



ROLE OF AYURVEDIC HERBAL AND HERBO-MINERAL FORMULATIONS IN FEMALE INFERTILITY- A REVIEW ARTICLE

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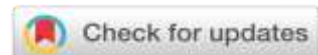
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ABSTRACT

Background (Introduction): Infertility is a global health issue affecting millions of people of reproductive age worldwide. According to WHO, available data suggests that between 48 million couples and 186 million individuals have infertility globally. According to ayurveda, womb preparation is the most important factor to attain fertility. Herbo-metallic formulations prepared using SOPs can play a significant role in eliminating doshas in a short duration of time. They are known for their minimum dose, maximum efficacy, and least side effects. They help to keep all the hormones and the reproductive system in an equilibrium state. They remove all the toxins from the body and regularize menstrual cycles. They possess *Rasayan* (Immuno-modulatory) and *Yogavahi* (Nano-carriers; Act accordingly) properties. **Aims/objective:** To evaluate the role of Herbo-metallic formulations in infertility. **Methodology:** All the material and data are collected from ancient treatises, Research papers under google scholar, pubmed, Elsevier, etc. search engines. **Results:** Various research have been reviewed for the impact of *Rasaushadhi* (Herbo-mineral/metallic formulations) on fertility and the result found to be quiet satisfying as they are *Ushana* in *virya* (Potency) and act directly on target organ (Reproductive tract) in shorter duration is prepared as per the classical procedure. **Discussion:** For healthy progeny, *ritu* (Menstrual cycle), *kshetra* (Reproductive tract), *beeja* (Ovum/sperm), and *ambu* (Nutrition) factors must be in homeostasis. Metallic preparations can be harmful and toxic if they are not prepared properly. The indications, dose, vehicle (*Anupan*), period of drug administration, interval or duration of treatment, disease diagnosed, nature or *Prakruti* of the patient, *Pathya-apathya*, etc. are major factors that should always be considered by the physician before prescribing *Rasaushadhi* to the patients.

Conclusion: As herbo-mineral formulations play a very significant role in ayurveda and they are capable to cure severe disorders in a minimum dose and time. Therefore, this article reviews several Rasaushadhis along with their pharmacokinetics concerning infertility.

Keywords: Infertility, *Rasaushadhi*, herbo-metallic, *Ayurveda*

INTRODUCTION

Infertility [1] [2] is described as the inability of a mature couple to conceive after a year of having normal coitus at the right time of the menstrual cycle. According to the World Health Organisation, the problem has become so pervasive that one in every four couples in affluent nations is now impacted by infertility in some form. Women's physical, mental, emotional, and social health are all impacted by infertility, both directly and indirectly. Infertility is a worldwide condition that may endure for some time. Every individual has the innate desire to carry on their own race. Every woman cherishes the desire to have children. *Acharyas* mentioned major factors involved in fertility are *Ritu*, *Kshetra*, *beeja* and *ambu* [Figure 1] must be in a state of equilibrium [3] Infertility is described as *Bandhyatva* in the classical Ayurveda literature. Here, *Vata Dosha* is primarily being disrupted. Additionally, *Rasa Dhatu* is vitiated, which disrupts the natural development of *Artava* (Ovum) and results in irregular and erratic menstruation. Furthermore, due to the blockage of tubes, there is an

occurring *Vikriti* (disease) of *Kshetra* which also causes infertility. There are other causes also, mentioned in ancient treatises directly or indirectly responsible for infertility- *Aartav dushti*, Various *yonivyapads*, *yoniarsh*, *aartava vaha Shroto veda*, *Ati bala*, *ati vridha*, Chronic disease, *Mansik abhitapa* (*Shoka*[Mourning], *Bhaya*[Fear], *Krodha*[Anger], etc.), *Mithya achara* (Aahara & vihara), *Beeja dosha*, *Daiva* (Idiopathic), Disturbed mental state, etc. Infertility is not an isolated condition. It is brought on by several different medical conditions. Therefore, drugs employed in the treatment attempt to get rid of the underlying cause. There isn't a single drug that is believed to be effective for increasing fertility. In order to address the biological or functional issue that leads to infertility, polyherbal and herbo-mineral combinations are utilized in the treatment of infertility. Thus, in this article, an attempt has been made to assess the role of Herbal as well as herbo-mineral formulations in the treatment of infertility.

