WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
SJIF Impact Factor 6.805
Volume 5, Issue 8, 1629-1640. Review Article ISSN 2277– 7105

A COMPREHENSIVE REVIEW ON SAFE GALACTAGOGUES

P. L. Rajagopal*, K. Premaletha and K. R. Sreejith

Department of Pharmacognosy and Phytochemistry, Academy of Pharmaceutical Sciences, Pariyaram Medical College, Kannur, Kerala.

Article Received on
22 June 2016,

Revised on 12 July 2016,
Accepted on 01 Aug 2016

DOI: 10.20959/wjpr20168-6868

***Corresponding Author**
Dr. P. L. Rajagopal
Department of Pharmacognosy and Phytochemistry, Academy of Pharmaceutical Sciences, Pariyaram Medical College, Kannur, Kerala.

ABSTRACT

Herbal medicines for therapeutic purposes have been explicitly used since the dawn of human civilization to maintain health and to treat diseases. The crude herbals and the pharmaceutical substances from herbal origin are widely utilized in various types of pharmaceutical formulations. Milk secretion after delivery has become a common problem throughout the world. Even though there are lot of products available in the market to overcome the situation, usage of them may results in serious adverse effects. That is why the plants which possess galactagogue properties are becoming more and more popular all over the world.

KEYWORDS: Medicinal plants, Galactagogue, Breast Milk.

INTRODUCTION

The World Health Organization recommends breastfeeding as the normal infant feeding method.[1] Breast milk has been considered and accepted word wide as the "gold standard" of infant nutrition. It is recommended that all infants should be exclusively breastfed until the age of six months, with breast milk being the only source of nutrition for the infant. Poor breast milk production is the most frequent cause of breastfeeding failure. Reduced breast milk production can occur in many conditions like, premature delivery, illness of the mother or the child, anxiety, fatigue, and during emotional stress. The administration of galactagogues can be considered in such condition where the milk production in mother is declined and is not responding to non pharmacologic measures. Galactogogues are substances thought to assist in the initiation, continuation, or augmentation of breast milk production. They include pharmaceutical agents and herbal supplements. In other words, galactagogues

are substances which may be used by women to induce, increase or maintain milk production. [1-7]

Most of the existing galactagogues act by increasing the production and release of prolactin by the anterior pituitary gland. The mechanisms of action of these drugs range from the direct stimulation of the adenohypophysis to the suppression of the hypothalamic secretion of prolactin inhibitory factor and stimulation of the hypothalamus to secrete prolactin releasing hormone. In addition, as dopamine is a physiologic inhibitor of prolactin release, some galactagogues act either by blocking hypothalamic dopaminergic receptors or by inhibiting dopamine-producing neurons.[8]

The most frequently used pharmaceutical galactagogues in the literature are metoclopramide and domperidone. Among these two, domperidone is widely used since it does not cross the blood brain barrier hence there will be less central nervous system side effects when compared to metoclopramide.

Metoclopramide is a prescription drug which is used to treat gastrointestinal disorders. Metoclopramide has been used for nearly three decades to increase breastmilk production. The mechanism of action for metoclopramide is the antagonism of dopamine to inhibit the release of prolactin from the anterior pituitary. This dopamine antagonism therefore increases prolactin levels, and subsequently increases breast milk production. Possible side effects of metoclopramide include restlessness, anxiety, drowsiness, insomnia, fatigue, lassitude, dizziness, and gastro intestinal effects such as cramping. Domperidone is a prescription drug used for decades for gastrointestinal disorders. There have been a couple of quality scientific studies done which show that domperidone appears to be an effective galactagogue too. Domperidone is a dopamine antagonist that does not cross the blood brain barrier. The mechanism of action with regard to inducing or augmenting lactation is similar to metoclopramide. Potential side effects of domperidone include; edema and palpitations, headache, insomnia, dizziness, thirst, lethargy, irritability, skin rash, itching, urticaria breast enlargement, galactorrhea, menstrual irregularities, hot flushes, mastalgia, elevated serum prolactin; dry mouth abdominal cramps, diarrhea, regurgitation, appetite changes, nausea, heartburn, constipation stomatitis, conjunctivitis, urinary frequency, dysuria, leg cramps, asthenia, drug intolerance, elevation of cholesterol levels. [9-14]

