Complementary, Holistic, and Integrative Medicine: Advice for Clinicians on Herbs and Breastfeeding

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Practice Gap

Pediatricians need to be aware that mothers commonly use herbal supplements while breastfeeding, despite the lack of regulatory guidelines and rigorous scientific evaluation. Several resources on the safety and efficacy of herbs during breastfeeding can help guide clinical recommendations.

Definition and Description

In the United States, herbal products are classified as dietary supplements, a regulatory category created with the introduction of the Dietary Supplements Health and Education Act (DSHEA). (1) Under this act, dietary supplements are defined as herbs or other botanicals, vitamins, minerals, enzymes, and certain other natural substances. Under DSHEA, herbal medicines are held to different regulatory standards than prescription medications in testing and marketing. Products sold as a dietary supplement, including herbal products, are not permitted to claim that they can treat, prevent, or cure any disease or condition. Currently in the United States, no existing regulatory guidelines set a standardized risk assessment to determine the safety and efficacy of herbs during breastfeeding. Despite the lack of rigorous scientific evaluation, many women use herbs during breastfeeding.

Breastfeeding

The benefits of breastfeeding are well known and include providing a special opportunity for maternal-infant bonding, provision of optimal nutrition, and transfer of immunologic properties. (2) Among the numerous health and medical organizations that endorse breastfeeding, the World Health Organization reports that breastfeeding provides optimal nutrition for the first 6 months of life. (3) The American Academy of Pediatrics states that health care professionals should encourage and recommend human milk for all full-term infants in whom breastfeeding is not specifically contraindicated and provide parents with complete, current information on the benefits and techniques of breastfeeding to ensure that their feeding decision is a fully informed one. (4) This policy is also supported by the American Academy of Family Physicians, (5) the American College of Obstetricians and Gynecologists, (6) and the Academy of Breastfeeding Medicine. (7)

Herbs, Herbal Medicine, and Lactation

In many cultures, the knowledge of using herbal remedies for breastfeeding and postpartum support has been passed down from generation to generation. Typical uses include increase of the milk supply, relief of engorgement, treatment of mastitis, or other therapeutic indications unrelated to lactation. Plants contain numerous physiologically active constituents in relatively small amounts, and it is likely that a number of chemical constituents enter human milk according to the same chemical principles that govern medications or compounds in food. (8) Current research and indications for use for some commonly used herbs during breastfeeding are described below.

Galactagogues

Poor breast milk production is the most frequent cause of breastfeeding failure, and breastfeeding mothers often seek advice from their clinician about what they can do to increase

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production. (9) Galactagogues are herbs or medications that increase breast milk production (Table 1). The use of herbal galactagogues dates back several thousands of years, with Hippocrates suggesting that “If the milk should dry up ... give her to drink the fruit and roots of fennel.” (13) Galactagogues include common culinary herbs, such as fennel seed (*Foeniculum vulgare*), anise seed (*Pimpinella anisum*), caraway seed (*Carum carvi*), dill seed (*Anethum graveolens*), fenugreek (*Trigonella foenum-graecum*), and alfalfa herb (*Medicago sativa*). Other galactagogues include goat’s rue herb (*Galega officinalis*), torbangun (*Coleus amboinicus*), blessed thistle herb (*Cnicus benedictus*), and milk thistle seed (*Silybum marianum*). (11) Despite the long history of use of herbal galactagogues, scientific research is limited, and little is known about the mechanism of action or relative efficacy.

Fenugreek

Fenugreek (*Trigonella foenum-graecum*), a popular cooking spice in India and the Middle East, is traditionally used as a galactagogue to aid digestion. (14) Fenugreek is included in the Food and Drug Administration’s list of herbs generally regarded as safe. (15) Despite its wide popularity, there is little research on fenugreek and breastfeeding women.