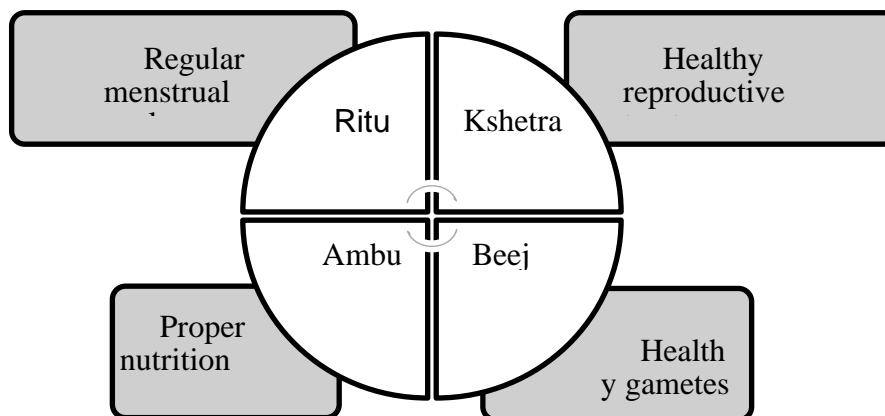


Figure 1: Four factors responsible for fertility

Infertility (*Bandhyatva*)- Disease review [2] [4]

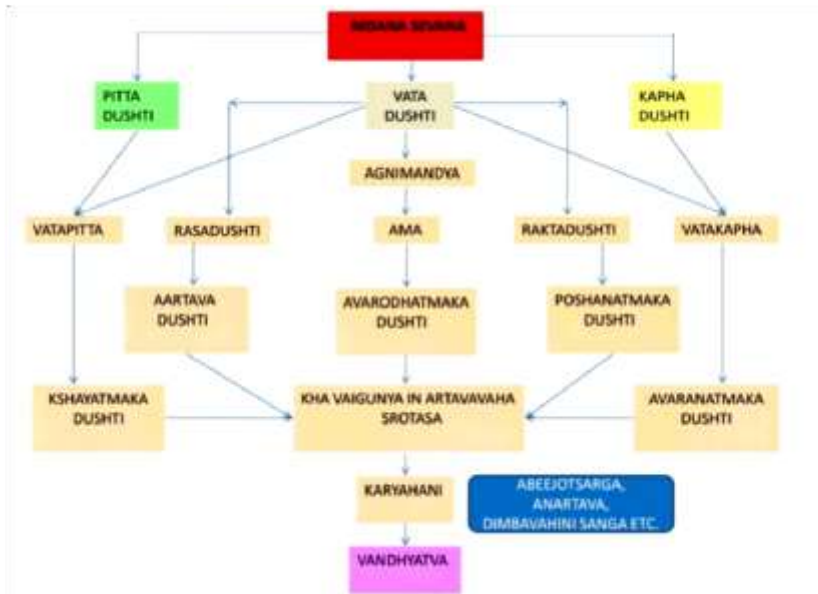
Infertility is a condition of the male or female reproductive system described by the failure to achieve pregnancy after 12 months or more of frequent unprotected intercourse. Weight, food, smoking, illnesses, substance misuse, toxins in the environment, medications, family medical history, and infections are just a few examples of factors that can impair a couple's ability to conceive. Either partner can be the cause of infertility. Infertility in men is typically brought on by the ejection of semen, a lack of sperm or low sperm counts, or issues with sperm's abnormal shape (morphology) and motility (motion), whereas in women it is brought on by irregular egg production, fallopian tube blockage or damage, and sperm count (which refers to abnormalities of the ovaries, uterus, fallopian tubes, and endocrine system). The number of eggs does not reach her. There are two types of infertility: primary and secondary. A person experiences primary infertility if they fail to get pregnant, and secondary infertility if they have at least one previous successful pregnancy. Preventing, diagnosing, and treating infertility are all included in fertility care. In most nations, particularly in low- and middle-income nations, obtaining equal and fair access to reproductive healthcare remains difficult. Reproductive health care is rarely prioritized in national universal health-care benefit packages. Men or women can be the cause of infertility. Ovarian, tubal, aging, uterine, PCOS, endometriosis, and other factors are among the reasons for infertility in women. Numerous factors, including diet, emotional instability, excessive physical activity, lifestyle, and stress that cause an imbalance of the doshas (which regulates body movements—*Vata*, *Pitta*, and *Kapha*), can have an impact on the menstrual cycle. Tubal diseases, such as blocked fallopian tubes, might result from unsuccessful abortion complications, postpartum sepsis, or abdominal/pelvic surgery, or they can be brought on by untreated STIs. Endometriosis is an example of an inflammatory uterine illness. Other congenital uterine abnormalities include septate uterus and benign uterine fibroids. ovarian conditions such as

