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# Herbal Medicine Use during Pregnancy: Benefits and Untoward Effects

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## Abstract

The use of herbal medicine has been on an increase over time. The most commonly used herbs are ginger, cranberry, valerian, raspberry leaf, chamomile, peppermint, thyme, fenugreek, green tea, sage, anise, garlic and bitter kola. The use of herbal medicine during pregnancy is associated with educational status of women, income level of household and age of women. Herbal medicines were used during pregnancy to treat nausea and vomiting, reduce the risk of preeclampsia, shorten labour and treat common cold and urinary tract infection. Using herbal medicine occasionally causes trouble. Heartburn, pre-mature labour, miscarriage, increase in blood flow, abortion and allergic reactions are the common troubles of herbal medicine use during pregnancy. Using herbal medicine during the first trimester and the third trimester is unsafe for the foetus. Pregnant women should talk to health professionals before consuming any herbal medicines. The unfortunate consequences of using herbal medicine during pregnancy need further study for various herbs. Therefore, clinical trial research should be done to identify unfortunate consequences of herbal medicine use during pregnancy.

**Keywords:** benefits, herbal medicine, pregnancy, safety, untoward effect

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## 1. Introduction

Herbal medicine has been used for disease prevention and treating ailments worldwide. It is known that between 65 and 85% of the world population used herbal medicine as their primary form of health care [1]. The prevalence of herbal medicine use during pregnancy ranges from 12 to 82.3% [2, 3]. Ginger, garlic, raspberry, cranberry, valerian, chamomile, peppermint and fenugreek are frequently used herbal medicines during pregnancy [2, 4–11]. Using herbal medicine during pregnancy has controversial issues. Even though, herbal medicine is easily available as

compared to other medicines, the safety issue during pregnancy is a concern. Using herbal medicine in first 3 months and late in third trimester is dangerous for the foetus. Before using any herbal medicine, it is better to consult the doctor and the pharmacist to ensure that the herbs are appropriate and safe to use during pregnancy [12]. In pregnancy, mothers are concerned about all medications that may affect their health, the health of the foetus, and the pregnancy outcomes. Availing evidence-based information about benefits and untoward effects of herbal medicine use during pregnancy is important for safer pregnancy and healthy foetus. The aim of this chapter is to provide the best available information on benefits and untoward effects of herbal medicine use during pregnancy. This chapter identified the prevalence of herbal medicine use during pregnancy across regions and countries. The chapter also identified the commonly used herbs and described the character of women who used herbs during pregnancy. The benefits and untoward effects of commonly used herbal medicine during pregnancy are reviewed based on scientific findings.

## 2. Herbal medicine use during pregnancy: benefits and untoward effects

Herbal medicine use during pregnancy is common across regions and countries. The prevalence of herbal medicine use during pregnancy is varied across regions and countries. Multi-national study conducted in different countries showed that 28.9% of pregnant women used herbal medicine during pregnancy [2, 4]. A literature review from the Middle East revealed that up to 82.2% of the women used herbal medicine at some point during pregnancy. The study also identified that many women used herbal medicine during the first trimester [5]. An observational cohort study done in South West England found that 26.7% of the women used a complementary or alternative medicine at least once during pregnancy. The use of herbs rose from 6% in the first trimester to 12.4% in the second trimester and to 26.3% in third trimester [13]. In Australia, 36% of the women took at least one herbal medicine during pregnancy [14]. Studies done in Africa showed the prevalence of herbal medicine use during pregnancy was between 12 and 73.1% [3, 6–9, 15–19].

The most commonly consumed herbal medicines during pregnancy include; ginger [2, 4–11], cranberry [2, 4, 10–11], valerian [2, 4, 10], raspberry leaf [2, 4, 10–11, 13], chamomile [13–14], peppermint [5, 13], rosehip [13], thyme [5], fenugreek [5, 9], green tea, sage, and aniseed [5]. Eucalyptus, tenaadam (*Ruta chalepensis*), damakess (*Ocimum lamiifolium*), feto, omore are also other herbal medicines used during pregnancy [6–8]. Garlic [6–8, 15–18], palm kernel oil, bitter kola and dogonyaro (*Azadirachta indica*) are other herbs that are used during pregnancy [15–18].

Being students, having no education, having low income and having tertiary education level make women more likely to use herbal medicine during pregnancy [2, 4, 6–8, 15–18]. The other factors that make women more likely to consume herbal medicines are being primiparas [2, 4, 9], non-smoking [2, 9] and old age women [13–14].