In one small, poorly designed, observational study, 10 exclusively breast-pumping women took 3 capsules of fenugreek seed, 3 times daily, and documented their milk production. There was an increase in the mean daily pump volume from 207 mL/d during week 1 to 464 mL/d during week 2 ($P=.004$). Unfortunately, this abstract does not provide the dose of fenugreek, but given the amount in most capsules (400-500 mg), this was likely in the range of 4 to 6 g/d. (16)

In terms of adverse effects, diarrhea and abdominal discomfort have been reported. Fenugreek can impart a maplelike odor to sweat, milk, and urine. There is a case report of a breastfed infant falsely diagnosed as having maple syrup disease whose mother was taking fenugreek. One case report described a brief loss of consciousness in a 5-week-old infant who had been given a bottle of fenugreek tea. On evaluation the infant was alert and in good

condition, and the physical examination findings were unremarkable except for unusual body odor similar to maple syrup. (17) A small number of studies in animals and humans suggest modest hypoglycemic activity, which is thought to be due to the high fiber content of the seeds. (18) Although fenugreek appears to have a good safety profile, particularly at doses typically used (3-6 g of powdered seed), its effectiveness as a galactagogue, optimal dose, and adverse effect profile in infants have not been established in clinical trials. Clinicians should be aware that a few case reports of fenugreek allergy suggest cross-reactivity with peanut allergens. (19)

Multiple Ingredient Products

Although many products on the market contain multiple ingredients, very few studies have examined these products and breastfeeding. In a recent double-blind, placebo-controlled study by Turkyilmaz et al, (20) breastfeeding mothers drank either an herbal tea containing hibiscus, fennel, rooibos, vervain, raspberry, fenugreek, goat’s rue, vitamin C, and fennel oil or placebo. The study consisted of 66 healthy mother-infant pairs randomized into 3 groups. One group received 3×200 mL of the herbal tea every day ($n=22$), and the other group was either assigned to placebo tea or control. The results indicated that mothers who drank the herbal tea increased their breast milk volume and their infants regained their birth weight more rapidly ($P<.05$).

Studies on Nongalactagogue Herbs Used During Breastfeeding

Women use herbs not only to increase milk supply but also to treat conditions encountered during the postpartum period. A few clinical studies have assessed these herbs

Table 1. Herbs Used as Galactagogues (10)(11)(12)

Herb	Genus and species
Fenugreek seed	<i>Trigonella foenum-graecum</i>
Fennel seed	<i>Foeniculum vulgare</i>
Anise seed	<i>Pimpinella anisum</i>
Goat’s rue herb	<i>Galega officinalis</i>
Nettle leaf	<i>Urtica dioica</i>
Alfalfa herb	<i>Medicago sativa</i>
Marshmallow root	<i>Althaea officinalis</i>
Caraway seed	<i>Carum carvi</i>
Blessed thistle seed	<i>Cnicus benedictus</i>
Torbangun herb	<i>Coleus amboinicus</i>

Abbreviations

DSHEA: Dietary Supplements Health and Education Act
GMP: good manufacturing process
GRAS: generally regarded as safe
SJW: St John’s wort

in breastfeeding women: senna (*Senna* spp, *Cassia* spp), often indicated for constipation; (2) St John's wort (SJW) (*Hypericum perforatum*), often used for postpartum depression; (3) and garlic, often used for upper respiratory tract infection (*Allium sativum*) (2) (Table 2).

Garlic is a popular culinary and medicinal herb, often used to lower blood pressure, to relieve the symptoms of colds and flu, and as a gut antimicrobial. Mennella and Beauchamp (23)(24) studied infant behavior after maternal ingestion of garlic. In these studies, no difference in the amount of milk ingested between groups of infants was found. However, infants were attached longer to the breast in mothers who consumed garlic. One study followed up 3 groups of 30 infant-mothers pairs for 11 days. This study showed no difference in the number of reported infants with colic for mothers who ingested garlic compared with those who ingested placebo while breastfeeding.

