[45]

Licorice also contains a natural constituent called glycyrrhiza. This substance has an ability to inhibit placental 11-beta-hydroxysteroid dehydrogenase type 2 which play an important role in regulation of feto-placental and maternal cortisol levels[46] that are essential for brain development of fetu.[47] Elevated levels of glucocorticoids are crucial, affecting neuronal division, maturation, migration, interactions, and apoptosis.[47] High doses of licorice consumption may promote the negative impact on the development of the limbic system causing the disruption in the maintenance of cognitive and behavioral functions especially in early life of the fetus.[48] Animal studies showed that licorice consumption inducing placental 11b-HSD2 deficiency had deleterious effect on cognitive functions in rodent.[49] Children of mothers who consumed licorice in their pregnancies are shown to exhibit a significantly poor performance in the vocabulary and the narrative memory tests and higher rates attention problems.[44] Furthermore, prenatal exposure to licorice containing a high level of glycyrrhiza was found to be associated with a shorter duration of gestation in pregnant women.[50] In summary, the consumption of licorice during pregnancy is contraindicated owing to its adverse effects on fetal cognitive development and its relation to still births and shortening of gestation.

## Ginseng

Ginseng is a herbal medicine that has been used to treat various ailments such as insomnia, fatigue, memory impairment, confusion, and decreased libido etc.[51] Fatigue is a common symptom of pregnancy with multifactorial reasons including stress, anxiety, and immunological changes in pregnancy. Taking ginseng by pregnant women with fatigue promoted significantly increased energy levels during pregnancy.[51] Although several studies reported that ginseng use during pregnancy did not exhibit any adverse effects on pregnancy outcome, animal model studies demonstrated that ginseng exerted direct teratogenic effects on rat embryos.[52-55] Moreover, a case report found a potential link between ginseng use during pregnancy and fetal androgenization.[56] Since the safety of ginseng use during pregnancy has not been well documented, it is considered potentially harmful during this time.

**In conclusion**, the studies with respect to the safety of herbal medicines used during pregnancy have not been convincing so far and there is still a lack of evidence-based data on this issue. Herbs may not be harmless as they seem to be, in daily practice.

## References

1. Coulter ID, Willis EM. The rise and rise of complementary and alternative medicine: a sociological perspective. Med J Aust 2004;180:587–9.
2. Gardiner P, Kemper KJ, Legedza A, Phillips RS. Factors associated with herb and dietary supplement use by young adults in the United States. BMC Complement Altern Med 2007;7:39.
3. Clement YN, Morton-Gittens J, Basdeo L, et al. Perceived efficacy of herbal remedies by users accessing primary healthcare in Trinidad. BMC Complement Altern Med 2007;7(7):14-22.
4. World Health Organization. Traditional medicine. Fact sheet Number 134. http://www.who.int/mediacentre/factsheets/fs134/en/. Accessed on February 4, 2013.
5. Eisenberg DA, Davis RB, Ettner SL, et al. Trends in alternative medicine use in the United States, 1990–1997: Results of a follow-up national survey. JAMA 1998;280:1569–75.

