

## Comparing the Effects of Yarrow, Honey, and Breast Milk for Healing Nipple Fissure

### Abstract

**Background:** Nipple fissure is a common problem among breastfeeding women, which can lead to early cessation of breastfeeding. Because of the lack of effective treatment and given the approved efficacy of honey and yarrow on sore healing, this study was conducted to evaluate and compare the effects of yarrow, honey, and breast milk on the treatment of nipple fissure. **Materials and Methods:** This study was a three-group clinical trial, and sampling was conducted at Sina breastfeeding counseling center from September 2016 to March 2018 in Sirjan, Iran, using a target-based method. The sample size consisted of 150 individuals who were randomly assigned into three groups as topical use of yarrow, the mountain honey, and breast milk after obtaining the written informed consent. The correct method of breastfeeding and using materials were instructed to these three groups on the 1<sup>st</sup>, 3<sup>rd</sup>, and 7<sup>th</sup> days, where the Storr scale was completed by the researcher. **Results:** Friedman test showed that, in these three groups of yarrow ( $\chi^2 = 92.19$ ,  $df = 2$ ,  $p < 0.001$ ), honey ( $\chi^2 = 93.29$ ,  $df = 2$ ,  $p < 0.001$ ), and breast milk ( $\chi^2 = 90.51$ ,  $df = 2$ ,  $p < 0.001$ ); severity of fissure had a significant reduction. Nevertheless, Kruskal–Wallis test revealed no significant difference among the severity of fissure scores in these three groups ( $p > 0.05$ ). **Conclusions:** Use of honey, yarrow, and breast milk can be recommended to women in breastfeeding counseling and pharmaceutical companies can be advised to use honey and yarrow in the preparation of anti-fissure creams.

**Keywords:** *Achillea*, breast feeding, honey, Iran, milk, nipples

### Introduction

Breastfeeding is considered as the ideal method of feeding infants' period.<sup>[1]</sup> Breastfeeding cessation causes infant's deprivation of the benefits of breast milk.<sup>[2]</sup> Accordingly, nipple trauma is the main reason for early breastfeeding cessation,<sup>[3]</sup> in which mother experiences pain as well as bleeding at the start, during, and between breastfeeding.<sup>[4]</sup> Also, nipple fissure may have a harmful effect on milk production,<sup>[5]</sup> and its highest prevalence is between 3 and 7 days after delivery.<sup>[6]</sup> The injured and painful nipples are not considered as a part of the natural course of breastfeeding and should be healed as soon as possible.<sup>[7]</sup> Indeed, breast pain is the second cause of breastfeeding cessation after the feeling of a condition that the mother's milk is insufficient.<sup>[8]</sup> In addition, different measures are taken to eliminate nipple fissure.<sup>[9]</sup> Remaining of some milk on the nipple and spontaneously

drying of that is beneficial, because the breast milk has both antiseptic and softening properties.<sup>[5]</sup> Lanolin is commonly used to treat fissure; however, some women do not use it due to allergy or contradictory effects of lanolin on sore nipples, which has been reported in numerous studies.<sup>[4]</sup>

In recent years, due to the failure of existing therapies, researchers tend to use herbal medicines.<sup>[9]</sup> Yarrow (*Achillea Millefolium*) is among the herbs whose various effects have been mentioned in both the traditional and modern medicines.<sup>[10]</sup> The most important and effective ingredients in this plant are cyanogenic glycosides, oxylines, choline, formic acid, tannin, camasolin escape oil, alkaloids, and flavonoids.<sup>[11]</sup> Yarrow plant is used in the traditional medicine for the treatment of bleeding, menstrual disorders, hemorrhoids, blood in urine, inflammation, and so forth.<sup>[12]</sup> Yarrow has been extensively used in traditional medicine against inflammatory disorders and for

