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### A REVIEW OF GALACTAGOGUES IN SIDDHA SYSTEM OF MEDICINE

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#### ABSTRACT

Lactation failure has become more common in females nowadays due to lifestyle modifications. Increased stress in working women, intake of junk foods have contributed to nutritional deficiencies and hormonal imbalances which ultimately leads to lactation failure. Galactagogues are those herbs, supplements or drugs that can increase the secretion or production of milk. In general, galactagogues are used to treat lactation failure or deficiency, also known as agalactia or hypogalactia, respectively. Some synthetic drugs used to treat lactation failure are metoclopramide and domperidone. Their remarkable side effects in mothers are xerostomia (dry mouth syndrome or hypo salivation), gastrointestinal disorders, cardiac arrhythmia, lethargy, sedation, extra pyramidal symptoms such as hypertension, tremor, tic, facial seborrhea, hyperhidrosis and even sudden death. In infants who ingested the milk from treated mothers develop intestinal discomfort, lethargy and sedation. The aim of this review is to highlight the galactagogue action of herbs used in siddha system of medicine. Many herbs possess galactagogue activity. But this donot cause the side effects mentioned above. The use of herbs in treating diseases is growing because of society's interest. This review may give a good reference in selection of medicinal plants with galactagogue activity.

#### KEYWORDS

Galactagogue, Metoclopramide, Herbs and Lactation failure.

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#### INTRODUCTION

Siddha system is one of the oldest healing systems of India based on way of life, diet and herbs. Herbs constitute an effective source for maintaining health in South India. Indian medicinal plants and their products are used to control various types of diseases such as diabetes, hypertension, gastric ulcer and bronchitis. In Siddha Materia Medica by K. S. Murugesu Mudaliyar, about 531 herbs are described. In that 24 herbs are being described as

galactagogues like *Asparagus racemosus* (shatavari), *Nigella sativa* (karunjeeragam), *Lepidium sativum* (aazhividhai), *Trigonella foenum graecum* (vendhayam) and *Allium sativum* (poondu) (Table No.1). These herbs not only possess galactagogue activity but also have many other actions. This makes it easier to treat multiple ailments with a single herb. As the herbs are rich in antioxidants, they produce no side effects. This review deals with galactagogues used in siddha system and their scientific validation.

### **Breast milk**

Breast milk forms the primary source of nutrition for infants. It contains about 88.5% of water and 11.5% of solids. Important solids are lactose, lactalbumin, iron, vitamins A and D and minerals<sup>2</sup>.

Breast milk is considered superior to animal milk or goat milk as it contains sufficient quantities of all the substances necessary for infants like iron, vitamins and minerals. The breast milk also provides several antibodies. This helps the infants resist the infection by lethal bacteria. Even some neutrophils and macrophages are secreted in milk. These phagocytic cells protect the infant by destroying microbes in the infant's body<sup>2</sup>.

### **Lactation**

Lactation means synthesis, secretion and ejection of milk. The physiological basis of lactation is divided into four phases:

Preparation of breasts (Mammogenesis)

Synthesis and secretion from the breast alveoli (Lactogenesis)

Ejection of milk (Galactokinesis)

Maintenance of lactation (Galactopoiesis)<sup>3</sup>

### **Role of hormones in lactation**

Various hormones like estrogen, progesterone, prolactin, placental hormones, growth hormones, thyroxine and cortisol are involved in the development and growth of breast. However Prolactin is the major hormone responsible for lactogenesis. Whereas hormones like growth hormone, thyroxine and cortisol are responsible for galactopoiesis.

### **Lactation failure**

Lactation failure or deficiency, also known as agalactia or hypogalactia, respectively is a medical condition in which lactation is insufficient or fails

completely due to an inadequacy of breast milk production and/or a failure of the milk let-down reflex. Mothers of pre-term babies and working mothers who are under constant stress also develop lactation failure.

### **Causes of lactation failure**

The most important cause of lactation failure is an insufficient secretion of prolactin from the pituitary gland.

Other causes include lymphocytic hypophysitis, sheehan's syndrome and adult growth hormone deficiency, all of which may cause lactation failure in part or full by lack of sufficient GH secretion.

Breast hypoplasia during puberty and/or pregnancy, is another cause of lactation failure. But it is rare. Overweight/Obesity can result in early lactation failure.