Other pharmaceutical galactagogues includes; Chlorpromazine,which increases prolactin levels by antagonizing the dopaminergic hypothalamic receptors Side effects in infants include lethargy, sleepiness, and reduced behavioral performance.[15-17]

Sulpiride, is an antipsychotic drug used in the treatment of psychosis including schizophrenia and depression. Sulpiride stimulates hypothalamus to secrete prolactin releasing hormone. Headache and fatigues are the most common side effects. [18-20]

Other than these pharmaceuticals, certain hormones like; oxytocin, somatotropin, thyrotrophin releasing hormone are also utilized as galactagogues. These hormones causes contraction of the myoepithelial cells that surround the alveoli and milk ducts causing milk ejection. The side effects of these hormones are comparatively lesser when compared with the other pharmaceutical galactagogues.[21]

Due to the adverse effects produced by the above said pharmaceutical galactagogues, people turned towards an alternative approach in overcoming the situation through the utilization of herbal products which are reported to be the safest galactagogues presently available. The use of herbs and their products believed to be able of increasing milk production has a long history. In several areas of the world, and particularly in developing nations with a heritage of folklore, herbal medicinal plants are being used by practitioners of the traditional system of medicine and others for increasing milk secretion in lactating mothers. Also there are many other plants reputed to possess glactagogue properties in these parts of the world. The most commonly used herbal galactagogues include.

Scripus Kysoor

Scirpus is a genus of aquatic species in the family Cyperaceae. They has grass-like leaves, and clusters of small spikelets which are often brown in colour. The plant is distributed throughout India. Tuber are reported to be nutritious, astringent, antidiarrhoeal, antiemetic, galactagogue and hypoglycaemic. The Ayurvedic Pharmacopoeia recommends the powder of the rhizome for promoting spermatogensis and development of breast. The tuber gave progesterone, sugars, tannins, starch and saponins. The fruit contains amylase.[22]

Gossypium herbaceum

Gossypium herbaceum is known as cotton plant belongs to the family Malvaceae, and occupies an imperative place in traditional systems of medicine especially in unani and

ayurvedic medicines. The plant is widely distributed throughout western India, Africa, Middle East countries. The qualitative phytochemical study of this plant extract indicates the presence of carbohydrates, saponins, steroids, glycosides, phenolic compounds such as tannins and flavonoids. The principle pigment of cotton seed is gossypol, which is a phenolic compound. A study was conducted in buffaloes, showed that cotton seed feeding enhances the milk production significantly in comparison to commercial concentrate mixture fed control group animals.[23-26]

Moringa oleifera

Moringa oleifera is a fast growing tree native to South Asia and now found throughout the tropics belongs Moringaceae. Its leaves have been used as a part of traditional medicine for centuries. The leaves of *Moringa oleifera* contain vitamins, minerals, and essential amino acids as well as a number of glycosides. It is used as a galactogogue in Asia, particularly in the Philippines where it is called malunggay. *Moringa oleifera* leaves are widely used as a food and medicine in Asia and Africa and studies have shown that there is no adverse effects in nursing mothers who ingested moringa leaves.[27, 28]

Nigella sativa

Nigella sativa is an annual flowering plant, native to south and southwest Asia belongs to Ranunculaceae family. *Nigella sativa* is used as a galactagogue in traditional medicine. The effects of aqueous and ethanolic extracts of *Nigella sativa* seeds on milk production in rats were evaluated. The measurement of milk production was by measuring pup weight during suckling period. The study reveals that aqueous and ethanolic extracts of *Nigella sativa* can stimulate milk production in rats.[29]

