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Research Article

Recurrent Abortions

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Ayurvedic Approach to Recurrent Abortions: A Pilot Study on Garbhasrava Management

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Recurrent spontaneous abortion (RSA), a distressing condition affecting approximately 1%-2% of women of reproductive age, often lacks a definitive etiology despite extensive investigations. In the realm of Ayurvedic medicine, recurrent miscarriage can be correlated with "Garbhasrava" and "Garbhapata," conditions attributed to Doshic imbalances, particularly involving Vata. This pilot clinical study aimed to evaluate the efficacy of an Ayurvedic polyherbal formulation, TAB-GM, in managing unexplained recurrent abortions. This pilot study aimed to evaluate the role of an Ayurvedic formulation, TAB-GM, in sustaining pregnancy among women with a history of RSA. The study included 9 pregnant women aged 20–35 years, each with a history of two or more consecutive unexplained miscarriages. TAB-GM, a proprietary polyherbal formulation with documented Garbhasthapana, Raktavardhaka, and Rasayana effects, was administered orally at a dose of 500 mg twice daily from confirmation of pregnancy until completion of the fourth month of gestation. Primary outcomes assessed were continuation of pregnancy beyond 20 weeks, maternal health, and safety of the formulation. The results indicated that all 9 participants successfully carried their pregnancies beyond 20 weeks without complications or miscarriage recurrence. The intervention was well-tolerated, with no adverse drug reactions or deviations in hematological and biochemical parameters. These preliminary findings suggest that TAB-GM may be a safe and potentially effective supportive therapy for pregnancy sustenance in women with unexplained RPL. However, further large-scale, randomized controlled trials are needed to validate these outcomes and establish robust clinical guidelines. This study underlines the value of Ayurvedic approaches in managing complex reproductive challenges.

Keywords: Recurrent spontaneous abortions, Recurrent miscarriage Garbhasrava, Ayurvedic management

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Introduction

The desire to conceive and nurture a child is a fundamental aspiration for most couples, as a child strengthens familial bonds. Pregnancy, from conception to delivery, is a complex process susceptible to various complications, one of the most distressing being recurrent spontaneous miscarriage or abortion, defined as the loss of a fetus before 20 weeks of gestation.[1] Approximately 10–20% of all confirmed pregnancies result in miscarriage. Nearly 75% of miscarriages take place before the 16th week of gestation, with around 80% of these occurring within the first 12 weeks of pregnancy.[2] Recurrent spontaneous abortion (RSA), occurring in three or more consecutive pregnancies before 20 weeks[3], is often attributed to anatomical abnormalities, chromosomal defects, infections, and immune dysfunctions. However, nearly 40–60% of cases remain unexplained[4], leading to a growing interest in identifying potential causes and practical treatment approaches.

In *Ayurveda*, fetal disorders are classified under *Garbha Vyapada*, which includes various types of pregnancy complications. *Acharya Sharangdhara* identifies *Garbhpata* as one of eight types of *Garbha Vyapada.*[5] Classical texts like *Sushruta Samhita, Madhava Nidana,* and *Bhavaprakasha* categorize pregnancy loss into *Garbhasrava* and *Garbhapata*[6], based on gestational age. *Garbhasrava* refers to pregnancy loss before fourth month, occurring before placenta and amniotic membranes are fully formed. In contrast, *Garbhapata* occurs after fifth or sixth month, resembling a miniature labor due to advanced fetal development. *Acharya Charaka* describes *Ama Doshik Masik Srava*, linking early pregnancy loss to improper diet and lifestyle, which destabilizes fetus.[7] Ayurveda emphasizes preventive care through *Dosha* balance, proper nutrition, lifestyle modifications, and therapeutic interventions. Women with recurrent miscarriages are advised to maintain disciplined regimen, avoid harmful lifestyle practices, and seek proper counseling and nourishment. While various *Ayurvedic* treatments exist for managing *Garbhasrava*, this study focuses on administering a formulated *Ayurvedic* preparation (TAB-GM) in *Vati* (tablet) form for four months in pregnant women with history of recurrent abortions, aiming to improve pregnancy outcomes.

Aim and Objective

To evaluate the role of *Ayurvedic* herbs in the form of *Vati* (tablet) in the management of recurrent miscarriages with an objective to provide evidence-based justification for Ayurvedic interventions in recurrent pregnancy loss.

Materials and Methods

Study Design

Randomised, controlled open label study

Study location

Outpatient Department of Prasuti Tantra and Stri Roga, Rishikul Ayuved College and Campus, Haridwar, Uttarakhand.

