

## GALACTAGOGUE HERBS: A QUALITATIVE STUDY AND REVIEW

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### ABSTRACT

Women often face challenges in their efforts to breast-feed their infants. One of these challenges may be a real or perceived insufficient milk supply. Presented here are some results from a qualitative study of self-care in pregnancy, birth and lactation among a purposeful sample of childbearing women in British Columbia. Twenty-three women were interviewed at one to four months postpartum, and were asked to share their experiences with childbirth and postpartum self-care. Interviews were tape recorded and transcribed. All 23 women were breast-feeding. Four women reported insufficient milk supply, whereas 14 women used galactagogue substances including herbal remedies, food items and pharmaceutical drugs to enhance their milk supply. Eleven women (48% of the sample) were using any of five galactagogue herbs, in many cases prophylactically. Each herb is reviewed and discussed here: blessed thistle (*Cnicus benedictus*), fennel (*Foeniculum vulgare*), fenugreek (*Trigonella foeniculum-graecum*) raspberry leaf (*Rubus idaeus*), and stinging nettle (*Urtica dioica*). This study reveals that galactagogue herb use is an element of postpartum self-care for some women, and it also identifies a need for clinical testing of the herbs. A larger-scale survey of galactagogue herb use would be beneficial to the state of knowledge, as would clinical trials and case reports on the more popular herbs.

### KEY WORDS

lactation, herbal medicine, fenugreek, fennel, raspberry leaf, nettle, blessed thistle, galactagogue

### RÉSUMÉ

Les femmes ont souvent à faire face à des difficultés lorsqu'elles essaient d'allaiter leur bébé. Une de ces difficultés peut-être soit un vrai manque de lait ou ce que certaines femmes perçoivent comme un manque de lait. Nous présentons ici, certains résultats d'une étude qualitative sur les soins personnels que se donnent les femmes durant la grossesse, l'accouchement et la lactation avec un échantillonnage significatif de femmes de la Colombie-Britannique. Vingt-trois femmes furent interviewées à 1-4 mois post-partum et on leur demanda de partager leurs expériences en ce qui a trait aux soins personnels qu'elles se sont données pour leur accouchement et leur post-partum. Ces entrevues furent enregistrées et transcrites. Toutes les 23 femmes allaitaient. Quatre des femmes ont rapporté un manque de lait alors que 14 des femmes utilisaient des substances galactogènes, incluant des remèdes à base de plantes, des produits alimentaires et des drogues pharmaceutiques pour accroître leur réserve de lait. Onze des femmes (48 % de l'échantillon) utilisaient une ou plusieurs des 5 herbes galactogènes et dans la plupart des cas l'utilisaient de manière prophylactique. Chacune de ces herbes sera examinée et discutée ici: Chardon béni (*Cnicus benedictus*), fenouil (*Foeniculum vulgare*), fenugrec (*Trigonella foeniculum-graecum*) framboisier (*Rubus idaeus*), et ortie dioïque (*Urtica dioica*). Cette étude démontre que l'usage des herbes galactogènes pour certaines femmes est un des éléments qui font partie des soins personnels qu'elles se donnent. L'étude identifie qu'il y a un besoin de test clinique de ces herbes.

### MOTS-CLÉS

lactation, phytothérapie, fenugrec, fenouil, framboisier, ortie dioïque, chardon béni, galactogène

THIS ARTICLE HAS BEEN PEER-REVIEWED

### INTRODUCTION

After a woman gives birth, the establishment of a mature milk supply is dependent upon the presence of mammary tissue, regular removal of milk from the breast, and a set of maternal hormones, prolactin and oxytocin.<sup>1</sup> Prolactin is involved in the initiation and stimulation of lactation in mammals. It is associated with numerous physiological processes in addition to lactation.<sup>1</sup> Oxytocin triggers milk secretion, or 'let-down'. These two hormones must be present (and in the case of prolactin, at above-baseline levels) for lactation to become established.<sup>1</sup> Neither hormone determines the volume of milk produced in a lactating breast; rather, this is a feedback mechanism dependent upon the amount of milk removed from the breast and the frequency of

milk removal.<sup>1</sup>

In addition to the appropriate hormones, successful establishment of the milk supply relies on an effective latch and suck on the part of the baby. Good technique on the part of mother and baby ensures adequate milk removal, and is usually sufficient to maintain an ample supply of milk.