polycystic ovarian syndrome and other follicular conditions. An imbalance of reproductive hormones is brought on by endocrine system disorders. The pituitary and hypothalamus are parts of the endocrine system. Common conditions that impact this system include hypopituitarism and pituitary malignancy. Male infertility is typically brought on by issues with sperm transport or production, such as varicoceles, infections, ejaculatory problems, tumors, hormonal imbalances, malformations in sperm tubules, etc. Infertility in men can be caused by an obstruction in the reproductive system, which causes a malfunction in the evacuation of sperm. Semen-carrying tubes (such as the ejaculatory ducts and seminal vesicles) may become blocked as a result of this condition. Blockages are typically brought on by genital tract injuries or infections. Sometimes aberrant hormone production by the pituitary gland, brain, and testicles results from hormonal diseases. Hormones such as testosterone control sperm production. Testicular or pituitary cancer are two conditions that can develop as a result of hormonal abnormalities. For instance, sperm production in the testicles may be impaired by varicoceles or surgical procedures. abnormal sperm quality and performance. Fertility is negatively impacted by disorders or situations that result in aberrant sperm shape (morphology) and motility (motility). For instance, the usage of anabolic steroids might result in abnormalities in the size and number of sperm in the semen. According to Ayurveda, "*Agnimandhya*" (digestion through the body's digestive fire) and vitiation of the three governing components of the body are the primary causes of any abnormal function in the body. Thus, *Agni dushti* and vitiated *doshas* are the major cause behind *Bandhyatva*. The *Bandhyatva*, its types (Table 1), prognosis, and treatment are very well described in the classics. A flowchart is used to explain the etiopathogenesis of *Bandhyatva* (Figure 2). *Bandhyatva* can occur as a symptom of other diseases such as *Putraghani*, *Vamana*, *Shandi*, *Suchimukhi*, *Asrija*, *Acharana*, *Prasransrani*, etc.

Table1: Types of *Bandhyatva* according to *acharya Charak* and *harita*

According to <i>Charak</i> [5]	According to <i>Harita</i> [6]
<i>Bandhya</i> , <i>Apraja</i> , <i>Sapraja</i>	<i>Kakbandhya</i> , <i>Anapatya</i> , <i>Garbhasravi</i> , <i>Mritavatsa</i> , <i>Balakshaya</i> , Unexplained

Figure 2: Etiopathogenesis of *Bandhyatva*



Management through ayurveda [7]