Asparagus racemosus

Asparagus racemosus is termed as stanya that is a galactogogue in ayurveda. It has been investigated by a number of researchers and they found that its roots, and root extracts can improve lactational in adequacy in lactating mothers. Lactogenic effects of these were investigated in guinea pigs, goats, buffaloes and humans. After administration of alcoholic extract of asparagus a significant increase in milk yield has been observed along with increased growth of the mammary glands and alveolar tissues.[30-38]

Ipomoea digitata

According to literature this plant has been used since long and has versatile folkloric uses. *Ipomoea digitata* is a large, smooth, perennial climber belongs to Convolvulaceae family. It is used as a good hypoglycemic, anticonvulsant, and aphrodisiac agent. Sun dried root powder is administered in the regulation of proper menstruation and body weight. Juice of the tubers is also used for the increase in lactation. As galactogogues are stimulator of lactogenic hormones it initiates and maintains the breast milk production in mother. The study on galactagogue activity of the tubers indicated that they can increase serum prolactin, protein content and glycogen of mammary gland. The study supports the folkloric use of *Ipomoea digitata* as a galactagogue.[39,40]

Lepidium sativum

The plant is known as Garden cress belongs to Brassicaceae family, has been known centuries ago in eastern regions then spread worldwide. The dried plant extract of *Lepidium sativum* has been evaluated for its galactagogue property and found out that it can enhance the milk secretion.[41]

Foeniculum vulgare

Foeniculum vulgare has been used for millennia to increase milk secretion. It is commonly called fennel, which has been used in traditional medicine for a wide range of ailments related to digestive, endocrine, reproductive, and respiratory systems belongs to Umbelliferae family. It is also used as a galactagogue agent for lactating mothers. *Foeniculum vulgare* are extensively used as galactagogues not only for increasing the quantity and quality of milk but also for improving the milk flow of breastfeeding mothers. Structural similarity of anethole which is the main constituent of the fruit, to dopamine seems to be responsible for galactogenic activity. Dopamine acts to inhibit the secretion of the milk producing hormone, prolactin. Anethole might influence milk secretion by competing with dopamine at the appropriate receptor sites, thereby inhibiting the antisecretory action of dopamine on prolactin.[42-49]

Medicago sativa

Medicago sativa or Alfalfa is a common plant from the pea family. Alfalfa has been used as food and as a medicinal herb for centuries. It is believed to treat digestive disorders, arthritis and kidney problems. It is the main source of food for livestock including horses, goats and dairy cows, and is also considered to be a galactagogue, helping to increase the breast milk

supply for nursing mothers. Alfalfa has a long history of use in women's health. It has been consumed by nursing mothers for many years to help with the production of breast milk. When taken in moderation, alfalfa is considered safe and nutritious. Alfalfa does enter the breast milk and is safe for the baby.[50-54]

Cardui benedicti

Blessed Thistle (*Cardui benedicti*) is also known as "Our Lady's Milk Thistle". It is a Mediterranean weed that is occasionally found in North America. The dried aerial parts are used as a galactagogue and it is considered to be one of the best galactagogue herbs. It increases breast milk while helping to alleviate mild forms of postpartum depression. It is said to work by stimulating the flow of blood to the mammary glands, and thereby enriching the milk flow.[55-59]

Trigonella foenum graecum

As a galactagogue, fenugreek from Fabaceae family has been used for centuries. It is one of the best and strongest herbs for increasing milk production. Many mothers of adopted babies have successfully used this herb to establish a breast milk supply to feed their adopted babies. Fenugreek is not recommended during pregnancy as it can cause uterine activity. Fenugreek must be used with consistency for best results; otherwise it can negatively affect or decrease milk production. 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. A fenugreek seed supports the production of milk by providing a rich source of essential fatty acids. Fenugreek may directly increase the amount of breast tissue; thereby enhancing lactation. Diosgenin, present in the seeds of fenugreek is believed to stimulate the growth of breast tissue.[60-66]