Clinical and historical evidence are available for using senna leaf and pod (*Senna* spp) to treat constipation in adults and children. The primary constituents are the anthraquinone glycosides, which inhibit the reabsorption of water and electrolytes from the bowel and add bulk to the stool, increase propulsive contractions, and stimulate intestinal motility. Senna has been studied in breastfeeding mothers and infants in 2 studies. One open-label study performed 24-hour monitoring after repeated doses of senna pods for investigation of the laxative metabolite rhein in breast milk. Trace amounts (0.007%) of rhein, an anthraquinone by-product, were detected in some of the breast milk samples. Postdoses varied between 0 and 27 ng/mL, with values below 10 ng/mL in 94% of milk samples. (25) A randomized controlled trial measured the efficacy of Senokot in 471 breastfeeding women with constipation and its effect on breastfed infants. Successful treatment of constipation in the immediate postpartum period averaged above 90%. (26) Both studies found no serious adverse events, none of the breastfed infant had any changes in stool consistency, but mild abdominal cramps in mothers were reported. The American Academy of Pediatrics lists senna as a product usually compatible with breastfeeding. (31)

Most commonly used in treating mild forms of depression, SJW has been studied in breastfeeding women. In one prospective, observational, cohort study, 33 breastfeeding women receiving SJW were compared with 101 disease-matched and 33 age- and parity-matched nondisease controls. Of the infants whose mothers were using SJW, there were 2 cases of "colic," 2 of "drowsiness," and 1 of "lethargy" compared with only 1 infant in each of the control groups. No significant difference was found in the frequency of maternal report of

decreased milk production among the groups, and no difference was found in infant weight during the first year of life. (28) There is also a case report of a breastfeeding mother with postnatal depression taking SJW preparation 3 times a day (Jarsin 300, Lichtwer Pharma AG, Berlin, Germany) that analyzed 4 breast-milk samples (foremilk and hindmilk) during an 18-hour period for the presence of hypericin and hyperforin, 2 marker compounds present in SJW. Only hyperforin was excreted into breast milk at a low level. Hyperforin and hypericin were below the lower limit of quantification in the infant's plasma. No adverse effects were seen in the mother or infant. (27)

Herbal Safety

Because of the highly limited number of studies on herb use during lactation, numerous lactation resources have mixed reports and safety recommendations, making it confusing for both mother and clinician (Table 3). Human studies are limited because of the ethics of conducting research in mothers and newborn infants, cost, and the complexity of assessing chemical composition of breast milk before and after herb ingestion. No uniform standard exists among the breastfeeding references, and authors interpret available *in vitro*, *in vivo*, and clinical data within their own classification system. Often these resources do not take into account different herb species, dose, or type of preparation.

In consulting with breastfeeding mothers on the use of herbs in lactation, the quality of the product being used is important to keep in mind. Some researchers have reported finding heavy metals and pesticides in herbal supplements on the US market. (37) A study found lead levels higher in breast milk of women taking Chinese herbal medicines than controls. (30) Product contamination may be decreasing with the introduction of the new Food and Drug Administration-mandated good manufacturing practices (GMPs) for dietary supplements in 2008. The GMP requires all manufacturers to produce products that provide consistency in identity, purity, strength, and composition, helping to ensure that all legal products are free from contamination. (38) However, clinicians should remain alert to the possibility of heavy metal exposures, such as lead, mercury, cadmium, and arsenic, in breastfeeding mothers who are using herbal remedies, particularly remedies that come from China and the Indian subcontinent.

Some lay herb texts and online resources recommend the use of comfrey leaf (*Symphytum officinalis*) and borage leaf (*Borago officinalis*) as galactagogues. Clinicians should discourage the ingestion of these herbs by breastfeeding mothers because they contain

