

Herbs Used as Mudir e Laban (Galactogogue) in Unani Medicine

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REVIEW ARTICLE	ABSTRACT
	Breast milk has been considered as the "gold standard" of infant nutrition in world wide. The World Health Organization recommends exclusive breastfeeding for infants up to six months as the normal infant feeding method. Prolactin is the hormone responsible for the production of milk. Though many women can produce enough milk to meet their infant's demand, there are mothers who cannot produce sufficient milk for their infants. This is the most common reported reason for early cessation of breastfeeding. To overcome this condition, galactogogue are the medications that could assist in increasing the production of milk, however they posses their own hazards. There are many herbal preparations which help to increase the breast milk secretions and also there are various ethnic groups have their own special foods that are thought to enhance the milk production. This kind of knowledge of galactagogues is passed down from generation to generation. Therefore the aim of this review is to gather such knowledge especially as mentioned in the Unani authentic texts. Further, this article will deal the ancient physiological concept of <i>mudir e laban</i> (galatogogue) in the light of available new information and to appraise the effects of herbs with an objective to
*Author for correspondence E-mail: <u>muznfarzana@gmail.com</u>	update the current knowledge regarding the use of herbal galactogogue in management of <i>qillat</i> e <i>laban</i> (Insufficient breast milk secretion). From this study it revealed that the most of the galactogogues mentioned in Unani classical texts h been scientifically proved through <i>in vitro</i> and <i>in vivo</i> studies. Also, efficacy of ce galactogogues has been proved by randomized clinical trials. There are some r galactogogues which mentioned in Unani classical texts which should be pro scientifically vis randomized clinical trial to provide effective, better-quality and s drugs without distorting the Unani concepts.
Article ID 95	
	Keywords: Galactogogue, <i>qillat e laban, breast milk breast milk.</i> Biomediournal © Copyright 2013. All rights reserved. Biomediournal Privacy Policy.

INTRODUCTION

Brest milk has long been accepted as the gold standard of infant nutrition (Damanik 2006). The World Health Organization 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 (Mannion C 2012). The breast milk consists of protein, enzymes, lipids, hormones, growth factors, vitamins A, B, C, lysozymes, antibodies and other factors that build a strong and healthy human being (Mradu Gupta and Badri Shaw 2011).

In worldwide, maternal perception of insufficient milk production is the most common reason reported by mothers for early cessation of breast feeding and its prevalence is between 30-80% (Mannion 2012). The causes of insufficient milk production are due to *Int J Adv Pharmacy Med Bioallied Sci.* 4, 3, 2016. preterm labor, mother and child illness, mother - baby separation, anxiety, fatigue, emotional stress etc,. The consequence of inadequate breast feeding causes high prevalence of malnutrition, infection and loss of mother-infant bonding etc. (Dhingra, 2009).

Therefore, galactogogue are considered in insufficient breast milk production and for this purpose medications are used to assist to increase the production of milk. Galactogogues are the substances that thought to assist in the initiation, continuation or augmentation of breast milk production (ABM Clinical Protocol 2011). Though, certain medicine like metoclopramide, chlorpramazine and domperidone are being used for augmenting lactation, they are seldom recommended in view of their limited efficacy prospects and major safety concern. Due to the www.biomedjournal.com adverse effects produced by the western medical treatment for this condition (Zhou HY 2009), the world turned to an alternative system to defeat the situation by utilization of herbs, which are safest, easily available and cost effective. Ancient literature of Unani Medicine is blessed with adequate medical description of insufficient lactation including its management. In Unani system of medicine, insufficient lactation (oligogalactacea) has been explained under the heading of '*Qillat e laban*'. The Unani physicians like lbn Sina, Al Razai, Rabban Tabri, Akbar Arzani etc., have mentioned several herbs used as a *mudir e laban* (galatogogue) in *qillat e laban*.

Therefore, the aim of this article is to provide comprehensive information on ancient physiological concept of *mudir e laban* (galatogogue) herbs present in Unani System of Medicine to update the current knowledge and to promote the research in these herbs which are not proved scientifically.