Instead of depending on the replacement or adjustment of the body's hormones by any outside or foreign substance, Ayurveda promotes health by bolstering the body's natural self-healing and balancing capabilities. It focuses on treating infertility holistically with the goal of enhancing the person's general health and quality of life. The *Charaka Samhita* states that "all disease arises due to imbalance in *Agni* (the power of digestion), and *Agni* is the single most important factor in the build-up of *Ama* (toxin created when undigested food forms in the stomach)". Thus, in order to properly cure *Ama*, *Agni* must also be treated. This includes using digestive herbs and spices, adhering to a set

mealtime schedule, and avoiding cold foods and beverages. *Vata* is the primary dosha associated with infertility, hence *vatanulomana* (correcting *vata* functions) is crucial in the treatment of infertility. Following a rigorous diet and exercise regimen will aid with *vatanulomana*. *Panchakarma* (Ayurvedic deep internal cleansing process) can also be used to eradicate *Ama*. A healthy *Agni* contributes to a healthy *Ojas*. The assessment of a person's dosha is crucial for prescribing the appropriate course of treatment and identifying any blockages or deficiencies in certain body regions, for which the appropriate food, body therapies, herbs, sensory therapies, lifestyle, and yoga therapies are used.

S.no.	Method of treatment	Drugs as well as processes used
1.	<i>Nidana parivarjana</i>	<i>Hitkar ahara vihar (Proper diet and mode of life), Kala yoga (Coitus before and after ritu kala), Mansika shanti (Mental wellbeing)</i>
2.	<i>Deepana & pachana</i>	<i>Trikatu churna, Lavanbhaskar churna, Hingwashtak churna, Chitrakadi vati, etc.</i>
3.	<i>Dhatu poshak dravya</i>	<i>Ashwagandha Shatavari paka, Ashwagandha Ksheera paka, Dhatriyadi ghrita, Sukumar ghrita etc.</i>
4.	<i>Prajasthapana gana</i>	<i>Endrin, Brahmi, Shatvirya, shashstravirya Etc.</i>
5.	<i>Vata Pradhan tridosha shamak chikitsa</i>	<i>Dashmoola kwath, Rasna saptaka kwath, Pushynug churna, etc.</i>
6.	<i>Hetuviparita chikitsa</i>	<i>Treatment of responsible causes- Yonivyapad chikitsa, Shukra dosha chikitsa, Aartava dushti chikitsa, etc.</i>
7.	<i>Snehan</i>	<i>Narayan taila, Shatpushpa taila etc.</i>
8.	<i>Swedan</i>	<i>Nadi swedan, avagaha swedan (Using vatashamak drugs)</i>
9.	<i>Panchkarma</i>	<i>Shodhan- Virechan: Trivrit Modak, Trivrit leha etc. Uttar basti- Phala ghrita, Ashwagandha ghrita, Bala taila etc.</i>
10.	<i>Yoga therapy</i>	<i>Surya Namaskara, Paschimothanasana, Bhramari pranayama</i>

S.no.	Factor	Single drugs	Compound formulations
1.	Ovarian factors: Anovulation/Oligo ovulation;	<i>Ashoka, Shatavari, Ashwagandha Dashmoola, Kumari,</i>	<i>ChandraPrabha vati, Yograj guggulu, Ashokarishta, Dashmoolarishta, Pushpadhanwa ras, Mahanarayan taila (Nasya and uttarbasti)</i>
	PCOS	<i>Kanchnar, LataKaranj, Varuna</i>	<i>Kanchnar guggulu, Aarogyavardhini vati, Punarnava guggulu</i>
2.	Tubal Factors: To remove the tubal block and adhesions; To improve ciliary action	<i>Guduchi, Kutki, Punarnava etc.</i>	<i>Uttarbasti: Kshar taila, Lashuna taila, Dhanvantari taila</i>
3.	Uterine factors: To improve endometrial quality and thickness,	<i>Shatavari, Ashoka, Bala etc.</i>	<i>Uttarbasti: Phala ghrita, Ashwagandha ghrita, Bala taila</i>
4.	Cervical factors:		<i>Yoni pichu (Tampon): Phala ghrita, Ashoka ghrita,</i>