6. Bishop, J. L., Northstone, K., Green, J. R., Thompson, E. A. The use of complementary and alternative medicine in pregnancy: Data from the Avon Longitudinal Study of Parents and Children (ALSPAC). Complementary Therapies in Medicine 2011;19(6):303–10.
7. Holst L,Wright D, Haavik S, Nordeng H. Safety and efficacy of herbal remedies in obstetrics—review and clinical implications. Midwifery 2011;27:80–6.
8. Dugoua, J. Herbal medicines and pregnancy. Journal of Population Therapeutics and Clinical Pharmacology 2010;17(3):370–8.
9. John LJ, Shantakumari N. Herbal medicines use during pregnancy: a review from the Middle East. Oman medical journal. 2015;30(4):229.
10. Menniti-Ippolito F, Mazzanti G, Santuccio C, et al. Surveillance of suspected adverse reactions to natural health products in Italy. Pharmacoepidemiol Drug Saf 2008;17:626–35.
11. Allaire AD, Moos MK, Wells SR. Complementary and Alternative Medicine in Pregnancy: A Survey of North Carolina Certified Nurse-Midwives. Obstetrics & Gynecology 2000;95(1):19-23.
12. Forster D., Denning A.,Wills G. et al. Herbal medicine use during pregnancy in a group of Australian women. Bio Med Central: Pregnancy and Childbirth 2006;6:1–9.
13. Lapi F, Vannacci A, Moschini M, et al. Use, attitude and knowledge of complementary and alternative drugs among pregnant women: a preliminary survey in Tuscany. Evid Based Complement Alternat Med 2010;7(4):477-86.
14. Tsui B, Dennehy CE, Tsourounis C. A survey of dietary supplement use during pregnancy at an academic medical center. Am J Obstet Gynecol 2001;185:433–77.
15. Ebrahimi N, Maltepe C, Einarson A. Optimal management of nausea and vomiting of pregnancy. Int J Women's Health 2010;2:241–8.
16. White B: Ginger: an overview. Am Fam Physician 2007;75(11):1689–91.
17. In Natural Standard Research Collaboration, Ginger (Zingiber Officinale Roscoe); 2009. [http://www.nlm.nih.gov/medlineplus/druginfo/natural/ patient-ginger.html] Accessed on Jan 23, 2015.
18. Ernst E, Pittler MH: Efficacy of Ginger for nausea and vomiting: a systematic review of randomized clinical trials. Br J Anaesth 2000;84(3):367–71.
19. Chrubasik S, Pittler MH, Roufogalis BD, Zingiberis R: A comprehensive review on the ginger effect and efficacy profiles. Phytomedicine 2005;12:684–701.
20. Chittumma P, Kaewkiattikun K, Wiriyasiriwach B: Comparison of the effectiveness of ginger and vitamin B6 for treatment of nausea and vomiting in early pregnancy: a randomized double-blind controlled trial. J Med Assoc Thai 2007;90(1):15–20.
21. Ensiyeh J, Sakineh MA: Comparing ginger and vitamin B6 for the treatment of nausea and vomiting in pregnancy: a randomised controlled trial. Midwifery 2005;25(6):649–653.
22. Pongrojpaw D, Somprasit C, Chanthasenanont MD: A randomized comparison of ginger and dimenhydrinate in the treatment of nausea and vomiting in pregnancy. J Med Assoc Thai 2007;90(9):1703–9.
23. Fischer-Rasmussen W, Kjaer SK, Dahl C, Asping U. Ginger treatment of hyperemesis gravidarum. Eur J Obstet Gynecol Reprod Biol 1991;38:19–24.
24. Wilkinson JM. Effect of ginger tea on the foetal development of Spraque–Dawley rats. Reproduction and Toxicology 2000;14:507–12.
25. Gallo M, Koren G. Can herbal products be used safely during pregnancy? Focus on echinacea. Canadian Family Physician 2001;47(9):1727-8.
26. Gallo M, Sarkar M, Au W, Pietrzak K, et al. Pregnancy outcome following gestational exposure to echinacea: a prospective controlled study. Arch Intern Med 2000;160:3141-3.
27. Izzo AA. Interactions between herbs and conventional drugs: overview of the clinical data. Medical Principles and Practice 2012;21(5):404-28.
28. Cuzzolin L, Francini-Pesenti F, Verlato G, Joppi M, Baldelli P, Benoni G. Use of herbal products among 392 Italian pregnant women: focus on pregnancy outcome. Pharmacoepidemiol Drug Saf 2010;19(11):1151- 8.
29. Moussally K, Berard A. Exposure to herbal products during pregnancy and the risk of preterm birth. Eur J Obstet Gynecol Reprod Biol 2010;150:102–3, DOI: 10.1016/j.ejogrb.2010.02.001.