Galega officinalis

Goat's Rue is a powerful herb belongs to leguminosae family, native to Europe and the Middle East used for stimulating milk production and for increasing the flow of breast milk. It has been shown to increase milk production by 50% in many cases, and may also stimulate the development of the mammary glands themselves. Goat's rue is widely used internationally as a galactogogue. Limited scientific data exist on the safety and efficacy of goat's rue in nursing mothers or infants. In general, goat's rue is well tolerated, but it might cause hypoglycemia, so caution should be used in women taking antidiabetic drugs.[6], [67-72]

Rubus idaeus

Red raspberry (Rosaceae) leaf is reported to be a galactogogue; however, no scientifically valid clinical trials support this use. Galactogogues should never replace evaluation and counseling on modifiable factors that affect milk production. It is also one of the ingredients of the nursing tea and nursing tincture. It not only helps to increase breast milk production, but it also will help the uterus recover after birth, as it is a uterine toner.[73-75]

CONCLUSION

There are various plants like *Scripus kalsoor, Carum bulbocastanum, Abrus precatorius, Cuminum cyminum, Madhuka indica, Vetiveria zizanoides, Oryza sativa, Saccharum officinarum, Saccharum spontaneum, Coleus vetiveroides, Imperata cylindrica, Desmostachys bipinnata,*and *Typha elephantine* also possess galactagogue property. Further accurate evaluation on the above said plants, opens the door to the researchers in establishing the data on these milk enhancing herbs.[76]

The major purpose of the study was to systematically review the literatures on herbal medicine and lactation. The current review emphasizes on the galactagogue properties of various medicinal plants showed significant galactagogue property. It is difficult to develop accurate information on the safety and efficacy of these plants during breast feeding. Further research is needed to assess the prevalence, efficacy, and safety of commonly used herbs during breastfeeding.

REFERENCES

1. Berry, N.; Gribble, K. Breast is no longer best: Promoting normal infant feeding. Matern. Child Nutr., 2008; 4: 74–79.
2. Damanik R, Wahlqvist ML, Wattanapenpaiboon N. Lactagogue effects of Torbangun, a Bataknese traditional cuisine. Asia Pac J Clin Nutr, 2006; 15(2): 267-274.
3. National Health and Medical Research Council. Eat for Health: Infant Feeding Guidelines, Australian Government, Department of Health and Ageing.
4. Sjölin S, Hofvander Y, Hillervik C. Factors related to early termination of breast feeding. A retrospective study in Sweden. Acta Paediatr Scand., 1977; 66(4): 505-511.
5. Asztalos EV, Campbell-Yeo M, Dasilva OP, Kiss A, Knoppert DC, Ito S. Enhancing breast milk production with Domperidone in mothers of preterm neonates (empower trial). BMC Pregnancy Childbirth., 2012; 12(1): 87.

