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Effect of Fenugreek on Breastfeeding Adequacy in Breastfeeding Mothers: A Review Study

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Abstract

Background

Effective interventions on exclusive breastfeeding that are appropriate for the existing conditions can have significant benefits on maintenance, continuity, and promotion of breastfeeding in mothers. The aim of this study is to evaluate the effect of Fenugreek on breast milk sufficiency in nursing mothers.

Materials and Methods

In this review, trials on the effect of Fenugreek on breast milk sufficiency were searched on the electronic databases of Scopus, EMBASE, Cochrane, Web of Science, and Medline, with no language or time restrictions before the end of December 2019, using the combination related keywords of Mesh. Study selection was done by two reviews.

Results

Reviews of 9 eligible clinical trials indicated the positive effect of fenugreek on breast milk adequacy and increased breast milk supply markers in the research participants compared to the control group. Effects of Fenugreek on breastfeeding adequacy were demonstrated in increasing neonatal weight gain, breastfeeding frequency, and fecal excretion frequency, number of changing diapers, increased breast milk production, and increased maternal prolactin hormone levels.

Conclusion

According to the results of reviewing previous studies, the use of fenugreek to improve breastfeeding adequacy and promote neonatal growth is recommended, considering its ease of access and use and rare adverse effects on the mother and infant.

Key Words: Breast milk, Fenugreek, Growth, Infant, Mother.

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1- INTRODUCTION

Breast milk is the ideal nutrition source for infants during the first six months after birth, because it provides all the nutrients needed for the healthy growth of infants. Breast milk also reduces the chance of developing infection, diabetes, heart and respiratory disorders, obesity, and allergic diseases (1). Despite the mentioned benefits, the prevalence of breastfeeding is relatively low, especially in developed countries in North America and Europe, where only 40% of mothers breastfeed their infants during the first six months after birth. The prevalence of exclusive breastfeeding in the first four months after birth is 60% in Scandinavian countries, 35% in the Netherlands, 16% in England, and 10% in France (2). Delay in breastfeeding and reduced breast milk production in the first few days after childbirth can lead to serious problems, such as decreased infant calorie intake, dehydration, hypernatremia, and hyperbilirubinemia. It is, therefore, highly recommended to evaluate a successful breastfeeding in terms of nutritional condition of the infant and the mother (3).

Reduced breast milk production is one of the most common causes of stopping breastfeeding. This is affected by various conditions such as preterm birth, maternal or infantile illness, separation of the infant from the mother, anxiety, and emotional stress, all of which are potent inhibitors of breast milk production (4). Moreover, despite measures taken to increase the prevalence of breastfeeding and prolong exclusive breastfeeding, mothers still report problems regarding exclusive breastfeeding (5). Shortened duration of exclusive breastfeeding remains a serious problem, especially in developing countries, as more than one million children aged less than a year die as a result of insufficient breastfeeding every year (6). Methods such as psychological support, relaxation techniques, and improved diet are recommended for promoting breastfeeding and increasing breast milk production. However, many mothers seek to increase their breast milk production through the help of physicians and medical intervention. Medicine recommended for increasing breast milk production (4) are drugs or herbs that stimulate milk production and increase its supply (7, 8). So far, various herbal and chemical drugs have been prescribed as such. The use of chemical drugs such as domperidone or metoclopramide may increase the risk of complications such as arrhythmia or hypothyroidism in mothers and children. Therefore, it is advisable to consider herbal breastfeeding supplements such as fennel, anise, barley, milk thistle and garlic to increase milk production. Among these herbs, fenugreek is one of the most widely used (2). Fenugreek (trigonella foenum-graecum L) seeds contain diosgenin, yamogenin, alkaloids, and trigonelline (9).

There is still little information regarding the exact function of fenugreek in increasing breast milk supply; although it can be attributed to its phytoestrogenic properties (10). Our study is, on the one hand, concerned with promoting the use of herbs as medicinal supplements, as they are cost-effective and available in non-formulated pharmaceutical forms, and their moderated consumption has no serious side effect. On the other hand, it focuses on the importance of and promoting exclusive breastfeeding. To achieve its goals, the present study reviews interventional studies of the effect of fenugreek on breastfeeding adequacy in the postpartum period.

2- MATERIALS AND METHODS

Trials evaluating the effect of peppermint on nipple fissure were researched on the electronic databases of Scopus, EMBASE, Cochrane, Web of Science and Medline (via PubMed) with

no language or time restrictions (until Dec. 2019). The following keywords and their combinations along with their Persian equivalents and their possible combinations were searched in the national databases (Magiran, SID, and Iran.Doc):

(Treatment OR Therapeutics OR Therapy) AND (Breast feeding OR Breastfeeding OR Breast Milk OR Human Milk) AND (fenugreek OR Trigonella foenum-graecum OR graecum).