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skin wound healing.<sup>[13]</sup> This plant has anti-fever properties and its extract or brewed in water or alcohol can heal the wounds and injuries of women's breast skin.<sup>[11]</sup> Also, honey has long been documented to have healing properties.<sup>[14]</sup> Moreover, it plays an important role in the process of ulcer healing, due to its acidity and also the presence of sugar and other nutrients. In addition, honey causes the growth of new tissues by increasing free oxygen in the ulcer environment.<sup>[15]</sup> A study by Mohammed concluded that the use of natural honey in the management of chronic foot ulcers was proved to be effective.<sup>[15]</sup> Also, a study by Soha showed that honey could be used as an effective and safe material for covering the bedsores of patients.<sup>[16]</sup> Dorjsembe found that, *Achillea asiatica* extract significantly increased epithelialization and accelerated skin wound healing in rats.<sup>[17]</sup>

By considering the high prevalence of nipple fissure and its complications, the lack of any agreed treatment for it, and the necessity of early treatment of nipple fissure, the effects of honey and yarrow on wound healing have been proven; however, no study was found conducted on investigating the effects of yarrow and honey on the treatment of nipple fissure. Since breast milk has been reported as a common treatment of nipple fissure in mother's safe program, the present study was carried out to compare the effects of honey, yarrow, and breast milk on the healing of nipple fissure.

## Materials and Methods

This study was performed from September 2016 to March 2018 in Sirjan, Iran, and was a three-group clinical trial (IRCT20190625044001N1). The sample size after a pilot study consisting of 20 breastfeeding mothers with nipple fissure, with a confidence interval of 95%, and a power of 90% was estimated to have 38 individuals for each group, which was then changed to 50 people by considering the probability of a 20% dropout. In total, 150 individuals were allocated to the three groups. With the sampling conducted at Sina breastfeeding counseling center using available sampling method among breastfeeding mothers, they were assigned to three groups in terms of the permissive block method (50 triplet block). Groups of topical use of yarrow, mountain honey, and breast milk after obtaining written consent from them were enrolled. The correct technique of breastfeeding was instructed to these three groups. The inclusion criteria were as follows: obtaining the minimum score of 2 from the Storr scale, the possibility of having face-to-face communication on days 1<sup>st</sup>, 3<sup>rd</sup>, 7<sup>th</sup>. Singleton pregnancy, and having term and normal neonate, exclusive breast feeding.<sup>[18]</sup> On the other hand, the exclusion criteria included the followings: mother's sensitivity to yarrow and honey, lack of proper treatment for up to 7 days, the impossibility of communication on days of study,

postpartum fever, incidence of mastitis, bottle feeding, and the use of topical creams and analgesics.<sup>[3,5,18]</sup>

In the breast milk group, breastfeeding women were asked to put a few drops of milk on their breast twice a day, after finishing the breastfeeding.<sup>[5]</sup> In the group of yarrow using, breastfeeding women were asked to wash their breasts with boiled yarrow (30 g yarrow in 1 L water for 10 min) twice a day after finishing the breastfeeding.<sup>[19]</sup> Finally, in the group of honey usage, breastfeeding women were asked to coat the nipple by the mountain honey (from the honey that researcher gave them) twice a day after finishing the breastfeeding. The treatment took 7 days, the Storr scale was measured by the researcher on the 1<sup>st</sup>, 3<sup>rd</sup>, and 7<sup>th</sup> days. The degrees of Storr scale ranged from zero to four: painless nipple with a natural color was given zero score. If the nipple was red and inflamed and there was pain at the start of breastfeeding and in the interval between breastfeeding, the score was two. If the nipple started to fissure, there was pain at the start of breastfeeding, and in the interval between breastfeeding, score was three. Finally, if the nipple was fissured with bleeding, pain at the start, during, and after breastfeeding, a score of four was given.<sup>[4,5]</sup> The Storr scale was validated in 1988 by Storr, using the content validity method and by measuring its Cronbach's alpha coefficient. The scale has also been confirmed for being used in Iran by many studies by measuring its content validity.<sup>[20]</sup> Then, the data were analyzed using SPSS for Windows (version 15; SPSS Inc., Chicago, Illinois, USA).