Overview of *Qillat e laban* (Insufficient milk) and *Mudir e laban* (Galactogogue) in Unani Medicine

Qillat e laban is due to altered quality of the *madda khoon* (blood humour) is decreased or *soo e mizaj* (abnormal temperament), (Sina I 2007) *zof e quwat e*

jaziba (weakness in attractive power) of breast, *qillat e khoon* (anemia), *nafaas* (puerperal blood losss), *kasarat e tams* (menorrhagia), (Arzani A 1890), *ghiza e kami* (poor diet) and *awarizat e nafsaniya* (psychological complications) which makes the quality of blood poor and body is not able to produce milk (Arzani A 2002). According to Unani classical texts the herbs mentioned as a *mudir e laban* or *muwallid e laban* consists the properties like *muwallid e mani* (inducing ovulation), (Tabri AR 2002 and Arzani A 1890) *muqaww e bah* (aphrodisiac), (Baiter I 2005), *musmmin e badan* (body strengthen) (Kabeeruddin M 2007) which also responsible for adequate milk production.

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Zakariya AL Razi described *qiilat e laban* is caused by alteration in *kaifiat e dam* (quality of blood), which can be due *qillat e dam* (anemia) or *khilth e balgham* (phlegm). Ismail Jurjani was of opinion that mainly *qillat e laban* is due to *soo e mizaj e badan* (abnormal temperament of body) or *pistan* (breast) (Jurjani, 2010).

In Unani classical texts various herbs mentioned as *mudir e laban* or *muwallid e laban* as have increased recent years and might be a useful tool in the treatment of insufficient milk production in mothers.

Table 1: Name of the herbs as *mudir e laban* property mentioned in Unani literature.

S. No.	Unani tibbi Name	Botanical Name
1.	Aspand (Ghani, 2005)	Peganumhermala
2.	Aam (Ahmad, 2005)	Mangiferaindica
3.	Angoor (Ahmad, 2005)	Vitisvinifera
4.	Anjir (Ahmad, 2005)	Ficuscarica
5.	Alsi (Hakeem, 2002)	Linumusitatissimum
6.	Asgandh (Ghani, 2005)	Withaniasomnifera
7.	Ajwaindesi (Ghani, 2005)	Carumcopticum
8.	Ash e jaw (Ghani, 2005)	Hordeumvulgare
9.	Akhrot (Ghani, 2005)	Jugulansregia
10.	Badam (Hakeem, 2002)	Prunusamygdalus
11.	Bozidan (Hakeem, 2002)	Pyrethrum indicum
12.	Gul e Mahuwa (Ahmad, 2005)	Madhucaindica
13.	Ghas (Hakeem, 2002)	Medicago sativa
14.	Hulba (Ghani, 2005)	Trigonellafoenum
15.	Hulhul (Ghani, 2005)	Ipomoea digitata
16.	Halim, Halyun (Hakeem, 2002)	Lepidiumsativum

17.	Khunjad (Hakeem, 2002)	Sesamumindicum
18.	Kalonji (Hakeem, 2002)	Nigella sativa
19.	Khurma (Ahmad, 2005)	Phoenix dactylifera
20.	Lehzan (Kabeeruddin, 2007)	Allium sativum
21.	Muslisafaid (Ghani, 2005)	Chlorophytum
		arundinacecum
22.	Maghze Narjeel (Ahmad, 2005)	Cocusnucifera
23.	Maghz e Pista (Ahmad, 2005)	Pistaciavera
24.	Maghz e Chilghoza (Ahmad, 2005)	Pinusgerardiana
25.	Musli Safaid (Ahmad, 2005)	Chlorophytumarundinaceum
26.	Maghaz e tukhm-e-kaddu (Ahmad, 2005)	Laginariasiceraria
27.	Maghz e tukhm-e kharpaza (Ahmad, 2005)	Cucumismelo
28.	Nagar motha (Kabeeruddin, 2007)	Cyperusrotundus
29.	Narjeel (Ghani, 2005)	Lodoiceamaldivica
30.	Panbadana (Mohd Kanzul, 2005)	Gossypiumarborenum
31.	Singhada (Ghani, 2005)	Trapaspinosa
32.	Satawar (Kabeeruddin, 2007)	Asparagus recemosus
33.	Sambhalu (Kabeeruddin, 2007)	Vitexnigundu
34.	Saunf (Ahmad, 2005)	Foeniculumvulgare
35.	Salab Misri (Ahmad, 2005)	Orchislatifolia
36.	Sohanjna (Kabeeruddin, 2007)	Moringaoleifera
37.	Tudrizard (Ahmad, 2005)	Lepidiumiberis
38.	Tukhm-e-tarbuz (Ahmad, 2005)	Citrullusvulgsis
39.	Tukhm e gajar (Ahmad, 2005)	Daucuscarota
40.	Tudrisurkh (Kabeeruddin, 2007)	Lepidiumiberis
41.	Thukum e Gandana (Ahmad, 2005)	Allium ascalonicum
42.	Unnab (Kabeeruddin, 2007)	Ziziphusjujuba
43.	Zeera safaid (Kabeeruddin, 2007)	Cuminumcyminum

Table 2: List of Retrieved Clinical Trials on Galactogogue and Oligogalactacea.