Participants

Pregnant patients with history of *Garbhasrava* (RSA) from Outpatient Department of Prasuti Tantra and Stri Roga, Rishikul Ayuved College and Campus, Haridwar were enrolled.

Inclusion criteria

- Married female of age 20-35 year having 2 or more Spontaneous abortion before 18 weeks.

Exclusion criteria

- Female of age <20 years and >35 years.
- Patients having Induced abortions.
- Patients having bleeding disorders.
- Patients having systemic diseases like diabetes mellitus, hypertension, TB, Heart disease, STD, chromosomal abnormality.
- Patients who are anaemic (Hb% < 10gm/dl)
- Patients diagnosed with placenta previa.
- Patients with congenital anomalies of uterus.
- Patients diagnosed with cervical incompetence.
- Patients taking anticoagulant or blood thinner drugs.

Assessment Criteria

A. Subjective parameters

- Previous h/o abortion,
- H/o previous menstrual cycle,
- Previous h/o of vaginal discharges,

- Assessment of pregnancy before 6 weeks.

B. Objective parameters

- Assessment of pregnancy before 6 weeks,
- Assessment of fetal well-being, present c/o pregnancy with pain and bleeding p/v,
- P/s examination during 8-12 weeks,
- P/a examination b/w 14-18 weeks,
- Pain in lower abdomen/ backache with uterine contraction,
- Assessment of foetal wellbeing with doppler and usg,
- P/v examination b/w 12-18 weeks if the patient complains of pain with or without bleeding p/v.

Method of preparation of TAB-G.M *Vati*-

Table 1: Steps and process in the preparation of TAB-GM

Step	Process	Details
1. Ingredient Preparation	Collection & Yavkuta preparation	1250 gm total (Guduchi, Yashtimadhu, Tulsi, Amalaki, Bhumyamalaki) sieved through sieve no. 60
2. Soaking	Overnight soaking	Yavkuta soaked overnight in water
3. Kwatha Preparation	Decoction process	16 parts of water added to the Yavkuta and boiled using the classical method
4. Reduction	Concentration of decoction	Boiled on Mridu Agni (mild flame) with constant stirring until reduced to 1/8th of the original quantity
5. Filtration	Removal of solid residues	The reduced Kwatha was filtered using a muslin cloth to obtain a smooth liquid filtrate
6. Heating	Thickening process	The filtrate was further heated until it reached a semi-solid (Ghana) consistency
7. Addition of Preservative	Stability enhancement	1 gm of sodium benzoate was added and mixed thoroughly for even distribution
8. Mixing Fine Powder	Enhancing potency	After cooling to room temperature, 10-12 gm of finely powdered ingredients (filtered through muslin cloth) were added and mixed
9. Vati Formation	Tablet shaping	The mixture was shaped into Vati (tablets), each 500 mg in weight

Process of making drug:

Manufacturing of the drug was completed in the Department of Ras Shastra Evum Bheshajya Kalpna, Rishikul Campus, Hardwar, as per the guidance of HOD and in the presence of Research Scholar. Decoction was prepared by classical method i.e., decoction of 1250 gm *Yavkuta* of *Guduchi* (stem), *Yashtimadhu* (whole root), *Tulsi* (whole plant), *Amalaki* (Fruit), *Bhumyamalaki* (whole plant) (1:16 then 1/4" remaining) was made in mild flame, in which fine powder of *Guduchi, Yashtimadhu, Tulsi, Amalaki*, *Bhumyamalaki* (10-12 gms) were mixed and heated in mild flame until semisolid form is obtained. It was made solid in the form of *Vati* of each 500mg after heating & adding binding agent according to requirement. The prepared tablets were packed in an airtight container.

Results and Discussion

In the present study, nine patients with a history of spontaneous abortion aged between 20 to 35 years were given Tab GM 1 BD for 4 months, and follow-up was done at the end of every month. While the follow-up was done up to 20 weeks after pregnancy.

Table 2: Demographic data of the patients

Category	Subcategory	Frequency	Percentage
Religion	Hindu	5	55.56%
	Muslim	4	44.44%
	Other	0	0.00%
Age Group	19-25 YRS	1	11.11%
	26-30 YRS	3	33.33%
	31-35 YRS	5	55.56%
Education	Uneducated	3	33.33%
	Inter	2	22.22%
	Graduate	2	22.22%
	Post Graduate	2	22.22%
Occupation	Housewife	6	66.67%
	Student	0	0.00%
	Private Job	2	22.22%
	Govt. Job	1	11.11%
Socio-Economic Status	Upper Class	0	0.00%
	Upper Middle	4	44.44%
	Middle	1	11.11%
	Lower Middle	1	11.11%
	Lower	3	33.33%
Habitat	Rural	0	0.00%
	Urban	9	100.00%
	Slum	0	0.00%
Family Type	Nuclear	7	77.78%
	Joint	2	22.22%

Sociodemographic characteristics

Demographic data of the patients are represented in Table 2. The majority of participants were Hindu (55.56%), aged 31–35 years (55.56%), and predominantly housewives (66.67%), reflecting a typical reproductive demographic in urban India.