3- RESULTS

The study was conducted on the effect of fenugreek on breast milk production and neonatal weight gain during the first week after birth, increased breastfeeding adequacy, and increased neonatal urinary frequency following the use of fenugreek syrup. The results showed a significant change in infants' weight in the group receiving intervention on days 1, 3, and 5 ($p = 0.001$) as well as the urinary frequency on days 1 to 5 ($p = 0.001$). No significant change was observed in the control group ($p>0.05$). The results showed a positive relationship between fenugreek consumption and increased breast milk production and neonatal weight gain (12). Results of a double-blind clinical trial on the effect of herbal supplement capsules, including ginger, turmeric, and fenugreek (consumed three times a day for two weeks) in increasing breast milk production and composition, showed that , contrary to the control group, breast milk production increased by 49% and 103% in intervention group after 2 and 4 weeks, respectively. However, there was no significant difference between the two groups in terms of breast milk composition (13). Another clinical trial investigated the effect of herbal tea containing fenugreek seed on breastfeeding adequacy in 0- to 4-month-old female infants. Results showed an improvement in breastfeeding adequacy markers, including neonatal weight gain, height, and head circumference, as well as increased frequency of wet dippers and fecal excretion at the end of the fourth week. The results also showed that fenugreek and fennel significantly improved breast milk sufficiency compared with the placebo group ($p<0.001$). However, the height growth showed no significant difference in the three groups ($p=0.094$) (7). A clinical trial investigated the effect of breastfeeding supplements, including herbal tea containing fenugreek, and date seeds on breast milk production using a breast pump. Results showed a statistically significant difference between the two intervention groups (fenugreek- and date-treated groups) with the control group; however, neonatal weight gain was not significantly different in the three groups on day 14 ($p = 0.01$). On day 3, breast milk production increased significantly ($p=0.001$) (14).

A double-blind clinical trial compared the effects of herbal tea containing fenugreek and apple seeds in mother-infant pairs who were homogeneous in terms of times and methods of delivery, anesthesia, neonatal gender, gestational age at birth, and birth weight. The results of this study reported the maximum weight loss and subsequent maximum weight gain in the fenugreek group ($p<0.05$). Also, the mean breast milk production was higher in mothers who used herbal tea containing fenugreek seeds as compared to those who used tea containing apple seeds and the control group (9). Another interventional study compared two similar breastfeeding supplements, including a combination of fenugreek powder with other ingredients, and a combination of garlic powder with other water-soluble substances with the control group. The results showed, despite the homogenous demographic characteristics of mothers and neonates, a significantly lower reduction in neonatal weight loss in the intervention groups compared to the control group ($p<0.05$).

The serum prolactin level was significantly higher in mothers who consumed breastfeeding supplements than the control group ($p<0.05$) (15). Similar clinical trials also investigated the effect of fenugreek on breast milk production and serum prolactin levels in mothers of preterm infants born earlier than 31 weeks of gestation. The results showed no significant difference in terms of breast milk production in the intervention and control groups on days 5, 10, and 15. Serum prolactin levels were also measured on days 5, 10, and 15 between the two groups of mothers, and the results showed no statistically significant difference (16). In a double-blind clinical trial, fenugreek seeds (6gr/ three times day) were added to every meal of nursing mothers for four consecutive weeks. At the end of the fourth week, neonatal weight and head circumference markers were significantly different between the intervention and control groups ($p<0.001$); but the height index showed no significant difference.

The two groups showed a significant difference in terms of other indicators of breastfeeding adequacy, including number of wet diapers, fecal excretion frequency, and breastfeeding frequency at the end of the fourth week. Other parameters showed no significant difference at the end of the first week, except for the breastfeeding frequency (17). A case-control study investigated the effect of herbal tea containing fenugreek seeds on the breast milk production using breast pump on days 3, 8, and 15. There was a significant difference between the fenugreek and control groups in terms of breast milk production only on day 3; however, there was a significant difference between the two groups on days 8 and 15. Also, maternal serum prolactin level in fenugreek group only increased significantly on day 3; however, there was no significant difference between fenugreek and control groups in terms of maternal serum prolactin level on day 15. This study reported the positive effect of herbal tea containing fenugreek seed on maternal satisfaction in the first days postpartum (18).