## Ethical considerations

This study was approved by the Ethics Committee in Research (IR.KMU.REC.1395.289). The participants were informed of the purpose and procedure of the study. Also, participation was voluntary and written informed consent was obtained.

## Results

This study was performed on 150 breastfeeding women in three groups of 50 individuals with honey, yarrow, and breast milk. There was no significant difference between these three groups in terms of their demographic characteristics [Table 1]. The results of the data analysis revealed that, in these three groups of yarrow ( $\chi^2 = 92.19$ ,  $df = 2$ ,  $p < 0.001$ ), honey ( $\chi^2 = 93.29$ ,  $df = 2$ ,  $p < 0.001$ , (and breast milk ( $\chi^2 = 90.51$ ,  $df = 2$ ,  $p < 0.001$ )), there was a significant decrease in the severity of fissure score. However, comparison of the severity of fissure in the study of the days between the three groups, revealed no significant difference ( $p > 0.05$ ) [Table 2].

## Discussion

This study was conducted to evaluate and compare the effects of honey, yarrow, and breast milk on nipple fissure healing. The present study found a significant reduction in the severity of fissure in all three groups. The study

**Table 1: Comparison of demographic variables in the three groups of honey, yarrow, and breast milk. Pre-study**

Variable	Honey n (%)	Yarrow n (%)	Breast milk n (%)	Chi-Square statistic	p
Age					
17-24	17 (34)	19 (38)	19 (38)		
25-34	29 (58)	26 (52)	24 (48)	1.50	0.83*
35 and more	4 (8)	5 (10)	7 (14)		
Number of labors					
One	24 (48)	25 (50)	30 (60)		
Two	22 (44)	20 (40)	16 (32)	1.98	0.76**
Three and more	4 (8)	5 (10)	4 (8)		
Type of labor					
Normal	33 (66)	29 (58)	28 (56)		
Cesarean	17 (34)	21 (42)	22 (44)	1.17	0.56*
Elapsed days of labor					
1-6 days	23 (46)	29 (58)	31 (62)		
7-13 days	16 (32)	11 (22)	4 (8)	9.45	0.051*
14 and more	11 (22)	10 (20)	15 (30)		

\*Fridman Test. \*\*Kruskal Wallis Test

**Table 2: Comparison of the severity of fissure in the three groups of honey, yarrow, and breast milk before the intervention (1<sup>st</sup> day), and on the 3<sup>rd</sup> and 7<sup>th</sup> days**

Median of fissure score	1 <sup>st</sup> day Median (Q <sub>1</sub> , Q <sub>3</sub> )	3 <sup>rd</sup> day Median (Q <sub>1</sub> , Q <sub>3</sub> )	7 <sup>th</sup> day Median (Q <sub>1</sub> , Q <sub>3</sub> )	Chi-Square statistic	p*
Honey	3 (2,4)	2 (1,2)	0 (0,1)	93.29	<0.001
Yarrow	3 (2,3)	2 (1,3)	0 (0,1)	92.19	<0.001
breast milk	2.5 (2,3)	2 (1,2)	0.5 (0,1)	90.51	<0.001
Chi-Square statistic	3.45	3.33	1.48		
p**	0.18	0.19	0.48		

\*Fridman Test. \*\*Kruskal Wallis Test

results found that, the use of mountain honey results in a significant reduction of fissure score by passing 7 days from topical honey treatment. The wound healing properties of honey include stimulation of tissue growth, enhanced epithelialization, and minimized scar formation. These effects are ascribed to honey's acidity, hydrogen peroxide content, osmotic effect, nutritional and antioxidant contents, stimulation of immunity, and unidentified compounds.<sup>[15]</sup> These results were in agreement with the results obtained by Muhammad study found that, the use of natural honey proved to be effective on the treatment of chronic foot ulcers.<sup>[15]</sup> Also, this study results were in agreement with Soha who demonstrated that honey could be used as an effective and safe material for covering the bedsore of the patients.<sup>[16]</sup> Moreover, positive findings on honey in wound care have been reported from 17 randomized controlled trials. Honey has been used in the treatment of ulcers, due to its various etiologies. In a review of the literature, more than 470 cases were treated by honey.<sup>[14]</sup> A wound is a disruption of the continuity of a tissue structure and injury by surgery or accident that causes destruction of tissue, disruption of blood vessels, extravasation of blood constituents, and hypoxia.<sup>[15]</sup>