Studies retrieved on galactogogue and oligogalactacea	Herb	Type of study	Number of patients included	Study duration	Assessment tool	Primary outcome of the studies
Gupta, 2011	Asparagus recemosus	RCT	60 (oligogalactace a mothers)	30 days	Quantitative determination of prolactin hormone concentration (ng/mL) in human serum of blood sample	The root powder oral administration in women in a double- blind randomized clinical trial has demonstrated a threefold increase in prolactin level in subjects of the research group compared to the control group.
Vida Ghasemi, Masoomeh Kheirkhah <i>et al</i> .	Foeniculumvulgare	RCT	78 (girl infant)	4 weeks	Demographic questionnaire	growth parameters and thenumber of wet diapers in a day, frequency of defecation were increased
Turkyılmaz, 2011	Trigonellafoenumgra ceum	RCT	66- mother- infant pair	4 weeks	Mothers' milk production and infants' weight gain	breast milk production and infants' weight gain pattern in the early postnatal period were increased
Ma. Corazon P,2000	Moringaoleifera	RCT	366 -postnatal mothers	-		Resume <i>in vivo</i> measurement of volume of breast milk and <i>in vivo</i> adequacy of milk production by infant weight gain.
Bhandari NR et al, 1979	Leptadeniareticulata	RCT	242- postnatal mothers	4 weeks	Mothers were evaluated clinically as to their lactation and Children were weighed once a week for four weeks	Statistical study of the results showed that the effect of Leptaden in lactation cases and the weight gain of the infants whose mothers were treated with Leptaden were statistically significant at P < 0.001. This study has shown the good effect of Leptaden in lactation cases both clinically and statistically.
Zuppa A, <i>et al, 2010</i>	Silybummarianum	RCT	50- Lactating mothers	60 days	Collected milk samples for a qualitative profile for increase daily milk production	Qualitative profile. an increase in daily milk production equal.
Gori L , 2012	Silybummarianum	RCT		63 days		In women orally treated for 63 days with 420mg/day of silymarin a clear galactogogueeffect was evident with an increase of 85.94% of daily milk production compared to 32.09% of the placebo group.
Rosti L , 1994	Galegaofficinalis	NA	NA	NA	NA	Galegaofficinalis 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.
Weed S, 1986	Carduibenedicti	NRCT	NA	NA	NA	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
Lockett and Grivetti, 2000	Tamarindusindicus , Moringaoleifera	NRCT	100			To determine dietary patterns for pregnant and lactating mothers among two groups of rural Fulani agropastoralists of eastern Nigeria
Sharma Set al, 1996	Asparagus racimosus, Glycyrrhizaglabra	RCT	64			To study the effect on prolactin and clinical galactogogue

RCT-Randomized Controlled Trial; NRCT-Non-randomized Controlled Trial; NA-Not Available