Based on the available researches and literature reviews, the most commonly used herbal medicines during pregnancy are identified. The benefits and untoward effects of the herbs are also reviewed.

## 2.1. Ginger (*Zingiber officinale*)

Common names of ginger is African ginger, black ginger, Cochin ginger, gingembre, ginger root, imber, and Jamaica ginger [20].

### 2.1.1. Benefits of ginger

Ginger is used as anti-nauseant and anti-emetic for nausea and for hyperemesis gravidarum. The recommended daily dose of ginger is up to 1g dried powder [21]. A single blind clinical trial showed ginger as an effective herbal medicine for decreasing nausea and vomiting during pregnancy. This study also suggested a daily total of 100 mg ginger in a capsule [22].

A randomized controlled clinical trial conducted on 120 women over 20 weeks of gestation with symptoms of morning sickness showed consumption of 1500 mg of dried ginger for 4 days improves nausea and vomiting. The study also revealed that newborns whose mothers consumed ginger during pregnancy had normal birth weights and normal APGAR score [23]. Consumption of ginger in amounts used in food preparation is likely to be safe. Taking 1–2 g dried ginger over the course of a day has been shown to relieve symptoms of minor disorder of pregnancy [24–26]. Using higher doses of ginger is not safe for pregnant women. Thus, pregnant women should not use higher dose of ginger.

### 2.1.2. Untoward effects of ginger

A literature review reported that ginger is not a safe herb. It is a potential abortifacient with high doses (>1000 mg daily consumption). Higher doses of ginger can cause thinning of blood, stomach discomfort and heartburn [24–27].

## 2.2. Garlic (*Allium sativa*)

Garlic is a perennial herb cultivated in different countries. It is commonly used as a food ingredient and as a spice in different countries [28].

### 2.2.1. Benefits of garlic

Study conducted on antimicrobial and antifungal activity of garlic showed antibacterial and antifungal features of garlic make it nutritious to consume during pregnancy [29]. Garlic enhances a woman's immune system; this in turn helps women to have healthy pregnancy and healthy babies. Eating garlic during pregnancy is important to reduce the risk of preeclampsia and protein retention in urine [30]. A randomized controlled study was conducted where 100 primigravida were treated with either garlic tablets (800 mg/day) or placebo during the third trimester of pregnancy to determine the effect of garlic tablets supplementation on preeclampsia. With the exception of a garlic odour, the few side effects like nausea were reported because of garlic consumption during the third trimester of pregnancy. Pregnancy outcomes were comparable in both treated with garlic and the placebo group. The study did not report any incidence of major or minor malformations in newborn infants and there were no spontaneous abortions of the foetuses [31].

### 2.2.2. *Untoward effects of garlic*

Excessive use of garlic should be avoided in early pregnancy. Pregnant women with thyroid disorders should avoid its use. Pregnant women should also avoid using garlic prior to surgery including caesarean as it may interfere with blood clotting. Another untoward effect of using garlic during pregnancy is that it may aggravate heartburn [32].

## 2.3. Cranberry (*Vaccinium macrocarpon*)

There are different types of cranberries: American cranberry, Arandano Americano, Arandano Trepador, Cranberries, European cranberry, Grosse Moosbeere, kranbeere, large cranberry, Moosebeere, Mossberry [20].

### 2.3.1. *Benefits of cranberry*

Using cranberry during pregnancy is important to prevent urinary tract infection [33], stomach ulcer [34–35], periodontal diseases [36–38] and influenza [39]. A survey conducted on 400 Norwegian postpartum women reported that cranberry was one of the most commonly used herbs during pregnancy, mostly for urinary tract infection [40].

### 2.3.2. *Untoward effects of cranberry*

The untoward effects of cranberry use during pregnancy needs further investigations.

## 2.4. Valerian (*Valeriana officinalis*)

Valerian is native to Europe and Asia and has naturalized in Eastern North America. It has been extensively cultivated in Northern Europe [41].

### 2.4.1. *Benefits of valerian*

Valerian is used as a mild sedative to help patients fall asleep and relieve stress and anxiety. There is a lack of safety information on consumption of valerian during pregnancy. It is highly recommended that pregnant women talk to the doctor before taking valerian during pregnancy [24, 26, 42]. Study conducted on effect of valerian consumption during pregnancy on cortical volume and the levels of zinc and copper in brain tissue of mouse foetus showed valerian consumption in pregnancy had no significant effect on brain weight and cerebral cortex volume and copper level in foetal brain [43].