	To improve cervical incompetence, To remove cervical erosions		<i>Kshara taila,</i> <i>Ksheera bala taila</i> <i>Yoni Dhawan (Douching):</i> <i>Triphala kwatha,</i> <i>Panchvalkala kwatha,</i> <i>Varunadi kwatha,</i> <i>Nimba kwatha</i>
5.	Psychological factors:		<i>Saraswatarishta,</i> <i>Mukt pishti,</i> <i>Manasmitra vatak,</i> <i>Shirodhara (taila, Dashmula kwatha, milk, takra)</i>

Role of Herbo-mineral (*Rasa aushadhi*) and herbal formulations in infertility

Even in the twenty-first century, infertility remains a serious problem, but more research has to be done on the disease and the best ways to treat it. Ayurvedic herbal and herbo-mineral formulations prepared using SOPs can play a significant role in eliminating doshas in a short duration of time. They are known for their minimum dose, maximum efficacy, and least side effects. They assist in maintaining the reproductive system and all hormones in a balanced state. They

remove all the toxins from the body and regularize menstrual cycles. They possess *Rasayan* (Immuno-modulatory) and *Yogavahi* (Nano-carriers; Act accordingly) properties. Various research has been reviewed for the impact of *Rasaushadhi* on fertility and the result was found to be quite satisfying as they are *Ushana in virya* (Potency) and act directly on target organs (Reproductive tract) in shorter duration as per the classical procedure. As herbo-mineral formulations play a very significant role in ayurveda and they are capable of curing severe disorders in a minimum dose and time.

Table3: Various formulations mentioned in texts [9]

S.no.	Classics	Formulation
1.	<i>Charak Samhita</i>	<i>Bhrihati shatavari ghrita</i>
2.	<i>Ashtanga hridaya</i>	<i>Kashmarya ghrita,</i> <i>Shatavari ghrita,</i> <i>Phala ghrita</i>
3.	<i>Ashtanga sangraha</i>	<i>Phala ghrita,</i> <i>Shatavari ghrita</i>
4.	<i>Bhaishajya Ratnawali</i>	<i>Sheet kalyanak ghrita,</i> <i>Priyangwadi taila,</i> <i>Lakshmana Rishta,</i> <i>Phala kalyanaka ghrita,</i> <i>Soma ghrita</i>
5.	<i>Sharangdhara Samhita</i>	<i>Maharasnadi yoga,</i> <i>Shatavari churna</i>

Table4: Various case reports showing results on infertility management through herbal and herbo mineral formulations

S.no.	Title	Medication	Conclusion
1.	Ayurvedic Management of Infertility Due to Polycystic Ovaries and Tubal Block: A Case Study (Buduru et al.) [10]	<i>Ashwagandha</i> <i>Ksheerapaka</i> , <i>Shatpushpa churna</i> , <i>Avipattikara churna</i> , <i>Pittantaka churna</i> , <i>tablet</i> <i>Leptaden</i> , <i>tablet</i> <i>Aloes</i> <i>compound</i> , <i>Phalasarpi</i> , <i>Pushpadhanva rasa</i> , and <i>Bala beej churna</i>	Timely ovulation and tubal patency are important factors for successful fertilization and conception. Hence, oral medications consisting of Aagneya and Vatanulomaka drugs along with Yonipichu with Dhanvantaram taila are effective in correcting both of these factors.
2.	Effects of pushpadhanwa rasa on psychological imbalances in polycystic ovarian disease patients and its management (Dash, et al.) [11]	<i>Pushpadhanwa rasa</i>	Both the trial groups significantly relieved psychological symptoms like Headache, Irritability, Mood swings, Depression, Sleep disturbances, Loss of confidence, Forgetfulness, and Loss of libido. Furthermore, results in Group B (71.19%) using herbal extracts were even more pronounced than Group A (66.96%) on psychological parameters.
3.	A clinical case study on secondary infertility W.S.R. to Abijotsarga (ovarian factor) & its management through Ayurveda (Selva, et al.) [12]	<i>Garbhupal Ras</i> , <i>Chitrakadi Vati</i> , <i>Bija dharak yoga</i> , <i>Phala ghrit</i>	Patients had conceived within the follow-up period of 3 months. No significant complication is evident during the study.
4.	Karnini yonivyapad w.s.r to cervical erosion - a case study (Nidhi Sharma & Asokan V) [13]	<i>Pradrantak Loha</i> , <i>Triphala Gugglu</i> , <i>Shatavari Vati</i> , <i>Punarnava Mandoor</i>	They are used as shaman chikitsa and are found very effective, and safe. After one-month of completion of the course, cervical erosion was completely eradicated.
5.	Clinical study on vandhyatwa (female infertility) W. S. R. To anovulatory factor and its management by 3 step treatment- a case study. (Madhuri, et al.) [14]	<i>Chandraprabha vati</i> , <i>Shatpushpa churna</i>	The patient got conceived with one month of treatment and is under regular ante natal check-ups. Now her gestational age is 32 wks.
6.	Ayurvedic management of ovarian chocolate cyst causing infertility: a case study (Heena Kausar Pinjaral et al.,) [15]	Tab Aloes compound, Tab pushpdhanva rasa, Ichcha bhedi rasa, Tab Leptadene, <i>Laghmalini vasant rasa</i> , Syp Evecare,	After three months of treatment, the Patient got pregnant and USG findings were suggestive of single live intrauterine pregnancy of 6weeks and 4days