### **TREATMENT WITH SYNTHETIC DRUGS**

Lactation failure can be treated with a galactagogue (lactation - promoting agent) such as D<sub>2</sub> receptor antagonists like domperidone, metoclopramide or certain antipsychotics like chlorpromazine, haloperidol, sulpiride or risperidone, an oxytocic such as oxytocin or an analogue like carbetocin or demoxytocin, with GH (or potentially with a growth hormone secretagogue, alternatively), or with thyrotropin - releasing hormone (TRH) or thyroid - stimulating hormone<sup>4</sup>.

### **Adverse events**

The main adverse effects of synthetic galactagogues in mothers are xerostomia, gastrointestinal disorders, cardiac arrhythmia, lethargy, sedation, extra pyramidal symptoms such as hypertension, tremor, tic, facial seborrhea, hyperhidrosis and even sudden death. In infants who ingested the milk from treated mothers develop intestinal discomfort and lethargy<sup>4</sup>.

### **HERBS WITH GALACTAGOGUE ACTIVITY IN BIOMEDICAL LITERATURE**

#### ***Asparagus racemosus***

The root powder of *Asparagus racemosus* was evaluated for its galactagogue activity at the dose of 60mg / kg body weight per day. Rice powder was used as placebo (60 mg / kg body weight per day). The treatment consisted of oral ingestion of the

treatment drug in the form of capsules three times daily with milk for 30 days. During the study period, there was increase in mean prolactin hormone level. Also the weight of both the mothers & the children was increased during the study period. From the study, it was concluded that *Asparagus racemosus* have galactagogue activity when compared to placebo<sup>5</sup>.

#### ***Nigella sativa***

Aqueous and ethanolic extracts of *Nigella sativa* were given orally at the dose of 0.5 and 1g/kg. Per 0.5 ml saline to the female albino mice. Control group received 0.5ml of saline. The milk yield was increased from Day 8 to the end of the test. The milk yield and weight of the pups showed a significant increase in comparison to the control group. So, it was finalized that *Nigella sativa* have got galactagogue activity<sup>6</sup>.

#### ***Lepidium sativum***

Galactagogue properties of *lepidiumsativum* seeds were studied in adult female virgin Norway rats. Each experimental rat was administered 1.6mg seeds powder/gm body weight/day for fourteen days. Different parameters (gross assessment, historical examination, enzymatic histochemical study and hormonal assay of follicle stimulating hormone, luteinizing hormone, prolactin, estrogen and progesterone) were assessed to study the effect of lepidiumsativum seeds on the mammary gland of young adult virgin rats. All the parameters significantly exhibited a strong mammatrophic and lactogenic effects of the seeds on the non-primed mammary gland of adult virgin rats. It was concluded that *lepidiumsativum* seeds are most probably a real galactagogue and might be useful in induction of lactation<sup>7</sup>.

**Table No.1: Siddha herbs used as galactagogues<sup>8-12</sup>**

S.No	Botanical name	Tamil name	Parts used as galactagogue	Other actions	Siddha classical text
1	<i>Ricinus tataricus</i>	Sevvamanakku	Leaves	Anti vatha	---
2	<i>Lepidium sativum</i>	Aazhihvidhai	Seeds	Emmenagogue Diuretic	---
3	<i>Madhuca longifolia</i>	Iluppai	Leaves	---	---
4	<i>Solanum tuberosum</i>	Urulaikizhangu	Root tuber	Nervine sedative Diuretic	---
5	<i>Vigna mungo</i>	Ulundhu	Seeds	Demulcent Nutritive	---
6	<i>Jatropha curcas</i>	Eliyaamanakku	---	Anthelmintic Styptic	---
7	<i>Sesamum indicum</i>	Ellu	Seeds	Emmenagogue Tonic	---
8	<i>Nervilia aragoana</i>	Orilaithamarai	---	---	Agathiyar Gunavagadam
9	<i>Erythrina variegata</i>	Kaliyanamurukku	Leaves	Emmenagogue Diuretic	---
10	<i>Jatropha curcas</i>	Kaatamanakku	Leaves	---	---
11	<i>Cinnamomum zeylanicum</i>	Kattukaruvapattai	---	Diuretic Diaphoretic	---
12	<i>Ficus hispida</i>	Sirupeyatthi	Fruits	Emetic	Agathiyar Gunavagadam
13	<i>Nigella sativa</i>	Karunjeeragam	Seeds	Emmenagogue Anthelmintic	---
14	<i>Asparagus racemosus</i>	Thanneervittan	Root tuber	Antispasmodic Demulcent	---
16	<i>Saccharum spontaneum</i>	Naanal	Root	Diuretic	---
17	<i>Ipomoea mauritiana</i>	Nilapoo sani	Root tuber	Cholagogue Aphrodisiac	---