### 2.4.2. *Untoward effects of valerian*

Studies conducted on mouse foetus presented that consumption of valerian during pregnancy had significant decrease in the level of zinc in the brain [43]. This finding suggests that valerian use during pregnancy should be limited.

## 2.5. Bitter kola

Bitter kola is a plant that comes from Africa. Africans have been using bitter kola for pregnant women since ages. Nowadays, bitter kola popularity has spread worldwide [44].

### 2.5.1. Benefits of bitter kola

Drinking bitter kola is good for pregnancy. Bitter kola contains nutrients and vitamins good for pregnancy. For Africans, bitter kola is the best supplement for pregnant women. Health benefits of bitter kola include treating nausea and vomiting, making uterus healthier, strengthening pregnant women and normalizing blood circulation in pregnant women. Bitter kola contains very strong caffeine. One bean of bitter kola contains the same amount of caffeine as two glasses of coffee. Thus, pregnant women have to drink the recommended dose (one small cup of bitter kola in a day) [44].

### 2.5.2. Untoward effects of bitter kola

Using very high doses of bitter kola is not recommended. A very high dose of bitter kola is not good for the uterus of the woman [45].

## 2.6. Fenugreek (*Trigonella foenum-graecum*)

Fenugreek is an annual leguminous herb that belongs to the family fabaceae, which is found as a wild plant and cultivated in Northern India. It is a galactagogue [46].

### 2.6.1. Benefits of fenugreek

Consumption of fenugreek during pregnancy increases milk production in pregnant women. The exact mechanism of fenugreek consumption and increasing milk production is not well understood. However, it is believed that seeds of fenugreek contain the precursor of a hormone that increases milk production [45, 46].

### 2.6.2. Untoward effect of fenugreek

Large amounts of fenugreek may cause uterine contractions, miscarriage or premature labour. It could affect blood sugar levels, so pregnant women with insulin-dependent diabetes mellitus should avoid it. It can also cause heartburn [47].

## 2.7. Red raspberry leaf (*Rubus idaeus*)

Red raspberry leaf is known as garden raspberry leaf. The deciduous raspberry plant produces it [48].

### 2.7.1. Benefits of red raspberry

Red raspberry leaf has mineral rich nutritive and uterine tonic to promote an expedient labour with minimal bleeding. It can also be used as an astringent to diarrhoea. In a study

based on two clinical trials, there was positive association with red raspberry use and astringency in the case of diarrhoea. Daily recommended dose is 1.5–5 g [23–24]. Traditionally, red raspberry leaf has been used in late pregnancy to shorten the duration of labour and to reduce complications of pregnancy. Pregnant women should consult a doctor or a pharmacist for advice before using red raspberry leaf in pregnancy in a tea or infusion [49]. Red raspberry fruit is not believed to pose risk to the mother or to the baby during pregnancy. Some women take it as a labour aid during the last 2 months before delivery, whereas others take it throughout the pregnancy. In a randomized clinical trial, 192 women at 32 weeks of gestation received 1.2 g of raspberry leaf tablets twice daily. The study reported no adverse effects to mothers or infants. The active treatment with raspberry leaf shortened the second stage of labour and lowered the rate of forceps delivery. A retrospective observational study conducted on 108 pregnant women showed that 57 women who ingested raspberry leaves were less likely to have an artificial rupture of membranes or to require caesarean section, forceps or vacuum birth than 51 controls [50–51]. Women have used red raspberry leaves for painful periods in pregnancy, morning sickness, to prevent miscarriage, easing labour and delivery and enriching breast milk [52].

#### 2.7.2. *Untoward effects of red raspberry*

The untoward effect of red raspberry needs further investigations.

### 2.8. Chamomile (*Matricaria recutita*)

There are two types of chamomile: German and Roman. The common German variety comes from the flower *Matricaria recutita*, and the less common Roman variety comes from the flower *Chamaemelum nobile*. German chamomile is used in teas and other supplements such as capsule and oils [53].

#### 2.8.1. *Benefits of chamomile*

Chamomile is used as a mild sedative and to aid digestion [32]. It has been used for the treatment of morning sickness [54]. German chamomile is the type used most often as a medicinal herb, extracts of which have been reported to increase the tone of uterus muscle [53]. Chamomile does not contain caffeine, which makes it safer for pregnant women, but there is some controversy over the safety of certain herbs not fully described by the Food and Drug Administration. There is insufficient information to say for sure whether chamomile can cause harm during pregnancy. As with many other herbs, the full effect of chamomile, especially in association with other medicines and herbs, has not been studied conclusively [55].