Reportedly, breast-feeding efforts are most often unsuccessful because of a perception of insufficient milk supply.<sup>2</sup> The reasons for this problem can involve an imbalance in maternal hormones, some deficiency in the breast tissue itself, or, most often, inadequate milk removal due to poor breast-feeding technique.<sup>3</sup>

Once milk removal problems (such as poor latch) have been ruled out, if the problem of insufficient milk supply remains, galactagogue substances may be helpful.

Galactagogues are substances that increase the production or flow of milk. They include foods, herbal medicines, and pharmaceutical drugs. Galactagogues can be helpful in solving milk supply issues not only by increasing milk production, but also by bolstering the nursing mother's confidence. As Ayers (2000) notes,

Because the most commonly cited reason for the premature discontinuation of breastfeeding is the mother's perception (usually inaccurate) of insufficient milk supply, offering women a sense of self-efficacy and empowerment through alternative therapy may help to combat this sense of inadequacy.<sup>2,4</sup>

A large number of plant preparations are used as galactagogues around the world. In a global scale review, Bingel and Farnsworth documented over 400 plant species that have been used to facilitate lactation, most of which were galactagogues.<sup>5</sup> Some galactagogue plants are applied topically, such as the leaves of the castor bean (*Ricinus communis*).<sup>6</sup> Many other herbs are taken internally.

By and large, the efficacy of these herbs is unproven in a clinical or laboratory setting.<sup>7,8</sup> However, many have enjoyed centuries of use by generations of women, which in itself makes them of interest to ethnobotanical and clinical researchers. Some of these herbs are likely to be effective medicines and, as noted above, there can be a psychological benefit derived from their use as well.<sup>4</sup>

## OBJECTIVE

Though galactagogue herb use has been reviewed on a global scale, the role of herbal galactagogues among Canadian women today is heretofore unstudied in an academic context.<sup>5</sup> Identified here are five galactagogue herbs that were in use among a small, purposeful sample of women in Western Canada. The main objectives of this paper are to (a) discuss the potential value of these herbs, including the participant's observations, historical use, safety and efficacy, and (b) provide direction for future clinical research.

## METHODOLOGY AND SAMPLE

This paper draws upon a data set gathered in 2002, for an interview-based study of women's perspectives on self-care and health care in pregnancy, childbirth and lactation. The data used here consisted of transcripts from interviews with 23 women, all of whom were one to four months postpartum at the time of the interview.

The participants were recruited by means of a flyer asking women to speak with the researcher on the subject of 'self-care and health care in pregnancy'. Thus women who had an interest in self-care volunteered to take part. Herbal medicine was not mentioned on the flyer, which was posted in several high-traffic locations in Vancouver and Victoria, distributed through the offices of midwives, circulated through the Home Birth Association of BC, and distributed through the Best Babies program in Victoria (a government-sponsored program that targeted women who were at risk of having low birth-weight babies due to poverty or

substance abuse).

The sampling method, known as purposeful sampling, targeted women with an interest in pregnancy self-care.<sup>9</sup> As Patton puts it: "The logic and power of purposeful sampling lies in selecting information-rich cases for study in depth."

Lincoln and Guba, who call it purposive or theoretical sampling, indicate that it "increases the scope or range of data exposed (random or representative sampling is likely to suppress more deviant cases) as well as the likelihood that the full array of multiple realities will be uncovered."<sup>10</sup>

The 45 to 90 minute interviews were tape-recorded and transcribed, and the participants were given the transcriptions by mail or e-mail and invited to review and revise the transcripts before the data were analysed. In this manner, some errors in the transcripts were eliminated.

The postpartum interviews were guided by an interview schedule, which covered the following points:

- the participant's health and general sense of well-being,
- her experiences with self-medication and herbal medicine, including galactagogue herbs,
- her birth experience, and sense of satisfaction with it,
- whether she had encountered any breast-feeding difficulties, and how she was coping with them, and,
- any advice she would give to others regarding pregnancy, childbirth and breast-feeding.