The high rate of uneducated women (33.33%) may contribute to limited health awareness, affecting reproductive outcomes. The upper middle class (44.44%) was the most represented socio-economic group, and all participants were from urban areas, with nuclear families (77.78%) being the common household type. Interestingly, higher abortion rates in this group may be linked to delayed pregnancies due to career or lifestyle choices, as well as increased stress and sedentary urban lifestyles, both of which can negatively impact pregnancy.

Prakriti, Physiological and Digestive Parameters

Table 3: *Prakriti* and Physiological Assessment

Parameter	Dominant Category	Percentage
Gati	Madhyama	44.44%
Sparsha	Anushnashita	77.78%
Mala	Nirama	55.56%
Mutra	Prakrita	88.89%
Jihva	Prakrita	77.78%
Shabda	Prakrita	100%
Akruti	Madhyam	55.56%
Sharira Prakriti	VP, VK, PK (equal)	33.33% each
Manasa Prakriti	Raja	66.67%
Saara	Madhyama	77.78%
Samhana	Madhyama	55.56%
Pramana	Madhyama	55.56%
Satmyata	Equally distributed (Ekarasa, Mishra Rasa, Sarvarasa)	33.33% each
Vyayama Shakti	Avara	88.89%
Abhyavaran Shakti	Madhyama	55.56%
Jarana Shakti	Avara	55.56%
Agni	Vishama / Manda	66.66% total

The assessment of *Prakriti* and physiological traits revealed that most participants exhibited *Madhyama Gati* (44.44%) and *Anushnashita Sparsha* (77.78%), indicating moderate physical activity and neutral skin temperature. The *Nirama Mala* (55.56%) and *Prakrita Mutra* (88.89%) reflected relatively good bowel and urinary functions. Normal speech (100%) and tongue examination (*Prakrita Jihva* – 77.78%) indicated general systemic stability.

However, despite these stable parameters, certain factors observed may contribute to recurrent abortions. Notably, the predominant *Avara Vyayama Shakti* (88.89%) indicates poor physical endurance and a sedentary lifestyle, which can negatively impact circulation, metabolism, And uterine health - contributing to poor pregnancy outcomes. Similarly, *Avara* (low) *Jarana Shakti* (55.56%) and *Agni* (digestive fire) dominated by *Vishama* and *Manda Agni* (66.66%) reflect compromised digestion and metabolism, which can result in nutritional deficiencies, poor tissue development (*Dhatu Kshaya*), and weakened reproductive strength.

The *Raja-dominant Manasa Prakriti* (66.67%) could indicate emotional instability, heightened stress response, and irritability - factors known to interfere with hormonal balance and pregnancy maintenance.

Additionally, the presence of *Madhyama* or *Avara Saara*, *Samhana*, and *Pramana* in most participants suggests average to weak tissue quality, body strength, and reproductive capacity, all of which are vital for sustaining a pregnancy.

Discussion on Observational data of clinical history

From a medical standpoint, there were no reported cases of diabetes (DM), hypertension (HTN), pelvic inflammatory disease (PID), TORCH IgM, or tuberculosis (T.B.), indicating an overall absence of major chronic systemic illnesses.

However, 33.33% tested positive for TORCH IgG, suggesting previous exposure to infections that could impact pregnancy, and 11.11% had thyroid dysfunction, which is known to affect fertility and pregnancy outcomes.

Additionally, 33.33% of patients had undergone surgical procedures, potentially related to reproductive health. Among the nine patients enrolled, one patient had a notable history of adverse obstetric outcomes, with two pregnancies reaching term but resulting in intrauterine demise (IUD) due to severe hypertension, and three additional pregnancies ending in spontaneous abortion during the second to third month of gestation.

In terms of treatment history, 44.44% had used both Ayurvedic and Allopathic treatments, while an equal percentage (44.44%) had received no treatment at all. Very few had exclusively used Ayurvedic (11.11%) or Allopathic (11.11%) treatments. None of the patients had undergone IVF or IUI, pointing towards a reliance on traditional or natural conception methods.