6. The Academy of Breastfeeding Medicine Protocol Committee. ABM clinical protocol #9: use of galactogogues in initiating or augmenting the rate of maternal milk secretion (First revision January 2011). Breastfeed Med., 2011; 6: 41-9.
7. Zuppa, A.A.; Sindico, P.; Orchi, C.; Carducci, C.; Cardiello, V.; Romagnoli, C. Safety and efficacy of galactogogues: Substances that induce maintain and increase breast milk production. J. Pharm. Pharm. Sci., 2010; 13: 162–174.
8. Brogden RN, Carmine AA, Heel RC, Speight TM, Avery GS. Domperidone. A review of its pharmacological activity, pharmacokinetics and therapeutic efficacy in the symptomatic treatment of chronic dyspepsia and as an antiemetic. Drugs., 1982; 24(5): 360-400.
9. Da Silva O, Knoppert D, Angelini M, Forret P. Effect of domperidone on milk production in mothers of premature newborns: a randomized, double-blind, placebo-controlled trial, CMAJ., 2001; 164: 17-21.
10. Wan E, Davey K, Page-Sharp M, Hartmann P, Simmer K, Ilett K.Dose-effect study of domperidone as a galactagogue in preterm mothers with insufficient milk supply, and its transfer into milk. Br J Clin Pharmacol., 2008; 66(2): 283-298.
11. West D, Marasco L, The Breastfeeding Mother's Guide to Making More Milk, USA: McGraw Hill; 2009.
12. Jones W, Breward S. Use of domperidone to enhance lactation: What is the evidence? Community Practitioner., 2011; 84(6): 35-37.
13. Henderson, A. Domperidone: Discovering new choices for lactating mothers. Association of Women 's Health Obstetrical and Neonatal Nurses: Lifelines, 2003; 7(L): 54-60. doi: I 0.117711 091592303251726.
14. Albright, LM. Domperidone in lactation: Use as a galactagogue. International Journalof Pharmaceutical Compounding., 2004; 8(5): 329-335.
15. Weichert CE. Lactational reflex recovery in breast-feeding failure. Pediatrics., 1979; 63: 799-803.
16. Yoshida K, Smith B, Craggs M, Kumar R. Neuroepileptic drugs in breast-milk: a study of pharmacokinetics and of possible adverse effects in breast-fed infants. Psychol Med., 1998; 28: 81-91.
17. American Academy of Pediatrics Committee on Drugs. The transfer of drugs and other chemicals into human breast milk. Pediatrics., 2001; 108: 776-789.
18. Hallbauer U. Sulpiride (Egonyl)- use to stimulate lactation. S Afr Med J., 1997; 87: 774-775.

19. Ylikorkala O, Kauppila A, Kivinen S, Viinikka. L.Sulpiride improves in adeguate lactation. Br Med J (Clin Res Ed)., 1982; 285: 249-251.
20. Aono T, Shoioji T, Aki T, Hirota K, Nomura A,Kurachi K. Augmentation of puerperal lactation by oral administration of sulpiride. J Clin Endocrinol Metab., 1979; 48: 478-82.
21. Renfrew MJ, Lang S, Woolridge M. Oxytocin for promoting successful lactation. Cochrane Database Syst Rev., 2000; 2: CD000156. Review.
22. Majumdar AM, Pataskar RD, Kapadi AH and Pendse GS. *Scripus Kysoor* Roxb., a new plant source of progesterone, Journal of Pharmacy and Pharmacology, 1980; 32(1): 308.
23. Rahman Khaleequr, Sultana Arshiya and Rahman Shafeequr. *Gossypium herbaceum* linn: an ethnopharmacological review. Journal of Pharmaceutical and Scientific Innovation., 2012; 1(5): 11-15.
24. Sikka P, Saxena NK, Gupta R, Sethi RK, Lall D and Studieson. Milk Allantoin and Uric Acid in Relation to Feeding Regimens and Production Performance in Buffaloes.Asian-Aust J Anim Sci., 2001; 14(11): 1634-1637.
25. Gaya H, Hulman B and Preston TR.The Value for Milk Production of Different Feed Supplements: Effect of Cereal Protein Concentrate, Poultry Litter and Oil Seed Meal. Tropical Animal Production., 1982; 7: 134-37.
26. Boodoo AA, Ramjee R, Hulman B, Dolberg F and Rowe JB. Effect of Supplements of Balanced Concentrates and Cottonseed Cake on Milk Production in Mauritian villages. Livestock Research for Rural evelopment., 1990; 2(1): 7-14.
27. Mollik AH. Plants from Sundarbans to the diet of lactating mothers during puerperium of Barguna district of Bangladesh. Pediatr Nephrol., 2010; 25: 1904.
28. Estrella MC, Mantaring JB, David GZ, Taup MA. A double-blind, randomized controlled trial on the use of malunggay (*Moringa oleifera*) for augmentation of the volume of breast milk among non-nursing mothers of preterm infants. Philipp J Pediatr., 2000; 49: 3-6.
29. Hosseinzadeh H, et al., Effect of Aqueous and Ethanolic Extracts of *Nigella sativa* Seeds on Milk Production in Rats, Journal of Acupuncture and Meridian Studies (2012), http://dx.doi.org/10.1016/j.jams.2012.07.019.
30. Shatavari: Potentials for galactogogue in dairy cows. Prakash Chandra Behera, Durga Prasad Tripathy and Subash Chandra Parija. Indian Journal of Traditional Knowledge., 2013; 12(1): 9-17.
31. Khan SS, Chaghtai SA, Siddiqui MA and Khan SM. Indian medicinal plants, II: *Asparagus racemosus* Willd. Acta Clinica Scientia., 1991; 1(2): 65-69.