#### 2.8.2. *Untoward effect of chamomile*

Chamomile may cause increased blood flow, contractions, miscarriage or premature labour. It can also cause allergic reactions [47].

## 2.9. Clary sage (*Salvia officinale*)

Clary sage is a plant native to Italy, Syria and Southern France and grows in dry soil. The essential oil is distilled from the flowers and flowering tips [56].

### 2.9.1. Benefits of clary sage

It is recommended that clary sage only be used from 37 weeks onwards. It may be used to induce labour if the body is ready to go into labour. It may stimulate the release of oxytocin in pregnant women [56]. Using clary sage is highly recommended during labour to help contractions to intensify and become more effective in pulling up the horizontal uterine muscles to open the cervix and move the baby down into the pelvis and into the birth canal. The simplest and most common way to use clary sage during labour is to put a few drops on to dry cloth; the mother will inhale the aroma when she needs it to help herself become more calm and relaxed during contractions [56–57].

### 2.9.2. Untoward effects of clary sage

Large doses best avoided for concern of potential miscarriage and abortifacient effect [47].

## 2.10. Anise (*Pimpinella anisum*)

Anise is known as aniseed. There are two types of anise: anise (*Pimpinella anisum*) and star anise (*Illicium verum*) Chinese star anise [58].

### 2.10.1. Benefits of anise

Orally, anise is used for dyspepsia, flatulence, rhinorrhoea (runny nose) and as an expectorant, diuretic, and appetite stimulant. Anise is also used to increase lactation and facilitate birth. Topically, anise is used for lice, scabies and psoriasis treatment. Using anise during pregnancy is likely safe when used orally in amounts commonly found in food. There is insufficient reliable information available about safety of anise when taken orally in medicinal amounts during pregnancy [59]. Anise used in small amounts in herbal tea is safer in pregnancy because exposure is relatively low [58].

### 2.10.2. Untoward effects of anise

When used topically, anise in combination with other herbs can cause localized pruritis. In allergic patients, inhaled or ingested anise can cause rhino conjunctivitis, occupational asthma and anaphylaxis [59]. Essential oil and concentrated anise should be avoided in pregnancy for the concern that they might trigger early labour [58].

## 2.11. Green tea (*Camellia sinensis*)

Green tea is mostly consumed in Middle East.



### 2.11.1. Benefits of green tea

Green tea is important to regulate blood sugar, cholesterol and blood pressure levels. It also speeds up the body's metabolic rate and provides a natural source of energy. It can help stabilize a pregnant mother's mood [60]. However, drinking too high a dose of green tea is not recommended. The recommended dose of caffeine per day is 300 mg [61].

### 2.11.2. Untoward effect of green tea

Pregnant women who consumed green tea are at risk of spontaneous abortion as shown by the following two studies. A case control study conducted on 3149 pregnant women showed that serum paraxanthine (caffeine metabolite) was higher in women who had spontaneous abortions than in controls [62]. Another case control study conducted on 1498 pregnant women also showed that consumption of 375 mg or more caffeine per day during pregnancy might increase the risk of spontaneous abortion [63]. Pregnant women who consumed high caffeine during pregnancy have a chance to deliver low birth weight infants. This is supported by the following studies. A prospective study conducted on 2291 pregnant women reported that women who consumed more than 600 mg of caffeine per day are at greater risk for having low birth weight infants [64]. A prospective study conducted on 63 women also reported that pregnant women who consumed more than 300 mg/day of caffeine had low birth weight newborns [65]. Studies showed consumption of high doses of caffeine had increased risk of stillbirth. A prospective follow-up conducted on 18,478 singleton pregnancies showed that the consumption of eight or more cups of coffee in a day doubled the risk of having stillbirth compared with women who did not consume coffee [66].

Even though the above studies are conducted on coffee consumption, consumption of high doses of green tea can have adverse effects on mothers and their infants. Caffeine found in coffee and green tea is not very different. Consumption of too much caffeine (more than 300 mg per day or more than eight cups per day) can cause miscarriage as seen by the above research findings. Consumption of too much caffeine can also cause trouble of sleeping.

## 2.12. Thyme (*Thymus vulgaris*)

It is known as common thyme, French thyme, garden thyme, oil thyme, red thyme oil, rubbed thyme, Spanish thyme, thyme aetheroleum, thyme essential oil, thyme oil, thyme herbal, van ajwain, vanya yavani, white thyme oil [67].