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Studies retrieved on herbal galactogogue	Herbs	Outcome of the study
Al Sanafi <i>et al</i> . 2014	Nigella sativa	Female mice kept in <i>Nigella sativa</i> containing diet was significantly higher (P < 0.01) than that of mother switched on to control diet.
Hosseinzadeh <i>et al</i> , 2012	Nigella sativa	The effect of aqueous and ethanolic extracts of <i>Nigella sativa</i> seeds on milk production in rats was evaluated. The measurement of milk production was by measuring pup weight during suckling period. The study reveals that aqueous and ethanolic extracts of <i>Nigella sativa</i> can stimulate milk production in rats.
Sikka <i>et al.</i> , 2001	Gossipium herbaceum	The studies conducted in buffaloes, showed that <i>Gossipium herbaceum</i> feeding enhances the milk production significantly (P<0.01) in comparison to commercial concentrate mixture fed control group animals.
Badgujar, 2015	Cyperus rotundus	The aqueous extract of <i>Cyperus rotundus</i> can stimulate milk production in the female rats which may be consequently effective in increasing the lactation of human too.
Kholif, 2001	Trigonella foenum	The effect of <i>Trigonella foenum</i> feeding on milk production in local Saudi lactating goats. Twelve lactating local Saudi goats from theZumri breed in early lactation week and parity. Six goatswerefed with 60gm/day of <i>Trigonella foenum</i> seeds powder for seven weekswhile the other six goats served as control. Milk yield wasrecorded daily and blood samples were collected twice a week. Also, blood samples were taken every 15 min for 6 hours during <i>Trigonella foenum</i> treatment. Milk yield was found to be significantly higher (p<0.05) in the treated group (1236±38 vs.1093±43ml/day). <i>Trigonellafoenum</i> fed goats exhibited significantly lower plasma levels of glucose (p=<0.05) and urea (p<0.01) compared to control. Mean plasma levels of growth hormone during six hours bleeding were significantly higher (p<0.05) in the <i>Trigonellafoenum</i> treatedgoats compared tocontrol (0.27±0.09 and 0.21±0.02ng/ml, respectively.
Abo El-Nor, 1999	Trigonellafoenum	In goats, it has been reported that feeding with 10 g daily offenugreek seed increases milk production. Attempting to elucidate the mechanismby which this plant increases milk production, it is proposed that the galactogenic effect could be mediated through increased feed intake in buffaloes.
Janabi, 2012	Trigonellafoenum	In goatsfeeding with fenugreek increased milk production and thiseffect might be mediated via prolactin (PRL) stimulation, because PRLconcentrations were found to be significantly higher inthe fenugreek fed goats compared to control group.
Sabins et al, 1968	Asparagus recemosus	In rats alcohol extract of <i>Asparagus recemosus</i> increased milk production concurrent with increased growth of mammary glands, alveolar tissues and acini.
Sharma, Bhatnagar, 2011	Asparagus recemosus	In other studies with alcohol extract of <i>Asparagus recemosus</i> demonstrated estrogenic effects in genital organs and in mammary glands in rats with hyperplasia in alveolar tissues and acini and with increased milk production
Narendranath, 1986	Asparagus recemosus	A significant increase in milk yield has also been observed in pigs and goats after feeding with lactare (commercial herbal galactogogues with <i>A. racemosus</i> in its formulation) which also increased growth of the mammary glands, alveolar tissues, and acini.
Tedesco, <i>et al.</i> , 2004	Silybummarianum	Treatment with 10 g silymarin/cow/days PO in the peripartum (from 10 day before calving to 15 days after calving), an increase in milk production of 5-6 L/day per cow was observed.
Capasso et al., 2009	Silybum marianum	Female rats treated for 14 days with 25-200mg/kg orally increased, in a dose dependent manner, the serum PRL levels. It is known that silymarin elicited partial ER activation and silybin B were probably responsible for a majority of the weak ER-mediated activities of silymarin, whereas, itsdiastereomer, silybin A, was found to be inactive.
González-Andrés, <i>et al</i> , 2004	Galega officinalis	Preliminary results on increasing milk yield n sheep indicated that a controlled daily dose of 2 g dry matter kg ⁻¹ (body weight) from the first month after lambing until the third milk recording 60 days later, led to a 16.90% increase in total milk yield and a

Table 3: List of Retrieved Animal Trials on Herbal Galactogogue

		10.86% increase when the milk yield is readjusted to a lactation length of 120 days.
Schaneberg, 2004 and	Foeniculum	In mice or goats, <i>F.vulgare</i> has been used as an estrogenic agent for centuries. It has been reported to increase milk secretion,
Shah, 1991	vulgare	improvethe reproductive cyclicity, facilitate birth, and increase libido.
	•	Aqueousandethanolic extracts of <i>P. anisum</i> seeds can increase milk production in rats. The aqueous (1 g/kg) and
Hosseinzadeh, 2012	Pimpinella anisum	ethanolicextracts (1 g/kg) increased rats milk production significantly in about 68.1% and 81%, respectively, compared to the
		control group.

CONCLUSION

The review of Unani classical texts provides list of herbal galactogogue, besides only some of them have been scientifically evaluated. But the evidences are weak and insignificant to get the conclusion. More importantly, before the assessment of clinical efficacy, study must provide evidence for the mechanisms of action of herbs as galactogogues and their safety through phytochemical and pharmacokinetic action of active ingredients present in galactogogues plants are compulsory to determine their mechanisms of action and to establish therapeutic ranges, dosage and possible side effects in different domestic animals and humans.

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Therefore, to prove significant safety and efficacy of herbal galactogogues further studies on the promising herbs are required to establish a preliminary data, on which well-designed, randomized clinical trial with double blind on large samples are needed to prove the galactogogue action which strong evidence for herbal galactogogue without distorting the Unani concepts to provide effective, better-quality and safer drugs to recommended to public.

CONFLICT OF INTEREST None to declare

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