The purpose of using an interview format rather than a survey was to gather a rich data set that could be used for thematic analysis.<sup>11</sup> With regards to herbal self-medication, the results of the thematic analysis are published elsewhere.<sup>12</sup>

This project received prior approval from the Human Research Ethics Committee at the University of Victoria. The participants signed a consent form at the time of the first interview. For the sake of anonymity, each woman was asked to choose the name she would go by in published reports and, whenever possible, she received draft copies of any articles in which she was quoted before the articles were submitted for publication.

## RESULTS

### *Socio-demographic characteristics*

Of the 23 women who participated in this portion of the study, nine lived in the metropolitan Vancouver area, and the remainder lived on Vancouver Island, mostly in the capital city of Victoria. They ranged in age from 19 to 43, and parity ranged from one to four. A range of birthplace, socio-economic backgrounds and racial backgrounds were represented in this group of women. Seventy-eight percent were Canadian-born; others were born in the United States, Germany or Asia. Seventy percent were Caucasian, though a few were Métis, Asian, or had mixed genetic heritage. All the participants had completed high school, and 78% had some post-secondary education; 10 women held undergraduate and/or graduate degrees.

Of the 23 participants, six were in physician care when they went into labour, nine had registered midwives, three had lay birth attendants, and five were unassisted. There were 10 hospital births

and 13 home births. The hospital births included four spontaneous vaginal births, three medically-induced vaginal births, and three Caesarean sections. The home births all involved minimal intervention. It is recognized that the high proportion of respondents who received care from registered midwives, lay birth attendants or who had unassisted births may indicate that the nature of self-care in lactation reported, including the use of galactagogues, is unique to these populations.

#### *Breast-feeding—general observations*

All of the women's infants were human milk fed at the time of the interview, and in two cases, a human milk/infant formula split was used. All of the women who were interviewed held a philosophy of 'breast is best'; human milk was believed to be more wholesome than infant formula. Breast-feeding was considered to be health promoting for the mother, as well as the baby. As one woman said, "I think [breast-feeding] is a really important thing for women to go through. I think it's really important for your body, and your hormones, too." She also considered it to be beneficial for her baby: "It's just amazing to see how much they thrive. Even while they're nursing, the expressions on his face, and the sounds he makes, you know, I can tell that it's really important for him to do that."

All of the participants indicated that breast-feeding was very important to them, including the two women who were unable to exclusively breast-feed their babies, and were using a breast-bottle split. Both of these women had previously undergone breast reduction surgery. For them, lack of success with breast-feeding brought on intense feelings of inadequacy. As one woman put it: "I was struggling with the breast-feeding. He became quite dehydrated. And uh, so that's, that's where I had difficulty. That's where I grieved, and I did a lot of crying, and that kind of stuff. ... I had no idea the emotional tie of the breast-feeding. None of that. Not a clue about what that would be like. So that was the only thing that I felt completely out of control with. And that, you know, will bother me for life. That will be an issue that I carry with me. And he was born to breast-feed. He loves it. You know?"

Four women in total reported the problem of insufficient milk supply. In addition to the two women who had breast reduction surgery, one woman had latch problems that led to a decline in milk supply, and another had concerns regarding her infant's weight gain. In every case, the situation was described as anxiety-inducing and emotionally challenging.

#### *Herbal inventory and review*

Though only two of the study participants had milk supply problems that were severe enough to necessitate supplementing with infant formula, 14 of the 23 women used some form of galactagogue (including herbs, food items, and prescription drugs), in many cases prophylactically. Eleven of these women used herbal galactagogues. Timing of initial herbal galactagogue use ranged from one day to three weeks postpartum, and continued in all cases until the time of the interview (between one and four months postpartum). The women received herbal galactagogue advice from a variety of sources, including midwives (n=10), friends (n=2), a doula (n=1), or a family member (n=1). The herbs used by these women included:

- blessed thistle (*Cnicus benedictus* L., family Asteraceae), 2

users,

- fennel (*Foeniculum vulgare* Miller, family Apiaceae), 4 users,
- fenugreek (*Trigonella foeniculum-graecum* L., family Fabaceae), 4 users,
- raspberry leaf (*Rubus idaeus* L., family Rosaceae), 2 users, and
- stinging nettle (*Urtica dioica* L., family Urticaceae), 2 users.