### 2.12.1. Benefits of thyme

A literature review conducted on herbal medicine use during pregnancy showed thyme is used to manage bloating and stomach aches. It is also used for treatment of common cold and urinary tract infection [2]. When used in amounts commonly found in food, thyme has a generally recognized safe status in the US. There is insufficient reliable information available about the safety of thyme when used in medicinal amounts during pregnancy [67]. Therefore, pregnant women should avoid using thyme in medicinal amount.

### 2.12.2. *Untoward effects of thyme*

Consumption of a large dose of thyme has an emmenagogue effect. Therefore, it is better to avoid it, especially in early pregnancy, because of concern of potential miscarriage [47].

## 2.13. Coconut

Countries within the Southeast Asian region are rich in coconut oil and other coconut by-products [67–69].

### 2.13.1. *Benefits of coconut*

Studies reported that coconut oil has been used to facilitate labour, delivery and prevent congenital malformation [70–72]. Coconut oil during pregnancy can be used as part of a healthy nutrient-dense whole food diet. Coconut oil supplies rich amounts of saturated fat with high amounts of lauric acid. The saturated fat content helps to build up adequate fat stores in pregnancy and in preparation for breast-feeding [73].

### 2.13.2. *Untoward effects of coconut*

The study conducted to investigate the effect of virgin coconut oil on mice showed that virgin coconut oil could affect infant growth and appearance via maternal intake. The study also suggests the use of virgin coconut oil as herbal medicine to be treated with caution [74].

## 2.14. Echinacea (*Echinacea spp*)

Echinacea species came from North America and were traditionally used by the Indians for a variety of diseases, including mouth sores, colds, injuries, tooth pain and insect bites [75].

### 2.14.1. *Benefits of Echinacea*

One clinical trial study shows positive association of echinacea consumption in reducing duration and recurrence of cold and urinary tract infection [76]. The recommended dose is 5–20 ml tincture.

### 2.14.2. *Untoward effects of Echinacea*

The untoward effect of using echinacea during pregnancy needs further study.

## 2.15. Peppermint (*Mentha piperita*)

Peppermint is one of the world's oldest medicinal herbs and is used in both Eastern and Western traditions. Ancient Greek, Roman and Egyptian cultures used the herbs in cooking and medicine. Peppermint is currently one of the most economically important aromatic and medicinal crops produced in the US [77].

### 2.15.1. Benefits of peppermint

Several clinical trials have shown that peppermint essential oil, a super concentrated form of herbs, can help relieve irritable bowel syndrome [78]. Natural medicine's comprehensive database showed there are no reports in the scientific literature of peppermint being either safe or contra-indicated during pregnancy. Peppermint leaves and oil are believed to be safe during pregnancy when consumed in food amounts [79]. Study conducted on use of antiemetic herbs in pregnancy indicated that peppermint is used for treatment of pregnancy-induced nausea [80].

### 2.15.2. Untoward effects of peppermint

The untoward effect of peppermint consumption during pregnancy needs further investigation.

## 3. Conclusion

The use of herbal medicine during pregnancy is a common phenomenon. Different studies have shown that many women used one or more herbal medicines during pregnancy. Some women used herbal medicine in first trimester while others used it in second or third trimester or throughout pregnancy.

The common benefits of using herbal medicine during pregnancy include managing vomiting and nausea, reducing the risk of preeclampsia, managing urinary tract infection and common cold, and shortening of duration of labour.

The common untoward effects of using herbal medicine in pregnancy are heartburn, premature labour, miscarriage, increase blood flow, abortion and allergic reactions.

Different studies revealed that using herbal medicine during the first 12 weeks and the last 12 weeks of gestation is dangerous for the foetus. Pregnant women should consult doctors or pharmacists before using any herbal medicines.

The untoward effects of using herbal medicine during pregnancy need further investigation for many herbs. Thus, researches, especially a clinical trial study should be conducted to identify untoward effect of herbal medicine use during pregnancy.

## Terminologies

Antiemetic	a drug that prevents or alleviates nausea and vomiting.
Astringent	a substance that contracts the tissues or canals of the body, thereby diminishing discharges, as of mucus or blood.
Emmenagogue	increases blood flow.
Abortifacient	cause a miscarriage "from Latin: abortus "miscarriage" and faciens 'making' is a substance that induce abortion.

Miscarriage	a term used for a pregnancy that ends on its own, within the first 20 weeks of gestation.
APGAR	referred to as an acronym for: appearance, pulse, grimace, activity and respiration.
Pruritis	itchy skin that makes one scratch.
Anaphylaxis	serious life threatening allergic reaction.
Galactagogue	milk-producing agent.
Tinctures	liquid extracts made from herbs that are taken orally (by mouth).

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