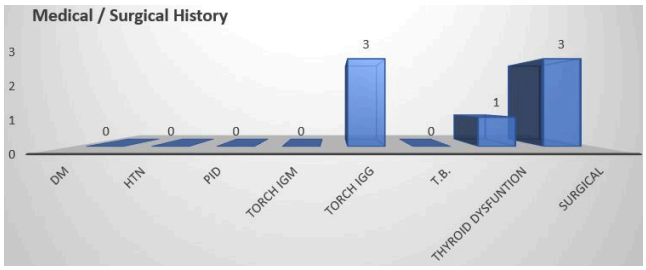

Figure 1: Medical/surgical history

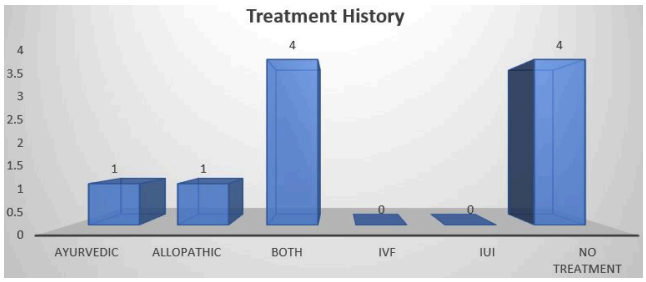

Figure 2: Treatment history

Discussion on history of menstrual health

Regarding menstrual health, most participants experienced menstrual cycles lasting up to 3 days or more than 5 days (each 44.44%), with the majority having an interval of 21–35 days (77.78%) and regular cycles (88.89%).

Use of sanitary pads showed that 66.67% required 3-4 pads per day & 66.67% also reported experiencing pain during menstruation, indicating presence of moderate menstrual discomfort. Consistency of menstrual blood was mostly clotted (66.67%) & foul smell was reported by 55.56%, suggesting possibility of underlying reproductive tract infections in some participants.

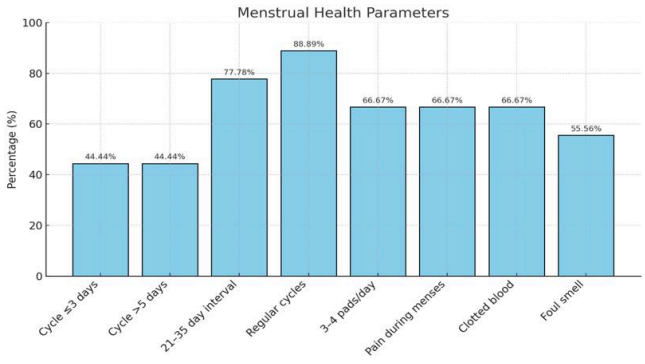

Figure 3: Data representing menstrual health patterns of the patients

History of previous abortions along with obstetric history

In terms of history of recurrent abortion 56% presents with primary infertility and 44% had secondary infertility, The data indicates that 66.67% of participants had two previous abortions , and most abortions occurred in the first to second month of gestation (55.56%). The most common type of abortion was with symptoms of inevitability (44.44%), and treatment history was equally distributed among no treatment, irregular, and regular treatment (33.33% each). Associated symptoms like weakness and mild fever were present in 11.11%, while 77.78% had no associated symptoms during past abortion history.

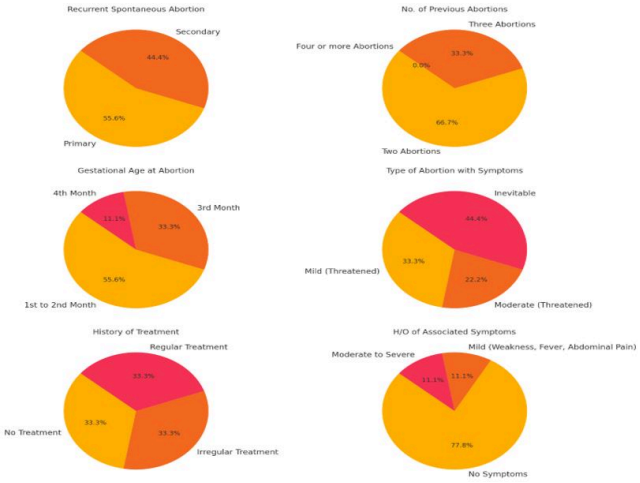

Figure 4: Pie charts showing percentage of previous abortions along with obstetric history

Assessment of pregnancy outcome

Early pregnancy symptoms like giddiness (77.78%) & morning sickness (44.44% mild, 33.33% moderate) were commonly reported. Notably, all participants were assessed for pregnancy before 6 weeks (Grade 2) & showed normal fetal well-being up to 12 weeks via USG (100%). There were no complaints of pain, bleeding, or uterine contractions during critical periods (8–18 weeks) & P/S & P/A examin. were normal in all cases. Impressively, all 9 patients completed treatment, with no cases of dropout or abortion & 100% continued pregnancy with regular follow-up, indicating highly positive clinical outcome & successful management protocol.