In addition, the following food items were used (each by one woman) to promote milk production: beer, brewer's yeast, barley broth, cashews, and pig's feet soup with ginger and sweet rice. One woman was using a homeopathic mineral preparation to support lactation. Two women (both of whom were supplementing with infant formula) were using a prescription galactagogue, Domperidone.

Blessed thistle - In this study, two women reported using blessed thistle, in capsules, to increase their milk supply. Both women had learned about blessed thistle from their midwives; both were undecided about whether or not it was an effective galactagogue, and both were using it in addition to other herbs.

Fennel - In this study, four women used fennel seed or oil, and all considered it to be an effective galactagogue. One learned about it from a friend, two from their midwives, and one from her mother, who used it herself while breast-feeding. Only two of these women had experienced milk supply problems; the other two were using the herb prophylactically. Three women brewed a tea from the seeds, while one woman used the essential oil. She had tried ingesting a drop of the oil in water, but she disliked the taste, so she decided to place the oil on her wrist instead, hoping to benefit from its odour.

Fenugreek - Four of the participants used fenugreek seed as a galactagogue, and in each case, it was prepared as a tea. Three women had learned about fenugreek from their midwives, and one from a friend. By and large, they considered it to be effective, though they were often unsure of how to measure its efficacy. As one woman said: "I think [it's working]. For a while there, I thought I wasn't producing as much milk, but it could have just been my imagination."

While three women used fenugreek on an ongoing basis, a fourth woman stopped using it at the advice of a public health nurse, who said it was on a list of substances contraindicated for lactating women. The reason for its contraindication was not given.

Raspberry leaf - Two women used raspberry leaf as a galactagogue; one at the advice of a midwife, the other at the suggestion of her doula. A third woman commented on raspberry leaf tea's remarkable stimulating effect on her milk supply a few weeks before she gave birth. She was nursing a toddler, and she noticed a sudden increase in milk volume when she began drinking the tea. Raspberry leaf's efficacy as a galactagogue is under debate, however. Some herbalists believe that raspberry leaf stimulates lactation and enriches breast milk by providing vitamins and minerals.<sup>14,15,19,31</sup> Conversely, due to its astringent qualities, it has the potential to shrink mammary glands and thereby reduce milk flow.<sup>14,32,33</sup>

Stinging nettle - In this study, two women used stinging nettle tea

as a galactagogue; both learned about it from their midwives. One of these women was using both fennel and stinging nettle to improve her milk supply. She had experienced some problems with her baby's latch, and as a consequence she felt that she was making very little milk. She was able to get the breast-feeding back on track, but she wasn't able to evaluate the efficacy of the herbs she'd used. As she put it, "Something worked! But it might have even just been her sucking."

## CONCLUSION

The perception of insufficient milk supply is a relatively common problem for breast-feeding mothers. While it is often explainable by physical problems caused by breast surgery, or milk withdrawal problems such as a poor latch, it is sometimes not so easily explained, and may even be imagined.<sup>4</sup> As demonstrated here, women may choose to use galactagogues to enhance their milk supply, whether or not they experience supply problems. From a purposive sample of 23 childbearing women, interviewed in the postpartum period, 14 were using galactagogues, which included herbal remedies, food items, and prescription drugs. Herbal remedies were most widely used; 11 women used five reputed galactagogue herbs.

The galactagogue herbs used by the women in this study included blessed thistle, fennel, fenugreek, raspberry leaf, and stinging nettle. Though the use of these herbs was supported by their historical role in human lactation, these herbs – and galactagogue herbs in general – have been subjected to almost no clinical or experimental study, and their mechanisms of action are largely unknown. Though the women who contributed to this study typically felt unable to evaluate the herbs' efficacy, they considered them to be of some value, for they supplied nutrients and (in the case of herbal teas) water, as well as promoting a sense of relaxation and self-efficacy.

This study reveals that, at least within the study population, galactagogue herb use is an element of postpartum self-care for some women. Yet, there is little evidence that the herbs actually work; nor is there evidence that they do not work. A larger-scale survey of galactagogue herb use would be beneficial to the state of knowledge, as would clinical trials of the more popular herbs.