The study results indicated that, the use of yarrow results in a significant reduction of fissure score by passing 7 days

from topical yarrow treatment, since *Achillea millefolium* plant is rich in flavonoids that have anti-inflammatory properties.<sup>[21]</sup> These results were in agreement with the results obtained by Haj Hashemi (2016) who found that pain, redness, edema, and episiotomy ulcer episode were less in the group that used yarrow compared to the control group.<sup>[11]</sup> Also, this study results were in agreement with Dorjsembe who demonstrated that, *Achillea asiatica* extract significantly increased epithelialization and accelerated skin wounds healing in rats.<sup>[17]</sup> The study results found that, the use of breast milk results in a significant reduction of fissure score within 7 days of topical breast milk treatment. It is because breast milk has both antiseptic and softening properties. Accordingly, this result was in line with the finding of a study by Sheiniazadeh Emadi, indicating that the mean of fissure score had a significant decrease in the group that consumed breast milk.<sup>[7]</sup>

Regarding a comparison among these three groups as honey, yarrow, and breast milk; the present study revealed that, there was no significant difference in severity of fissure score among these three groups. These results were in agreement with the finding obtained by Moreland who found in his review study that none of the topical solutions had an extraordinary effect on the treatment of nipple fissure.<sup>[22]</sup> Also, the study results were in agreement with

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Kazemirad (2012) who demonstrated that the decrease in the mean of fissure score on the 3<sup>rd</sup> and 7<sup>th</sup> days was significantly different, both in the group of using Calendite E cream and the group of using breast milk. Nevertheless, there was no significant difference on the 7<sup>th</sup> day.<sup>[5]</sup>

A limitation of this study was that, there are different honeys that can have different effects, but we surveyed one type of mountain honey. Another limitation was that, the use of these materials was self-reported and may have not been used properly.

### Conclusion

Based on the results of the present study, we can conclude that honey, yarrow, and breast milk are all effective on the treatment of nipple fissure. Thus, use of this material can be recommended to women in breastfeeding counseling, and pharmaceutical companies can be advised to use honey and yarrow in the preparation of anti-fissure creams.

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### Conflicts of interest

Nothing to declare.