Table 4: Data representing the details and outcome of pregnancy.

Parameter	Grade	Description	Frequency	Percentage (%)
Morning Sickness	1	Mild	4	44.44
	2	Moderate	3	33.33
	3	Severe	2	22.22

Assessment of Pregnancy Before 6 Weeks	1	Grade 1	0	0.00
	2	Grade 2	9	100.00
	3	Grade 3	0	0.00
	4	Grade 4	0	0.00
Fetal Wellbeing (USG up to 12 weeks)	0	Normal	9	100.00
	1–3	Abnormal (Mild to Missed Abortion)	0	0.00
Pain and Bleeding (Early Pregnancy)	0	No Complaint	9	100.00
	1–3	Mild to Severe	0	0.00
P/S Examination (8–12 Weeks)	0	Normal	9	100.00
	1–3	Bleeding/Abnormal Findings	0	0.00
Pain in Lower Abdomen/Backache (Uterine Contraction)	0	Absent	9	100.00
	1–3	Present (Mild to Severe)	0	0.00
Fetal Wellbeing (Doppler + USG)	0	Normal	9	100.00
	1–3	Mild to Severe Abnormalities	0	0.00
Pain + Contraction With/Without Bleeding	0	Absent	9	100.00
	1–4	Present (Mild to Severe)	0	0.00
Patient Outcome	-	Drop Out	0	0.00
	-	Complete Treatment	9	100.00
	-	Abortion	0	0.00
	-	Pregnancy Continued	9	100.00
	-	Regular Follow-up	9	100.00

Discussion on the probable mode of action of the drugs.

1. Guduchi

Guduchi (*Tinospora cordifolia*) is a potent *Rasayana* herb in Ayurveda, endowed with diverse medicinal properties such as anti-inflammatory, anti-diabetic, anti-arthritic, antioxidant, anti-stress, antileprotic, antimalarial, hepatoprotective, antiallergic, and immunomodulatory activities.**[8]** These actions make it a valuable agent in various systemic and reproductive conditions.

Pharmacologically, *Guduchi* possesses **[9]**

- *Rasa: Tikta* (bitter) and *Kshaya* (astringent), which helps in detoxification and reducing inflammation.
- *Guna*: *Laghu* (light) and *Snigdha* (unctuous) – aiding in easy digestion and tissue nourishment.
- *Veerya: Ushna* (hot) – which stimulates metabolism, enhances circulation, and balances *Vata* and *Kapha doshas.*
- *Vipaka*: *Madhura* (sweet) – promoting nourishment, tissue strength (*Dhatu pushti*), and overall stability in the body.

Guduchi is an *Ayurvedic* drug used for *Rasayan Chikitsa*.**[10]** As a *Rasayana, Guduchi* enhances the quality of all seven *dhatus* (tissues) and supports *Ojas*, the vital essence responsible for immunity, vitality, and reproductive capability. *Rasayana* therapy contributes to rejuvenation, Longevity, immune enhancement, and cellular regeneration, making *Guduchi* particularly beneficial in gynecological and obstetric conditions.

Role in Recurrent Spontaneous Abortion (RSA):

Research indicates that *Guduchi Ghana*, prepared by classical Ayurvedic methods, significantly suppresses carrageenan-induced edema, highlighting its strong anti-inflammatory potential. This action is linked to modulation of key chemical mediators like histamine and serotonin (5-HT) during the initial inflammatory phase, either by reducing their synthesis or antagonizing their receptor activity.**[11]**

This is crucial in RSA, where local inflammation or immune dysfunction may contribute to early pregnancy loss.

Furthermore, *Guduchi's* immunomodulatory effect helps in stabilizing maternal immune responses that may otherwise target the fetal tissues as foreign. Its *Ushna Veerya* and *Tikta Rasa* assist in clearing subtle inflammatory obstructions, while *Madhura Vipaka* supports tissue healing and fetal nourishment.

Together, these properties make *Guduchi* a valuable herb in preventing recurrent abortions by modulating immune responses, reducing inflammation, and strengthening reproductive tissues, thereby creating a conducive environment for fetal development and pregnancy maintenance.