Herbal review author Eric Yarnell also reported that very little scientific research has been done to support the use of herbal medicine in pregnancy and lactation.<sup>41</sup> He appealed to midwives and herbal practitioners to publish their findings, so that we may have a better understanding of the beneficial or adverse effects of natural remedies. Given the apparent relevance of galactagogue herbs to postpartum midwifery care, I repeat his call for midwives to publish their observations.

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## APPENDIX 1: DESCRIPTION OF GALACTAGOGUE HERBS USED BY STUDY PARTICIPANTS

*Blessed Thistle* - Blessed thistle is a Mediterranean weed that is occasionally found in North America.<sup>13</sup> The dried aerial parts are used as a galactagogue and it is considered to be one of the best galactagogue herbs.<sup>14-16</sup> It is usually taken in capsules or as a tea. It is

said to work by stimulating the flow of blood to the mammary glands, and thereby enriching the milk flow, but this theory has not been confirmed in a laboratory or clinical setting.<sup>15</sup> It is rich in a sesquiterpene lactone called cnicin, which stimulates digestive enzymes and bile secretions.<sup>15,17</sup> There have been no clinical trials of blessed thistle as a galactagogue.

Blessed thistle was historically reputed to be a heal-all, and was even said to heal the plague.<sup>16</sup> It is recommended for birthing and nursing mothers because of its hemostatic properties, which reduce the likelihood of postpartum hemorrhage, and because of its antidepressant effects.<sup>14,15,18</sup>

The German Commission E has approved blessed thistle as a remedy for loss of appetite and dyspepsia.<sup>17</sup> The Commission E does not recommend blessed thistle for use during pregnancy and lactation, and its popularity as a galactagogue is not mentioned in their monograph.<sup>17</sup> In strong doses, the plant is strongly emetic and causes nosebleeds, so it should not be overused.<sup>16,18</sup> Blessed thistle is reputedly an effective emmenagogue and thus should be avoided by pregnant women.<sup>19</sup>

*Fennel* - Medicinally, fennel is widely used as a digestive aid and as a treatment for dyspepsia.<sup>17,18</sup> It has mild estrogenic properties.<sup>5,18</sup> Fennel is also used to counteract infant colic, whether consumed by the mother or given directly to the infant.<sup>14,20</sup> The effectiveness of an herbal colic remedy containing fennel, chamomile (*Matricaria chamomilla*), vervain (*Verbena officinalis*), licorice (*Glycyrrhiza glabra*), and lemon balm (*Melissa officinalis*) was demonstrated in a prospective, double-blind clinical trial involving 68 infants, two to eight weeks of age. When given directly to the infants, the herbal tea eliminated colic in 57% of those in the treatment group, as compared to 26% of those in the control group.<sup>20</sup> Since the remedy was given directly to the babies in this trial, it remains clinically unproven that the beneficial effects of the herbs would reach the infant through the mother's milk.

The "Wise Woman Herbal for the Childbearing Year" suggests that breast-feeding women use the seeds of fennel or a number of its edible relatives in the celery family (*Apiaceae*) to improve their milk supply.<sup>14</sup> Although clinical evidence for its efficacy is lacking, fennel seed has enjoyed centuries of use as a galactagogue. Its mechanism of action, if any, is unknown.

In Italy, a galactagogue tea is made from the seeds of fennel and anise (*Pimpinella anisum* L. [*Apiaceae*]).<sup>21</sup> Two case reports from that country describe temporary central nervous system depression in infants, 15 and 20 days old, whose mothers were consuming fennel and anise seed tea in quantities exceeding two litres a day.<sup>21</sup> All symptoms disappeared once the women stopped drinking the tea. However, these appear to have been isolated cases, so it is possible that a particular batch of the tea was adulterated with another, more toxic herb.