	<i>Phala ghrita</i>	with a completely resolved ovarian cyst.
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DISCUSSION

Ritu (menstrual cycle), *Kshetra* (reproductive system), *Beeja* (ovum/sperm), and *Ambu* (nutrition) elements need to be in balance for healthy progeny. Inadequate preparation can make metallic preparations poisonous and dangerous. The indications, dose, vehicle(anupan), period of drug administration, interval or duration of treatment, disease diagnosed, nature or *Prakruti* of the patient, *pathya-apathya*, etc. are major factors that should always be considered by the physician before prescribing *Rasaushadhi* to the patients. All of the formulas listed above have been utilized for *Vrisya* (aphrodisiac), *Vajikarana* (increased sexual potency), and *Vandhyatwa* (male and female sterility). There are some scientific relations mentioned behind different formulations used in infertility. *Ashwagandha Ksheerapaka* aids PCOS patients in reducing weight and relieving stress. *Phala ghrita* encourages healthy ovulation and aids in reducing tubal blockages. Along with calming the *vata* and *pitta doshas*, *Pushpdhanva rasa* also supports healthy ovulation. Additionally, *Dhanvantaram taila* reduces tubal obstruction and enhances ciliary motility. The characteristics of *Chandraprabha vati* is *vata-pittakaphahara*, *balya*, *vrushya*, and *rasayan*. It aids in the recovery of an anovulatory cycle. The aloe component increases cervical mucus production and quality while promoting ovulation. The main cause of *Bandhyatva* is vitiated *vata (Apana vata)*. *Vata*, along with other doshas, may be treated primarily with *Agnidipana*, *Pachaka*, *Vatanulomaka*, and *Brimhana*. [16] *Apana Vayu*'s natural course is downward, and if it does not move due to hormone imbalance, constipation, or any other issue, it is said to be stuck. According to ancient Ayurvedic texts, the finest *Panchakarma* treatment for *Vataroga* is *basti*. *Yogabasti* helps the body detoxify, gets rid of *Sroto Sanga*, and calms the *Tridosha*, especially *Vata*. Encouraging ovulation activates the H-P-O axis. [17]

CONCLUSION

The majority of nations continue to struggle with the accessibility, availability, and quality of therapies to treat infertility. In national population and development programmes, reproductive health strategies, public health funding, infertility diagnosis, and treatment are frequently not given priority. However, it is not difficult to state that many components of Ayurveda are worked out by numerous professionals for the entire treatment of sterility. As a result, many better results have been obtained. [18] Herbal and herbo-mineral formulations have better results in tubal and ovarian factors due to their mode of action in the dissolution of blockages and obstruction through *ushna virya*, *vyavayi*, *vikasi*, and *tikshna in guna*.

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