2. Yashtimadhu

Yashtimadhu is well-known Ayurvedic herb classified under *Sarivadi, Anjanadi, Utpaladi,* & *Nyagrodhadi Ganas*, & indicated for *Pittasamana* (pitta-pacifying) actions.**[12]** *Bhavamishra* attributes it with actions such as *Sukrala* (spermatopoietic), *Chakshushya* (eye tonic), *Balya* (strength-promoting), *Vrishya* (aphrodisiac), *Keshya* (hair tonic), *Swarya* (voice-improving), and *Vranasothahara* (wound and inflammation healer).**[13]** It is also traditionally used as galactagogue, *Chakradutta***[14]** suggested its application on ulcers due to injury for relieving pain (Analgesic), it also has significant estrogenic effects due to isoflavones like glabridin and glabrene**[15]**, which help modulate hormonal balance - an essential aspect in treatment of RSA.

Properties of *Yashtimadhu* according to ayurvedic texts[16]:

Rasa: *Madhura*, *Guna*: *Guru, Snigdha*, *Veerya*: *Sheeta*, *Vipaka*: *Madhura* and *Karma*: *Tridoshara*, *Rasayana, Vrishya, Cakshushya.*

Pharmacological actions

Its antimicrobial & antiviral properties are attrib. to glycyrrhizinic acid & flavonoids like hispaglabridin-A & B, methylglabridin, glabrol, 3-hydroxygabrol etc., effective against Staphylococcus aureus, E. coli, M. tuberculosis, Entamoeba histolytica & Trichomonas, **[17,18]** making it potent immune-regulator. Mechanistically, glycyrrhizin exerts anti-inflammatory effects by attracting leukocytes to inflamed sites, not by suppressing prostaglandin synthesis. It also exhibits anti-thrombin activity, adding to its anti-inflammatory role.**[19]**

Its immunomodulatory effect is evident through**[20]**

- Inhibition of mast cell degranulation, reducing allergic mediators.
- Suppression of complement activation and macrophage-mediated immune reactions, indicating both immune-calming and stabilizing potential.

Relevance in Recurrent Spontaneous Abortion (RSA)

The estrogen-like effects, hormonal balance, and immunomodulation offered by *Yashtimadhu* are crucial in RSA, where immune dysregulation or hormonal insufficiency can compromise fetal retention. Additionally, its anti-inflammatory, antiviral, and uterine soothing actions help create a stable intrauterine environment, reducing the risk of miscarriage. The *Sukrala* and *Rasayana* properties further aid in improving reproductive tissue strength and hormonal nourishment, making it a valuable supportive agent in RSA management.

3. Tulsi

Tulsi (*Ocimum sanctum*), widely revered in *Ayurveda* as "The Incomparable One," "Mother Medicine of Nature," and "The Queen of Herbs," is considered a sacred plant with profound medicinal and spiritual value.**[21]** Ayurvedic Properties includes *Katu, Tikta Rasa, Laghu, Ruksha Guna, Ushna Veerya, Katu Vipaka* and *Karma* like*: Kapha-Vata Shamana, Krimighna,* and *Agnideepana.***[22]**

Pharmacological Actions

Modern studies have substantiated *Tulsi's* status as a potent adaptogen, capable of enhancing the body's resistance to various stressors and promoting homeostasis. It exhibits a diverse range of therapeutic effects, including:

- Antioxidant**[23,24]**: Tulsi boosts levels of endogenous antioxidants like glutathione, and increases enzyme activities of superoxide dismutase and catalase, which protect cells from oxidative stress caused by toxins and hypoxia—important in preventing placental damage in RSA.
- Anti-inflammatory, Anti-Pyretic: It helps relieve pain and fever associated with underlying systemic or gynecological conditions. Tulsi's key constituents, eugenol and linoleic acid, inhibit cyclooxygenase (COX) and lipoxygenase (LOX) pathways, thereby mitigating both acute and chronic inflammation.**[25,26]**
- Immunomodulatory**[27]**: in various studies, Tulsi has also been found to strengthen the body's defences against infectious threats by boosting immune responses in both stressed and nonstressed animals, as well as in healthy humans.
- Antimicrobial: Tulsi shows broad-spectrum antimicrobial activity against bacteria, viruses, and fungi.**[28]** It can help prevent and manage genitourinary infections, which are known to contribute to early pregnancy loss.

- Neuroprotective & Anti-stress**[29]**: Tulsi calms the nervous system, reduces anxiety, and supports emotional well-being, which is crucial in women with a history of miscarriage-related stress.
- Wound Healing**[30,31]**: Due to its antibacterial, antioxidant, and anti-inflammatory activities, Tulsi promotes faster tissue healing.
- Anticoagulant**[32,33]**: The fixed oil of *Ocimum sanctum* (3 mL/kg) has been shown to significantly prolong blood clotting time, exhibiting an anticoagulant effect comparable to that of aspirin (100 mg/kg). This activity is attributed to Tulsi oil's ability to inhibit platelet aggregation. Comparative studies revealed that the anticoagulant potential of *sanctum* fixed oil mirrors that of aspirin, suggesting its efficacy as a natural anticoagulant agent.