There are no known contraindications for use of fennel seed or fennel oil during lactation, but it is not recommended for use for more than a few weeks at a time.<sup>17</sup>

*Fenugreek Seed* - Fenugreek seed has a number of medicinal

applications. For instance, it is used to protect the gastrointestinal tract as a therapy for ulcers and bowel inflammation.<sup>19,22</sup> As a galactagogue, fenugreek has been used for centuries, and it was used historically as such along with fennel by wet nurses in the southern United States.<sup>23,24</sup> There are also reports of fenugreek's use as a galactagogue in Sudan, Egypt, other parts of North Africa, Iraq, and Argentina.<sup>5</sup>

Fenugreek is an important medicine in India's Ayurvedic tradition, where it is used to treat a variety of digestive and mucosal conditions.<sup>25,26</sup> And in India, once the child has been born, women are encouraged to eat a sweetened paste or halva made from the seeds to increase the flow of milk.<sup>25</sup>

According to the literature, fenugreek may affect lactation on any of several levels. First, it is reputedly an oxytocic. The herb has a reputation as a uterine stimulant as well as a galactagogue. The uterus and the milk ducts in the breast are both stimulated by the hormone oxytocin, so its effect upon these tissues may be oxytocic.<sup>5</sup> "Alternatively, these plants may not possess oxytocin-like activity, and their reputed galactogenic effect might instead merely be coincidental to their being used in obstetrics."<sup>25</sup> A second hypothesis is that fenugreek supports the production of milk by providing a rich source of essential fatty acids.<sup>27</sup> However, it is not clear how this might enhance milk quantity as well as quality. A third explanation is that fenugreek may directly increase the amount of breast tissue, thereby enhancing lactation. One compound in fenugreek, diosgenin, is believed to stimulate the growth of breast tissue.<sup>24,28</sup>

Fenugreek should not be used during pregnancy because of its purported uterine stimulant properties. Outside of pregnancy, fenugreek appears to be without contraindications. According to popular lore, an adequate dose has been consumed when one's body smells maple. The German Commission E monograph recommends a daily dose of six grams of the seeds.<sup>29</sup> Doses of over 100 grams can cause nausea and an upset stomach.<sup>30</sup>

*Raspberry Leaf* - A search of the literature reveals no clinical evidence that raspberry leaf is a galactagogue. Although the herb can be a good source of vitamins A, B complex, C, and E, as well as calcium, iron, phosphorus, and potassium, there is no proof that it increases the production of breast milk.<sup>14,34</sup> Nonetheless, it can be expected to provide essential nutrients and promote a sense of self-efficacy and relaxation in the breast-feeding mother. Perhaps the cultural value of raspberry leaf tea and its association with motherhood has perpetuated its use in lactation. There is a recognized need among breast-feeding women for "support, nurturing and replenishment in return for 'giving out.'"<sup>35</sup> Raspberry leaf tea can give women this sense of being supported, nurtured and replenished. As one woman said:

I don't notice a huge difference as far as whether or not I have more milk or less milk, or anything like that. I think the one thing the raspberry leaf tea does is it helps me relax. Just because it's a warm drink, I think. So I just sit down and I feel like, okay, I'll just put my feet up, have a cup of tea. It helps me relax, and feel warm and tingly inside.

*Stinging Nettle* - Stinging nettle leaf has a long-standing reputation

for enriching human milk.<sup>14,15,19,36,37</sup> The herb is believed to be completely non-toxic.<sup>37</sup> Nettle contains many nutrients, including iron, calcium, and vitamins A, C, and K, as well as phosphorus, potassium, sulphur, and vitamin D.<sup>14,32</sup> It also contains some B vitamins and appreciable amounts of magnesium.<sup>38</sup> The leaves are comprised of up to 20% mineral salts, mainly calcium, potassium, silicon, and nitrates.<sup>17</sup> Nettle extract has been found to contain all of the essential amino acids.<sup>36</sup>

Nettle is believed to support lactation by providing essential nutrients.<sup>14</sup> It has no medicinal action, apart from being mildly diuretic and hemostatic.<sup>39</sup> Dried nettles mixed into cattle fodder are said to boost milk production in cows.<sup>16,40</sup> Nonetheless, the herb's astringent qualities could theoretically reduce milk production if used in a concentrated form.<sup>14,33</sup> Otherwise, there are no known contraindications to nettle's use during pregnancy or lactation.<sup>17</sup>

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## AUTHOR BIOGRAPHY

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