Table 2. Human Observational Trials of the Use of Herbs During Lactation

Studies and Herb Characteristics	Type of Study	Aim of Study	Outcome of Study
Study by Westfall, 2003 (21) N: blessed thistle, fennel, fenugreek, raspberry leaf, stinging nettle L: <i>Cnicus benedictus</i> , <i>Foeniculum vulgare</i> , <i>Trigonella foenum-graecum</i> , <i>Rubus idaeus</i> , <i>Urtica dioica</i> D: unknown T: tea from seeds, capsule, oil	N = 23, NRCT, qualitative	To discuss the potential value of herbs in breastfeeding women and provide direction for future research	14 of the 23 women used some form of galactagogue and 11 of these women used herb: blessed thistle, 2 users; fennel, 4 users; fenugreek, 4 users; raspberry leaf, 2 users; and stinging nettle, 2 users. Women received herbal advice from midwives, friends, a doula, or a family member.
Study by Damanik et al, 2006 (22) N: torbangun vs reference group and fengugreek group L: <i>Coleus amboinicus</i> , <i>Trigonella foenum-graecum</i> Lour D: 150-g leaves vs 600-mg capsule T: leaves vs seeds	N = 75, RCT	To report the effects of consumption of torbangun leaves for 1 month after birth on the quantity and quality of breast milk	Milk intake significantly increased from 361 to 479 mL, an mean 65% increase ($P < .05$).
Study by Mennella and Beauchamp, 1991 (23) N: garlic extract L: unknown D: 1.5 g of garlic extract (General Nutrition) T: capsule	N = 8, NRCT, before-after	To assess whether odor of human milk is altered because of certain flavors in the mother's diet that are transmitted to her milk	Infants latched for a longer period ($P < .05$) and suckled more when the milk ($P = .007$) smelled like garlic.
Study by Mennella and Beauchamp, 1993 (24) N: garlic extract L: unknown D: 1.5 g of garlic extract (General Nutrition) T: capsule	N = 30, NRCT, case-crossover	To evaluate the infant's behavior after maternal garlic ingestion	4 of 10 infants in the placebo group and 4 from garlic group were colicky. Infants whose mother ingested garlic breastfed longer, but no differences in milk volume were observed.
Study by Faber and Streng-Hesse, 1988 (25) N: senna and psyllium laxative (Agiolax) L: <i>Senna</i> spp, <i>Plantago ovata</i> D: 5 g of the standardized senna preparation (= 15 mg sennosides A+B) with psyllium T: granules	N = 20, NRCT, open label	To determine the amount of the sennoside metabolite rhein in breast milk after repeated doses of senna pods	None of the breastfed infants had any changes in stool consistency. 0.007% of the sennoside intake (as rhein) was excreted in breast milk. Postdose varied between 0 and 27 ng/mL, with values below 10 ng/mL in 94% in milk samples.

Continued

Table 2. (Continued)

Studies and Herb Characteristics	Type of Study	Aim of Study	Outcome of Study
Study by Shelton, 1980 (26) N: senna tablets (Senokot) L: <i>Senna</i> spp D: 7 mg of sennosides A + B T: tablets	N = 471, RCT	To determine the success of constipation treatment by Senokot and its effect on breastfed infants	Mild abdominal cramps were reported in mothers. No diarrhea or loose stool were observed in the infants. Successful treatment of constipation in the immediate postpartum period was observed in 94% of patients.
Study by Klier et al, 2002 (27) N: St John's wort L: unknown D: 300 mg 3 times daily (Jarsin) T: unknown	N = 1, NRCT, case report	To examine the effect of St John's wort on the infant	No adverse effects were reported in the mothers or infants. Hypericin was not excreted to breast milk but hyperforin was detected in fore- and hindmilk in very low concentrations.
Study by Lee et al, 2003 (28) N: St John's wort L: <i>Hypericum perforatum</i> D: unknown T: unknown	N = 167, NRCT, cohort	To examine the safety of St John's wort in breastfeeding mothers and their infants	No maternal adverse events were reported. In groups 2 and 3 there was 1 colicky infant in each group, and in group 1 there were 2 cases of colic, 2 cases of drowsiness, and 1 case of lethargy. No change in milk production.
Study by Klier et al, 2006 (29) N: St John's wort L: <i>Hypericum perforatum</i> D: 300 mg 3 times daily (Jarsin) T: tablets	N = 7, NRCT, open label	To evaluate the safety of St John's wort during breastfeeding	No adverse effects or unusual behavior, such as lethargy, rashes, photosensitivity, and sleep pattern. The hyperforin concentration was analyzed and varied from 2.1 to 5.6 ng/mL in foremilk.
Study by Chien et al, 2006 (30) N: traditional Chinese herbs – Dong quai root, lycium fruit, jujube fruit, shy wuh tang (formula of rehmannia tuber, dong quai root, Sichuan lovage root, and Chinese peony root) L: <i>Angelica sinensis</i> , <i>Lycium</i> spp, <i>Ziziphus jujube</i> , shy wuh tang (<i>Rehmannia glutinosa</i> , <i>Angelica sinensis</i> , <i>Ligusticum sinense</i> , <i>Paeonia lactiflora</i>) D: 1 g of herb – analyzed T: unknown	N = 72, NRCT, survey and lead analysis	To assess the relationship between consumption of traditional Chinese herbs and lead concentration in breast milk	The concentration of the lead in breast milk was higher in the group consuming traditional Chinese herbs compared with the control group ($P < .05$).