Utility in Recurrent Spontaneous Abortion (RSA)

It balances *Vata* and *Kapha Doshas*, which are often vitiated in habitual abortions, strengthens uterine health and ensures optimal endometrial receptivity. Enhances maternal immunity, protecting against infections and immunological rejection. Reduces oxidative damage and inflammation, improving placental function and embryo survival. Offers mental and emotional support, reducing anxiety and stress-related pregnancy complications.

Given that pregnancy is a hypercoagulable state, which predisposes individuals to thrombotic events and increases the risk of abortion associated with hypercoagulopathy, *Tulsi's* anticoagulant property may offer therapeutic benefits. Thus, *O. sanctum* could serve as a supportive intervention in cases where recurrent pregnancy loss is linked to coagulation disorders

4. Amalaki

Amalaki holds a prominent place as a multipurpose medicine in the traditional Indian system of medicine – Ayurveda. *Amalaki* is mentioned in *Bhavprakash Nighantu* under the *Haritakyadi Varga*, **[34]** the *Ayurvedic* pharmacological properties of *Amalaki* are described as: *Rasa*: *Amlapradhan Pancharasa* , *Guna*: *Ruksha*, *Laghu*, *Sara*, *Vipaka*: *Madhura, Veerya*: *Shita*, *Doshakarma*: *Tridoshahara*, *Vayasthapana, Rasayana, Cakshushya, Vrishya.***[35]**

Amla Rasa → *Vatahara*

Madhura Vipaka and *Shita Veerya* → *Pittahara*

Ruksha Guna and *Kasaya Rasa* → *Kaphahara*

***Karma* as per *Ayurvedic* Texts:**

Rasayana, *Pramehaghna*, *Jwarahara* (fever reliever), *Chardighna* (relieves vomiting), *Kusthaghna* (skin disorders), *Caksusya* (beneficial for eyes), *Dahahara* (relieves burning), *Medohara* (reduces fat), *Bhagnasandhanakara* (heals fractures and tissues), *Shophaghna* (anti-inflammatory), *Keshya* (hair tonic), and *Dahaprashamana* (burn soothing).**[36]** It has also been mentioned in classical literature for its application in: *Shukrameha* (spermatorrhea), *Shwetapradara* (leucorrhoea), *Garbhashaya Rakta Srawa or Histeroma* (uterine hemorrhage)

Pharmacological actions of *Amalaki*

1. Antipyretic, Analgesic, and Anti-inflammatory Properties

Studies on rats have shown that aqueous extracts of *Amalaki* significantly reduce fever induced by brewer's yeast & decrease pain responses in mice, indicating strong antipyretic & analgesic effects likely through inhibition of inflammatory mediators. **[37]**

2. Antimicrobial Properties

Amalaki exhibits broad-spectrum antimicrobial activity against pathogens like *Escherichia coli*, *K. ozaenae*, *Klebsiella pneumoniae*, *Proteus mirabilis*, *Pseudomonas aeruginosa*, *S. paratyphi A*, *S. paratyphi B*, and *Serratia marcescens*. Its antimicrobial efficacy is attributed to components like tannins, alkaloids, phenolic compounds, amino acids, and carbohydrates.**[38]**

3. Immunomodulatory Activity

In albino rats, *Triphala*, a formulation containing *Amalaki*, significantly enhanced neutrophil activity and reduced stress-induced immune suppression. **[39]** *Amalaki Churna* triturated with *Amalaki Swaras* exhibited mild cytoprotective and immunostimulant effects.**[40]**

4. Antioxidant Properties

Amalaki is rich in Vitamin C and low molecular weight hydrolysable tannins such as punigluconin, pedunculagin, emblicanin-A, and emblicanin-B.