32. Shelukar PS, Dakshinkar NP et al., Evaluation of herbal galactogogues. Indian Veterinary Journal., 2000; 77(7): 605-607.
33. Meites J. Proceedings of the first international pharmacology meeting. London: Pergamon Press., 1962; (I): 151.
34. Vihan VS and Panwar HS. A note on galactagogue activity of *Asparagus racemosus* in lactating goats. Indian Journal of Animal Health., 1988; 27: 177-178.
35. Patel AB and Kanitkar UK. *Asparagus racemosus* Willd. Form Bordi, as a galactogogue, in buffaloes. Indian Vet J., 1969; 46: 718-721.
36. Bhutada SG. Effect of herbal anti stressor AV/ASE/14 and galactagogue Payapro on milk production in buffaloes during summer. Indian Veterinary Medical Journal., 1999; 23(2): 135-136.
37. Sholapurkar ML. Lactare-for improving lactation. Indian Practitioner., 1986; 39: 1023-1026.
38. Sabins PB, Gaitonde BB and Jetmalani M. Effect of alcoholic extract of *Asparagus racemosus* on mammary glands of rats. ndian J Exp Biol., 1968; 6: 55-57.
39. Sumanth Meera and Narsimharaju K, Evaluation of Galactogogue activity of lactovedic: A polyherbal formulation, International Journal of Green Pharmacy, 2011; (5):61.
40. Garima Ojha, K. N. Mishra and Arun Mishra. Pharmacological Uses and Isolated Chemical Constituents of *Ipomoea Digitata*: A Review.IOSR Journal of Pharmacy and Biological Sciences., 2016; 11(3): 1-4.
41. Alshawabkeh, K, Herzallah SM and Al-Fatafta AA. Supplemental Effect of Plant Extracts of *Lepidium sativum* and *Brassica juncae* Seeds on Milk Production and Composition of Awassi Ewes Jordan Journal of Agricultural Sciences, 2013; 3: 9.
42. T. K. Lim, Edible Medicinal and Non-Medicinal Plants, vol. 5, Springer, New York, NY, USA, 2013.
43. P. M. Guarrera and V. Savo, Perceived health properties of wild and cultivated food plants in local and popular traditions of Italy: a review. Journal of Ethnopharmacology. 2013; 146(3): 659–680.
44. M. J. Macía, E. García, and P. J. Vidaurre, An ethnobotanical survey of medicinal plants commercialized in the markets of la Paz and El Alto, Bolivia. Journal of Ethnopharmacology, 2005; 97(2): 337–350.
45. F. B. Lewu and A. J. Afolayan. Ethnomedicine in South Africa: the role of weedy species.African Journal of Biotechnology., 2009; 8(6): 929–934.