D=dose; L=Latin name; N=name of product or plant; NRCT=nonrandomized control trial; RCT=randomized control trial; T=type of preparation.

Table 3. Comparison of Safety From Well-Known References

Common name (Latin name)	Botanical Safety Handbook, 2nd ed ^a (32)	The Essential Guide to Herbal Safety (8)	Herbal Medicines in Pregnancy and Lactation ^b (33)	Natural Medicine Comprehensive Database (34)	Medications and Mother's Milk ^c (35)	Drugs in Pregnancy and Lactation (36)
Fenugreek (<i>Trigonella foenum- graecum</i>)	Safety class: 2b	Lactation category C: compatible with breastfeeding	Caution EL: 4 (theoretical)	Insufficient reliable information available; avoid using. Although fenugreek is used to promote lactation, there are no clinical studies testing its safety in mother or infant.	L3	NA
Garlic (<i>Allium sativum</i>)	Safety class: 1	Lactation category C: compatible with breastfeeding.	Safe EL: 1 (based on RCT)	Possibly unsafe – when used orally in amounts greater than those commonly found in foods. Several small studies suggest that garlic constituents are secreted in breast milk and that breastfeeding infants of mothers consuming garlic are prone to extended breastfeeding and an altered flavor in breast milk. There is insufficient reliable information available about the safety of topical garlic use during lactation.	L3	Breastfeeding recommendation: compatible; risk factor: C
Senna (<i>Senna</i> spp)	Safety class: 2d	Lactation category CC: compatible with breastfeeding but use with caution	Safe EL: 1A (strong evidence based on RCT)	Possibly safe – when used orally and appropriately, short term. Although small amounts of constituents of senna cross into breast milk, senna has been taken	L3	Breastfeeding recommendation: compatible; risk factor: C

Continued

Table 3. (Continued)

Common name (Latin name)	Botanical Safety Handbook, 2nd ed ^a (32)	The Essential Guide to Herbal Safety (8)	Herbal Medicines in Pregnancy and Lactation ^b (33)	Natural Medicine Comprehensive Database (34)	Medications and Mother's Milk ^c (35)	Drugs in Pregnancy and Lactation (36)
St. John's wort (<i>Hypericum perforatum</i>)	Safety Class: 2d	Lactation category CC: compatible with breastfeeding but use with caution	Caution EL: 1 (based on RCT)	by breastfeeding mothers with apparent safety. Senna does not cause changes in the frequency or consistency of infants' stools. Possibly unsafe – when used orally. Breastfeeding infants of mothers who take St John's wort can experience colic, drowsiness, and lethargy; avoid using. Possibly safe – when used orally in moderate amounts. Because of the caffeine content of green tea, breastfeeding mothers should closely monitor caffeine intake. Breast milk concentrations of caffeine are thought to be approximately 50% of maternal serum concentrations. Minimal consumption would likely result in limited exposure to a nursing infant. Possibly unsafe –when used orally in large amounts. Consumption of green tea might cause irritability and increased bowel activity in nursing	L2	Breastfeeding recommendation: compatible; risk factor: C
Green tea (<i>Camellia sinensis</i>)	Safety class: 1		Caution EL: 3 (in vitro scientific evidence)		Not documented	NA

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Table 3. (Continued)

Common name (<i>Latin name</i>)	Botanical Safety Handbook, 2nd ed ^a (32)	The Essential Guide to Herbal Safety (8)	Herbal Medicines in Pregnancy and Lactation ^b (33)	Natural Medicine Comprehensive Database (34)	Medications and Mother's Milk ^c (35)	Drugs in Pregnancy and Lactation (36)
				infants. Large doses or excessive intake of green tea should be avoided during lactation. There is insufficient reliable information available about the safety of green tea extracts when applied topically during breastfeeding.		