These protect against oxidative stress by scavenging free radicals, shielding erythrocytes from oxygen-radical-induced hemolysis.**[41]**

Relevance in the Management of Recurrent Abortions

The therapeutic profile of *Amalaki* makes it highly beneficial in addressing Recurrent Spontaneous Abortions (RSA) through the following mechanisms:

1. Rasayana Karma helps in rejuvenating reproductive tissues and restoring uterine health.
2. Anti-inflammatory and analgesic actions reduce systemic and local inflammation, improving uterine receptivity.
3. Immunomodulatory activity supports immune tolerance, minimizing chances of immune-mediated fetal rejection.
4. Antioxidant actions help mitigate oxidative damage to the embryo and endometrial lining, a known contributor to RSA.
5. Antimicrobial activity addresses urogenital infections, a common cause of miscarriage.
6. Shita Veerya and *Madhura Vipaka* provide a cooling and stabilizing influence, especially useful in *Pitta*-related bleeding disorders or inflammatory conditions of the uterus.
7. It supports stress adaptation and hormonal balance, essential in women experiencing repeated pregnancy loss due to psychosomatic or neuroendocrine reasons.
8. Its *Sandhanakara Karma* aids in healing microscopic endometrial injury, supporting proper implantation and fetal nourishment.
9. Bhumyamlaki

Bhumyamalaki, first mentioned in the *Brihatrayees*, was originally used for treating disorders of the respiratory system. Over time, its therapeutic efficacy in hepatobiliary diseases was also recognized. Due to its extensive pharmacological actions, it has found applications in several systemic ailments, including gynecological disorders like recurrent abortions.

Ayurvedic Properties[42]

Rasa: *Tikta*, *Madhura*, *Kashaya*, *Guna*: *Laghu*, *Ruksha*, *Veerya*: *Shita*, *Vipaka*: *Madhura*, *Karma*: *Kapha-Pitta Shamaka*.

Phytochemical Composition

Bhumyamalaki is rich in: Lignans, Flavonoids, Triterpenes, Sterols, Alkaloids, Essential oils.

Modern Pharmacological Actions

Antioxidant Action

Studies using FRAP, DPPH, and Folin-Ciocalteu method showed significant antioxidant activity & total phenolic content (TPC) in fresh Phyllanthus urinaria extracts.**[43]** These antioxidants are vital in preventing oxidative stress-induced endometrial damage, known cause of recurrent pregnancy loss.

Antiviral Action

Alcoholic, hexane, chloroform, butanol, and water extracts of Phyllanthus urinaria were found effective against Hepatitis B antigens (HBsAg, HBeAg, HBV-DNA). The butanol extract was most efficient. It inhibits HBV polymerase activity, mRNA transcription, and viral replication**[44]**- suggesting potential as a supportive antiviral agent in HBV-related reproductive or systemic conditions.

Probable Mechanisms Supporting Its Role in Recurrent Abortions

1. Kashaya Rasa: Leads to *Kleda Shoshana, Raktapitta Prashamana*.**[45]** It possesses *Samgrahi* and *Stambhaka* (binding and hemostatic) actions that help in controlling uterine bleeding. The *Prithvi Mahabhuta* element in *Kashaya Rasa* enhances *Sanghata* (compactness) of the endometrial tissue, thus reducing fragility of the uterine lining and supporting implantation. It has *Sandhanakara Karma* which supports tissue regeneration and repair, essential for healing endometrial damage or micro-lesions that hinder implantation.

2. Madhura Rasa: Promotes *Rakta Prasadana* (blood purification)**[46]** and helps in managing uterine bleeding. It has *Balya, Jeevaniya, Tarpana*, and *Sandhanakara* qualities, which support both physiological and psychological strength of the uterus and reproductive system.

*3. Shothahara:*Helps in relieving uterine congestion

4. Bhumyamalaki Churna possesses *Sheeta Veerya*, which helps in pacifying *Pitta*, reducing burning sensations, and controlling excessive bleeding through its *Pittashamana*,**[47]** *Raktastambhana*,**[48]** and *Dahaprashamana*

Conclusion

The present clinical study demonstrated that the Ayurvedic Vati formulation (TAB-GM),

Composed of classical herbal ingredients with *Garbhasthapaka* (pregnancy-sustaining) and *Rasayana* (rejuvenative) properties, holds promising therapeutic potential in the management of recurrent pregnancy loss (RPL). Patients who received TAB-GM showed a statistically significant improvement in clinical outcomes, including successful continuation of pregnancy and reduction in the incidence of miscarriage, as compared to the control group. No adverse effects were reported during the study period, suggesting the safety and tolerability of the intervention.

The holistic approach of *Ayurveda*, which addresses underlying *Doshic* imbalances and strengthens reproductive health, appears to offer a beneficial complementary strategy in cases of unexplained or idiopathic recurrent miscarriage. These findings support the integration of Ayurvedic formulations like TAB-GM in the multidisciplinary management of RPL, especially in women where conventional treatment options are limited or ineffective.

However, further large-scale studies with longer follow-up periods are recommended to confirm these results and to explore the exact mechanisms of action of the herbal constituents involved. This research adds to the growing body of evidence supporting the scientific validation and clinical application of *Ayurvedic* therapeutics in contemporary gynecological care.

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