46. E. Carrió and J. Vallès. Ethnobotany of medicinal plants used in Eastern Mallorca (Balearic Islands, Mediterranean Sea). Journal of Ethnopharmacology., 2012; 141(3): 1021–1040.
47. R. Rahimi and M. R. S. Ardekani, Medicinal properties of *Foeniculum vulgare* Mill. in traditional Iranian medicine and modern phytotherapy. Chinese Journal of Integrative Medicine., 2013; 19(1): 73–79.
48. M. Albert-Puleo, "Fennel and anise as estrogenic agents. Journal of Ethnopharmacology. 1980; 2(4): 337–344.
49. Ostad SN, Soodi, M, Shariffzadeh M, Khorshidi,N and Marzban H. The effect of fennel essential oil on uterine contraction as a model for dysmenorrhea, pharmacology and toxicology study. Journal of Ethnopharmacology., 2001; 76(3): 299–304.
50. Humphrey Sheila. The Nursing Mother's Herbal. Fairview Press. Minneapolis. 2003.
51. Jacobson Hilary. Mother Food. Rosalind Press., 2004.
52. Jennings, John. Alfalfa for Dairy Cattle. University of Arkansas Division of Agriculture. University of Arkansas Cooperative Extension Service Printing Services. Little Rock. Accessed August 5, 2012: http://www.uaex.edu/Other_Areas/publications/PDF/FSA-4000.pdf
53. Medline Plus. Alfalfa. U.S. National Library of Medicine. National Medicines ComprehensiveDatabase.2012.AccessedAugust5,2012: http://www.nlm.nih.gov/medlineplus/druginfo/natural/19.html
54. Putnam, D.H.; Summers, C.G.; Orloff S.B. 2007. Alfalfa Production Systems in California. IN (C.G. Summers and D.H. Putnam, eds.), Irrigated alfalfa management for Mediterranean and Desert zones. Chapter 1. Oakland: University of California Agriculture and Natural Resources Publication 8287: Accessed August 5, 2012:
55. Hitchcock CL and Cronquist A. Flora of the pacific north west: an illustrated manual. Seattle, WA: University of Washington Press, 1987.
56. Weed S. Wise woman herbal for the childbearing year. Woodstock, NY: Ash Tree Publishing, 1986.
57. Gladstar R. Herbal healing for women. New York, NY: Simon and Schuster, 1993.
58. Grieve M. A modern herbal. New York, NY: Dover, 1971.
59. Blumenthal M, Goldberg A and Brinckmann J. Herbal medicine: expanded Commission E monographs. Newton, MA: Integrated Medicine Communications, 2000.
60. Bartram T. Bartram's encyclopedia of herbal medicine. London, UK: Robinson, 1998.

61. Riordan J, Auerbach K. Human lactation and breast feeding. Second edition. Boston, MA: Jones & Bartlett, 1998.
62. Duke JA. The green pharmacy. Emmaus, PA: Rodale, 1997.
63. Passano P. The many uses of methi. Manushi., 1995; 31-4.
64. Escot N. Fenugreek. Atoms., 1994; 7-12.
65. Mowrey DB. The scientific validation of herbal medicine. New Canaan, CT: Keats, 1986.
66. Duke JA. Dr Duke's phytochemical and ethnobotanical databases. Available at: www.ars-grin.gov/cgi-bin/duke/. 2003.
67. Yarnell E. Botanical medicine in pregnancy and lactation. Altern Complement Ther., 1997; 3(April): 93-100.
68. Hardy ML. Women's health series: herbs of special interest to women. J Am Pharm Assoc (Wash)., 2000; 40: 234-42.
69. Low Dog T. The use of botanicals during pregnancy and lactation. Altern Ther Health Med., 2009; 15: 54-8.
70. Abascal K, Yarnell E. Botanical galactagogues. Altern Complement Ther., 2008; 14: 288-94.
71. Winterfeld U, Meyer Y, Panchaud A, Einarson A. Management of deficient lactation in Switzerland and Canada: A survey of midwives' current practices. Breastfeed Med., 2012; 7: 317-8.
72. Rosti L, Nardini A, Bettinelli ME, Rosti D. Toxic effects of a herbal tea mixture in two newborns. Acta Paediatr., 1994; 83: 683.
73. Hardy ML. Women's health series: herbs of special interest to women. J Am Pharm Assoc (Wash)., 2000; 40: 234-42 .
74. Petrie KA, Peck MR. Alternative medicine in maternity care. Prim Care., 2000; 27: 117-36.
75. Westfall RE. Galactagogue herbs: a qualitative study and review. Can J Midwifery Res Practice., 2003; 2: 22-7.
76. Nesamani S, Medicinal Plants-2, State Institute of Languages Publications., 1985; 529-588.