### References

1. Abd-Elsalam S, Hamido S, Abd el Hameed H. Effect of using pharmacological versus alternative therapy on traumatic nipples for lactating mothers. *J Am Sci* 2011;7:485-96.
2. Tafazoli M, Saeedi R, Gholami Robatsangi M, Mazloom R. Aloe vera gel Vs. lanolin ointment in the treatment of nipple sore: A randomized clinical trial. *Tehran Univ Med J* 2010;67:699-704.
3. Marrazzu A, Sanna MG, Dessole F, Capobianco G, Piga MD, Dessole S. Evaluation of the effectiveness of a silver-impregnated medical cap for topical treatment of nipple fissure of breastfeeding mothers. *Breastfeed Med* 2015;10:232-8.
4. Eshgizade M, Moghaddam MB, Moghaddam HM, Mahmoudian A, Mina M. Comparison of the effect of olive oil, aloe vera extract and breast milk on healing of breast fissure in lactating mothers: A randomized clinical trial. *Qom Univ Med Sci J* 2016;10:19-27.
5. Kazemirad M, Khodakarami N, Salamzadeh J, Nasiri N, Kazemi M, Moattar F. Comparison of calendite cream versus expressed breast milk. *Adv Nurs Midwifery* 2013;23:53-80.
6. Akbari SAA, Alamolhoda SH, Baghban AA, Mirabi P. Effects of menthol essence and breast milk on the improvement of nipple fissures in breastfeeding women. *J Res Med Sci* 2014;19:629-33.
7. Sheiniazadeh-Emadi S, Ehsani P, Dahanzadeh S. Comparison evaluation of Curcumin (*Curcuma longa* extract) with the application of expressed breast milk in the treatment of nipple cracks in lactating primiparous women: A randomized clinical trial. *J Clin Nurs Midwifery* 2015;4:11-9.
8. Morrison AH, Gentry R, Anderson J. Mothers' reasons for early breastfeeding cessation. *MCN Am J Matern Child Nurs* 2019;44:325-30.
9. Shanazi M, Khalili AF, Kamalifard M, Jafarabadi MA, Masoudin K, Esmali F. Comparison of the effects of lanolin, peppermint, and dexpanthenol creams on treatment of traumatic nipples in breastfeeding mothers. *J Caring Sci* 2015;4:297-307.
10. Potrich FB, Allemann A, da Silva LM, dos Santos AC, Baggio CH, Freitas CS. *et al.* Antitumorogenic activity of hydroalcoholic extract of *Achillea millefolium* L.: Involvement of the antioxidant system. *J Ethnopharmacol* 2010;130:85-92.
11. Hajhashemi M, Ghanbari Z, Movahedi M, Rafieian M, Keivani A, Haghollahi F. The effect of *Achillea millefolium* and *Hypericum perforatum* ointments on episiotomy wound healing in primiparous women. *J Maternal-Fetal Neonatal Med* 2018;31:63-9.
12. Parand R, Ghorbani R, Roodsari HS. Effects of alcoholic extract of *Achillea millefolium* flowers on fertility parameters in male rats. *JSSU* 2011;19:84-93.
13. Tadić V, Arsić I, Zvezdanović J, Zugić A, Cvetković D, Pavkov S. The estimation of the traditionally used yarrow (*Achillea millefolium* L. Asteraceae) oil extracts with anti-inflammatory potential in topical application. *J Ethnopharmacol* 2017;199:138-48.
14. Al-Waili N, Salom K, Al-Ghamdi AA. Honey for wound healing, ulcers, and burns; data supporting its use in clinical practice. *ScientificWorldJournal* 2011;11:766-87.
15. Mohamed H, Salma M, Al BL, Abdi S, Gouda Z, Barakat N, *et al.* The efficacy and safety of natural honey on the healing of foot ulcers: A case series. *Wounds* 2015;27:103-14.
16. Saha A, Chattopadhyay S, Azam M, Sur PK. The role of honey in healing of bedsores in cancer patients. *South Asian J Cancer* 2012;1:66-71.
17. Dorjsembe B, Lee HJ, Kim M, Dulamjav B, Jigjid T, Nho CW. *Achillea asiatica* extract and its active compounds induce cutaneous wound healing. *J Ethnopharmacol* 2017;206:306-14.
18. Saeidi R, Tafazoli M, Gholami M, Mazloom R. New treatment for nipple soreness in breastfeeding mothers: A clinical trial study. *IJN* 2015;6:48-51.
19. Amooie AM, Mojahed M, Mojahed M. *Entrepreneurship Package of Yarrow Production*. 1<sup>st</sup> ed. Tehran: Asrare Elm; 2016. p. 45.
20. As'adi N, Kariman N, Mojab F, Pourhoseingholi MA. The effect of Saqez (*Pistacia atlantica*) ointment on nipple fissure improvement in breastfeeding women during one-month follow-up. *Avicenna J Phytomed* 2017;7:477-85.
21. Benedek B, Kopp B, Melzig MF. *Achillea millefolium* L. s.l. -- is the anti-inflammatory activity mediated by protease inhibition? *J Ethnopharmacol* 2007;113:312-7.
22. Morland-Schultz K, Hill PD. Prevention of and therapies for nipple pain: A systematic review. *J Obstet Gynecol Neonatal Nurs* 2005;34:428-37.