30. No Author listed. Herb-drug interactions: reported vs potential effects; in: Rotblatt M, Ziment I (eds), Evidence-Based Herbal Medicine. Philadelphia:Hanley & Belfus;2002:45–55.
31. Johns T, Sibeko L. Pregnancy outcomes in women using herbal therapies. Birth Defects Res 2003;68:501–4, DOI: 10.1002/ bdrb.10052.
32. Facchinetti F, Pedrielli G, Benoni G, et al. Herbal supplements in pregnancy: unexpected results from a multicentre study. Human reproduction. 2012;27(11):3161-7.
33. Conover EA. Herbal agents and over-the-counter medications in pregnancy. Best Pract Res Clin Endocrinol Metab 2003;17(2):237-51.
34. Chin RK. Peppermint and common pregnancy disorders. Asia Oceania J Obstet Gyanaecol 1991;17:379–80.
35. Hoffman D. The complete illustrated holistic herbal. Rockport, MA: Element Books Inc; 1996.
36. Fleming T. PDR for herbal medicines. 4th ed., USA: Thomson Health Care Inc; 2009.
37. Hashim M, Johina A, Deyaa K, Fareed M, Mohamed H, Faten A. Knowledge attitude and practice of complementary and alternative medicine(CAM) among pregnant women: a preliminary survey in Qatar. Middle East J Fam Med 2005;7(10):6–14.
38. Orief YI, Farghaly NF, Ibrahim MIA. Use of herbal medicines among pregnant women attending family health centers in Alexandria. Middle East Fertil Soc J, 2012. http://dx.doi.org/10.1016/j.mefs.2012.02.007. Accessed January 20th, 2016.
39. Charlson M, McFerren M. "Garlic: what we know and what we don't know". Arch Intern Med 2007;167(4):325–6.
40. Ziaei S, Hantoshzadeh S, Rezasoltani P, Lamyian M. The effect of garlic tablet on plasma lipids and platelet aggregation in nulliparous pregnant at high risk of preeclampsia. Eur J Obstet Gynec Reprod Biol 2001;99:201–6.
41. Al-Kuran, L. Al-Mehaisen, H. Bawadi, S. Beitawi, Z. Amarin The effect of late pregnancy consumption of date fruit on labour and delivery Journal of Obstetrics and Gynecology 2011;31:29–31.
42. Kodad O, Socias R. Variability of oil content and of major fatty acid composition in almond (Prunus amygdalus Batsch) and its relationship with kernel quality. J Agric Food Chem 2008;56:4096–101.
43. Timur Taşhan S, Kafkasli A. The effect of bitter almond oil and massaging on striae gravidarum in primiparaous women. Journal of clinical nursing 2012;21(11-12):1570-6.
44. Räikkönen, K., Pesonen, A.K., Heinonen, K., et al. Maternal licorice consumption and detrimental cognitive and psychiatric outcomes in children. Am J Epidemiol 2009;170:1137-46.
45. Choi JS, Han JY, Ahn HK, et al.. Fetal and neonatal outcomes in women reporting ingestion of licorice (Glycyrrhiza uralensis) during pregnancy. Planta Med 2013;79:97–101.
46. Benediktsson R, Calder AA, Edwards CR, et al. Placental 11 beta-hydroxysteroid dehydrogenase: a key regulator of fetal glucocorticoid exposure. Clin Endocrinol (Oxf) 1997;46(2):161–6.
47. Seckl JR, Meaney MJ. Glucocorticoid programming. Ann N Y Acad Sci 2004;1032:63–84.
48. Lupien SJ, McEwen BS. The acute effects of corticosteroids on cognition: integration of animal and human model studies. Brain Res Brain Res Rev 1997;24(1):1–27.
49. Holmes MC, Seckl JR. The role of 11beta-hydroxysteroid dehydrogenases in the brain. Mol Cell Endocrinol 2006;248(1–2):9–14.
50. Strandberg TE, Järvenpää AL, Vanhanen H, McKeigue PM.. Birth outcome in relation to licorice consumption during pregnancy. Am J Epidemiol 2001;153(11):1085–8.
51. Nordeng, H., & Havnen, G. C. Use of herbal drugs in pregnancy: a survey among 400 Norwegian women. Pharmacoepidemiology and Drug Safety 2004;13(6):371–80.
52. Seely D, Dugoua J.-J, Perri D, Mills E, Koren G. Safety and efficacy of Panax ginseng during pregnancy and lactation. Can J Clin Pharmacol 2008;15(1):87–94.
53. Shin S, Jang J.Y, Park D. et al. Korean red ginseng extract does not cause embryo-fetal death or abnormalities in mice. Birth Defects Res (Part B) 2010;89:78–85.
54. Chan LY, Chiu PY, Lau TK. An in-vitro study of ginsenoside Rb1-induced teratogenicity using a whole rat embryo culture model. Hum Reprod 2003;18(10):2166-8.
55. Chan LY, Chiu PY, Lau TK. Embryotoxicity study of ginsenoside Rc and Re in in vitro rat whole embryo culture. Reprod Toxicol 2004;19(1):131-4.
56. Awang DV. Maternal use of ginseng and neonatal androgenization. JAMA 1991;266(3):363.