EL=evidence level; NA=not applicable; RCT=randomized controlled trial.

^aClass 1 are herbs that can be safely consumed when used appropriately. Class 2 are herbs for which the following use restrictions apply, unless otherwise directed by an expert qualified in the use of the described substance: 2a, for external use only; 2b, not to be used during pregnancy; 2c, not to be used while nursing; and 2d, other specific use restrictions as noted. Class 3 are herbs for which significant data exist to recommend the following labeling: "To be used only under the supervision of an expert qualified in the appropriate use of this substance."

^bGreen indicates safe; orange, caution; red, unsafe; and white, unknown.

^cL1 indicates safest. Drug has been taken by a large number of breastfeeding mothers without any observed increase in adverse effects in the infant. Controlled studies in breastfeeding women fail to demonstrate a risk to the infant and possibility of harm to the breastfeeding infant is remote or the product is not orally bioavailable in an infant. L2 indicates safer. Drug has been studied in a limited number of breastfeeding women without an increase in adverse effects in the infant and/or the evidence of a demonstrated risk that is likely to follow use of this medication in a breastfeeding women is remote. L3 indicates moderately safe. There are no controlled studies in breastfeeding women; however, the risk of untoward effects to a breastfed infant is possible, or controlled studies show only minimal nonthreatening adverse events. Drugs should be given only if the potential benefit justifies the potential risk to the infant. (New medications that have absolutely no published data are automatically categorized into this category, regardless of how safe they may be.) L4 indicates possibly hazardous. There is positive evidence of risk to a breastfed infant or to breast milk production, but the benefits from use in breastfeeding mothers may be acceptable despite the risk to the infant (eg, if the drug is needed in a life-threatening situation or for a serious disease for which safer drugs cannot be used or are ineffective). L5 indicates contraindicated. Studies in breastfeeding mothers have demonstrated that there is significant and documented risk to the infant based on human experience, or it is a medication that has a high risk of causing significant damage to an infant. The risk of using the drug in breastfeeding women clearly outweighs any possible benefit from breastfeeding. The drug is contraindicated in women who are breastfeeding an infant.

pyrrolizidine alkaloids, which have the potential to cause liver damage and cross into breast milk. (39) Lactating women should be cautioned against excessive or frequent use of salves, oils, and balms made from pyrrolizidine alkaloid-rich herbs that are applied topically to the breast and thus could be ingested by the breastfeeding infant.

In addition to quality, there are several additional safety concerns clinicians should keep in mind. Breastfeeding mothers should be aware that caffeine is present in a number of herbal beverages, including coffee (*Coffea arabica* and *Coffea canephora*), tea (*Camellia sinensis*), yerba mate (*Ilex paraguariensis*), kola nut (*Cola nitida*), and guarana (*Paullinia cupana*). Caffeine crosses the placenta-fetal barrier and is found in breast milk at approximately 50% of maternal serum concentration. The half-life of caffeine varies from several hours to days, depending on the person. Newborns do not have the enzymes needed to metabolize caffeine until several days after their birth, and the metabolic half-life of caffeine in a newborn is, on average, more than 3 days. Excessive maternal consumption may cause irritability in nursing infants.

Many herbal preparations are sold as tinctures and fluid extracts, which contain a mixture of alcohol and water. The amount of alcohol can range from 20% to 90%. Although the amount consumed is relatively small because the dose is generally 2 to 5 mL of tincture 3 times daily, mothers and clinicians should take note. Sometimes tinctures are given directly to the infant to ease colic or alleviate symptoms of a cold. Clinicians should inquire about all herbal use by mother and infant and counsel accordingly.