18	<i>Carica papaya</i>	Pappali	Raw fruit	Anthelmintic Stomachic	---
19	<i>Momordicacharantia</i>	Paagal	Leaves	Anthelmintic	
20	<i>Desmodiumtriflorum</i>	Sirupulladi	Whole plant	Diuretic Tonic	Agathiyar Gunavagadam
21	<i>Piper beetle</i>	Vettilai	Leaves	Antiseptic Sialogogue	---
22	<i>Fumariaparviflora</i>	Thara	Leaves	Diuretic Anthelmintic	Agathiyar Gunavagadam
23	<i>Trigonellafoenumgraecum</i>	Vendhayam	Seeds	Diuretic Demulcent	---
24	<i>Cyperusrotundus</i>	Koraikizhangu	Root tuber	Emmenagogue Diuretic	---
25	<i>Physalis minima</i>	Thakkali	Whole plant	Diuretic Laxative	---

## CONCLUSION

Herbs are available throughout India. There are still in day to day practice, as these are safe and cost effective. Even though more number of herbs are mentioned in siddha texts, only three of the herbs are proven of its galactagogue activity. The most common traditionally used herbs like fenugreek and garlic are being used as galactagogues worldwide. But these herbs lack scientific studies. So for a healthy future, more clinical and pharmacological studies should be conducted to investigate the unexploited potential of these galactagogue herbs mentioned in siddha system of medicine. This may be a helpful review for further studies in application of herbal galactagogues in various conditions.

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## CONFLICT OF INTEREST

We declare that we have no conflict of interest.

## REFERENCES

1. Murugesu Mudaliyar K S. Siddha material medica, *Dept of Indian Medicine and Homeopathy, Chennai, Govt of Tamil Nadu*, 2006, 87-500.
2. Sembulingam K and Prema Sembulingam. Essentials of Medical Physiology, *Jaypee*

*Brothers Medical Publishers (P) Ltd*, Sixth Edition, 511-512.

3. Dutta D C. Text Book of Obstetrics, *New Central Book Agency (P) Ltd*, 6<sup>th</sup> Edition, 149, 2004.
4. Felipe Penagos Tabares, Juliana V, Bedoya Jaramillo and Zulna Tatiana Ruiz-Cortes. Review Article - Pharmacological Overview of Galactagogues, *Veterinary Medicine International*, 2014, 1-20.
5. Mradu Gupta and Badrishaw. A Double-Blind Randomized clinical Trial for Evaluation of Galactagogue Activity of Asparagus race mosuswilld, *Iranian Journal of pharmaceutical Research*, 10(1), 2011, 167-172.
6. Hossein Hosseinzadeh, Mohsen Tafaghodi, Mojdeh Jalal Mosavi and Elahe Taghiabadi. Effect of Aqueous and Ethanolic Extracts of Nigella Sativa seeds on Milk Production in Rats, *Journal of Acupuncture and Meridian Studies*, 6(1), 2013, 18-23.
7. Snehal Doke and Manisha Guha. Garden cress (*Lepidiumsativum L.*) Seed- An Important Medicinal Source: A Review, *J. Nat Prod. Plant Resour*, 4(1), 2014, 69-80.
8. Al-Yawer M A, Al-Khateeb H M and Al-Khafaji. *The Iraqi Postgraduate Medical Journal*, 5(1), 2006, 1-121.
9. Haridutta Dandotiya, Girraj Singh and Kashaw S K. The Galactagogues use by Indian Tribal Communities to overcome poor

Lactation, *International Journal of Biotechnology and Bioengineering Research*, 4(3), 2013, 243-248.

10. Narasimharaju Kalidindi. Evaluation of Galactagogue activity of Lactovedic - a polyherbal formulation, *Rajiv Gandhi University of Health Sciences*, Karnataka.
11. Mylove Mortel and Supriya D Mehta. Systematic Review of the Efficacy of Herbal Galactagogues, *J Hum Lact*, 29, originally published online 6 March 2013, 154.
12. Mohamed Bnouham. Medicinal Plants with Potential Galactagogue Activity Used in the Moroccan Pharmacopoeia, *Journal of Complementary and Integrative Medicine*, 7(1), 2010, 1-15.

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