4- DISCUSSION

The present review study was carried out on nine studies that have investigated the effect of fenugreek on increasing milk production and other indicators of breastfeeding adequacy. The results of these studies supported the positive effect of fenugreek seeds on increasing breast milk production. Fenugreek seed has been recognized as a facilitator of breastfeeding and herbal breastfeeding supplement in the postpartum period worldwide. Although the precise mechanism of the effect of fenugreek seed on increasing breast milk production is unclear, the researchers believe that it contains substances that stimulate prolactin hormone secretion (19, 20). Besides, fenugreek seed extract contains steroidal compounds (sapogenin and diosgeninin) that affect the secretion of the hypothalamic and pituitary hormones (21). Fenugreek is known as a breastfeeding herb that is also consumed in late pregnancy and has no specific complications for the mother or infants (19). The importance of nutrition and the benefits of breast milk is undeniable in the world. It ensures the transfer of system boosters, mother-baby emotional attachment, availability of appropriate nutrients and other essential nutrients that support normal baby growth. Furthermore, postpartum hemorrhage, ovarian cancers, osteoporosis in breastfeeding mothers have been reported less frequently (22-24). Results of some studies have shown the importance of breastfeeding adequacy and exclusive breastfeeding by referring to a reduction of approximately 1.3 million infant deaths a year (25). Ravi & Joseph (2019) found that fenugreek was effective in increasing breast milk by monitoring changes in infant's weight in the first days

after birth (12). The results of other studies by Abdou and Fathey (18), and Bumrungpert et al. (13), and Srinivas et al. (15) showed that the use of herbal supplements containing fenugreek seed was effective in increasing breast milk production and nutritional content. Besides, the findings of studies by Abdou et al. (18), Srinivas et al. (15), and Reeder (16) reported positive effect of fenugreek in increasing maternal serum prolactin levels. Other studies by Ghasemi et al. (7), El Sakka et al. (4), and Vahdat (17) investigated breastfeeding adequacy markers, especially weight gain, breastfeeding frequency, urinary excretion frequency in infants. The results showed the positive effect of fenugreek as an effective and available breastfeeding supplement.

4-1. Study Limitations

Considering the heterogeneity and small number of studies, we could not perform meta-analysis. Some of the studies reviewed in the present review study had poor methodology quality. Other limitations included missing or inappropriate random allocation sequences, missing or inappropriate blinding reports, lack of intention-to-treat analysis, therefore, it is recommended to design and report future studies based on CONSORT checklist. Other limitations of the present study include the small number of studies and their low sample size, indicating the need for further studies with larger sample size.

5- CONCLUSION

Considering the desirable effects of herbs, the positive attitude of mothers towards using natural products, and the critical role of breastfeeding in infant health, fenugreek has been considered in complementary medicine. In addition, to help mothers overcome concerns regarding breast milk inadequacy, fenugreek is considered an effective product to maintain the breast milk production and improve its adequacy as well as promote infants' growth and health. Therefore, future studies are needed to optimize the use of desirable effects of fenugreek in breastfeeding.

6- CONFLICT OF INTEREST: None.

7- REFERENCES

1. Ozalkaya E, Aslandoğdu Z, Özkoral A, Topcuoğlu S, Karatekin G. Effect of a galactagogue herbal tea on breast milk production and prolactin secretion by mothers of preterm babies. Nigerian journal of clinical practice. 2018;21(1):38-42.

2. Sevrin T, Alexandre-Gouabau M-C, Castellano B, Aguesse A, Ouguerram K, Ngyuen P, et al. Impact of Fenugreek on Milk Production in Rodent Models of Lactation Challenge. Nutrients. 2019;11(11):2571.

3. Turkyılmaz C, Onal E, Hirfanoglu IM, Turan O, Koç E, Ergenekon E, et al. The effect of galactagogue herbal tea on breast milk production and short-term catch-up of birth weight in the first week of life. The journal of alternative and complementary medicine. 2011;17(2):139-42.

4. El Sakka A, Salama M, Salama K. The Effect of Fenugreek Herbal Tea and Palm Dates on Breast Milk Production and Infant Weight. Journal of Pediatric Sciences. 2014;6:e202.

5. Raisi Dehkordi Z, Raei M, Ghassab Shirazi M, Raisi Dehkordi S A, Mirmohammadali M. Effect of telephone counseling on continuity and duration of breastfeeding among primiparus women. Hayat 2012; 18(2): 57-65.

6. Kyle T. Essentials of pediatric nursing. Philadelphia, PA: Lippincott Williams & Wilkins; 2008.

7. Ghasemi V, Kheirkhah M, Vahedi M. The effect of herbal tea containing fenugreek seed on the signs of breast milk sufficiency in Iranian girl infants. Iran Red Crescent Med J. 2015 Aug; 17(8): e21848.