NOTE: *The content of this article is solely the responsibility of the authors and does not necessarily represent the official views of the National Center for Complementary & Alternative Medicine or the National Institutes of Health.*

Summary

The use of herbal remedies is a tradition held in many cultures throughout the world, and women may use herbal remedies during lactation. Because of the limitations of the current literature, it is difficult to develop accurate information on the safety and efficacy of specific herbs used during breastfeeding. It is critical that more research is conducted in this area, including national prevalence studies and safety and efficacy studies.

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PIR Quiz

This quiz is available online at <http://www.pedsinreview.aappublications.org>. NOTE: Learners can take Pediatrics in Review quizzes and claim credit online only. No paper answer form will be printed in the journal.

New Minimum Performance Level Requirements

Per the 2010 revision of the American Medical Association (AMA) Physician's Recognition Award (PRA) and credit system, a minimum performance level must be established on enduring material and journal-based CME activities that are certified for *AMA PRA Category 1 Credit™*. In order to successfully complete 2013 *Pediatrics in Review* articles for *AMA PRA Category 1 Credit™*, learners must demonstrate a minimum performance level of 60% or higher on this assessment, which measures achievement of the educational purpose and/or objectives of this activity.

In *Pediatrics in Review*, *AMA PRA Category 1 Credit™* may be claimed only if 60% or more of the questions are answered correctly. If you score less than 60% on the assessment, you will be given additional opportunities to answer questions until an overall 60% or greater score is achieved.

1. A breastfeeding mother of a 2-month-old infant reports to you that she is taking fenugreek seed capsules (3 capsules 3 times daily) to increase milk production. Which of the following adverse effects in some exposed infants from fenugreek seed ingestion by breastfeeding mothers is reported in the literature?
 - A. Colicky behavior.
 - B. Maplelike odor of urine.
 - C. Mild constipation.
 - D. Mild drowsiness.
 - E. Mild hyperglycemic activity.

2. A breastfeeding mother of a 1-month-old infant reports to you that she is using Senakot for constipation. Which of the following adverse effects caused by breastfeeding mothers' intake of Senakot is reported in the literature?
 - A. Mild abdominal cramps in infants.
 - B. Mild abdominal cramps in mothers.
 - C. Mild decrease in volume of milk in mothers.
 - D. Mild drowsiness in infants.
 - E. Mild watery stools in infants.

3. A breastfeeding mother of a 2-month-old infant requests guidance on the use of a supplement to increase her milk supply. Which of the following is a galactagogue that should be discouraged because it contains pyrrolizidine alkaloids that have the potential to cross into breast milk and cause liver damage?
 - A. Anise seed.
 - B. Comfrey leaf.
 - C. Fennel seed.
 - D. Milk thistle seed.
 - E. Torbangun.

4. Research has documented higher levels of which product in breast milk of women taking Chinese herbal medicines vs controls?
 - A. Arsenic.
 - B. Cadmium.
 - C. Gold.
 - D. Lead.
 - E. Mercury.

5. A breastfeeding mother of a newborn reports ingestion of herbal tea up to 4 cups per day. She is unaware that caffeine is present in a number of herbal beverages and excessive maternal consumption may cause irritability in breastfeeding infants. Caffeine is found in breast milk at approximately what percentage of maternal serum concentrations?
 - A. 10%.
 - B. 25%.
 - C. 50%.
 - D. 75%.
 - E. 100%.

Parent Resources From the AAP at HealthyChildren.org

The reader is likely to find material relevant to this article to share with parents by visiting these links:

- <http://www.healthychildren.org/English/ages-stages/baby/breastfeeding/Pages/Eating-for-Two-Your-Diet-And-Breastfeeding.aspx>
- <http://www.healthychildren.org/English/ages-stages/baby/breastfeeding/Pages/How-a-Healthy-Diet-Helps-You-Breastfeed.aspx>
- <http://www.healthychildren.org/English/ages-stages/baby/breastfeeding/Pages/Things-to-Avoid-When-Breastfeeding.aspx>