8. Shariati M, Mamoori G, Khadivzade T. The survey of effect of using "Shirafza Drop"by nursing mothers on weight gain (WG) of 0-6

months exclusively breastfed. Horizon Med Sci. 2004; 10(1): 24-30.

9. Mir Heydar H. Plant Sciences: used in theprevention and treatmentplants. 2nd ed. Tehran: Office ofIslamicculture; 2010. Pp.145-49 (Persian).

10. Patisaul HB, Jefferson W. The pros and cons of phytoestrogens. Front Neuroendocrinol. 2010; 31(4): 400-19.

11. Jadad AR, Moore RA, Carroll D, Jenkinson C, Reynolds DJM, Gavaghan DJ, et al. Assessing the quality of reports of randomized clinical trials: is blinding necessary? Control Clin Trials.1996;17(1):1-12.

12. Ravi R JJ. Effect Of Fenugreek On Breast Milk Production And Short- Term Catch-Up Of Birth Weight. Clinical Epidemiology and Global Health. 2019. Available at: https://doi.org/10.1016/j.cegh.2019.12.021.

13. Bumrungpert A, Somboonpanyakul P, Pavadhgul P, Thaninthranon S. Effects of Fenugreek, Ginger, and Turmeric Supplementation on Human Milk Volume and Nutrient Content in Breastfeeding Mothers: A Randomized Double-Blind Controlled Trial. Breastfeeding medicine: the official journal of the Academy of Breastfeeding Medicine. 2018.

14. Abeer El Sakka, Mostafa Salama, Kareem Salama. The Effect of Fenugreek Herbal Tea and Palm Dates on Breast Milk Production and Infant Weight. Journal of Pediatric Sciences. 2014; 6(0):1-8.

15. Srinivas R EK, Sasikumar S. The Effect of Naturally Formulated Galactagogue Mix on Breast Milk Production, Prolactin Level and Short-Term Catch-Up of Birth Weight in the First Week of Life. International Journal of Health Sciences & Research. 2014;4(10):242-53.

16. Reeder C LA, O'Connor-Von, S K. The Effect of Fenugreek on Milk Production and Prolactin Levels in Mothers of Preterm Infants. Clinical Lactation. 2013;4(4):159-65.

17. Vahdat N VS. The Effect of Fenugreek Seed on Breastfeeding Adequacy and Neonatal Weight gain in the First Month After Birth. Journal of Animal Environmental Research 2017;10(2):99 -108.

18. Mohamed Abdou R, Fathey M. Evaluation of early postpartum fenugreek supplementation on expressed breast milk volume and prolactin levels variation. The Gazette of the Egyptian Paediatric Association. 2018;66(3):57-60.

19. Sharma R JA, Kantwa S, Jain N, Rani D. Role of Garlic and Fenugreek during Gestation and Lactation: A Review. Universal Journal of Environmental Research & Technology. 2014;4(5): 265-79.

20. Health: NIo. National Center for Complementary and Alternative Medicine. . Herbs at a glance: Fenugreek. 2012; Retrieved from http://nccam.nih.gov/health/fenugreek.

21. Mazalzadeh F HK, Namjoyan F, SakiMalehi A. Effect of Fenugreek Vaginal Cream on Dyspareunia and Sexual Satisfaction in Menopausal Women: A Randomized Clinical Trial. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2018;21(3):22-30.

22. Taghizade Moghaddam, H., Khodaee, G., Ajilian Abbasi, M., Saeidi, M. Infant and Young Child Feeding: a Key area to Improve Child Health. International Journal of Pediatrics, 2015; 3(6.1): 1083-92.

23. Vakili R, Kiani M, Saeidi M, Hoseini BL, Alipour Anbarani M. Junk Food Consumption and Effects on Growth Status among Children Aged 6-24 Months in Mashhad, Northeastern Iran. International Journal of Pediatrics, 2015; 3(4.2): 817-822. doi: 10.22038/ijp.2015.4637.

24. Hoseini BL, Vakili R, Kiani M, Khakshour A, Saeidi M. Maternal Knowledge and Attitude toward Exclusive Breast Milk Feeding (BMF) in the First 6 Months of Infant Life in Mashhad. International Journal of Pediatrics, 2014; 2(1): 63-9.

25. Sharifirad G, Shahnazi H, Sedighi E, Mahaki B. The effect of supporter presence in education sessions of breastfeeding on knowledge, attitude and behavior of nulliparous women. Journal of Health. 2018; 9(1):45-61.