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From Classical Texts to Laboratory Validation: Safety Profile of Ayurvedic Vaginal Therapeutics

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Abstract
Despite notable advancements in women's healthcare over recent decades, a significant gap persists in addressing gynaecological disorders through integrative and evidence-based approaches. Ayurveda, with its millennia-old emphasis on women's health, describes a comprehensive framework of local vaginal therapies (Sthanik Chikitsa) for managing conditions such as pruritus vulvae, leucorrhea, vaginitis, foul smell, burning sensation, and recurrent vaginal infections. While classical texts provide detailed therapeutic procedures, there exists a paucity of contemporary scientific validation, particularly regarding safety assessments through established laboratory methods such as patch testing, cytotoxicity assays, microbiological evaluation, and biocompatibility analysis. This article bridges the knowledge gap by synthesising classical Ayurvedic principles with modern investigative techniques. It proposes a translational model in which Ayurvedic vaginal therapeutics can be standardised and validated using contemporary safety protocols, thereby paving the way for integrative clinical practice and future research.

Keywords: Sthanik Chikitsa, Vaginal Therapies, Yoni Dhavan, Patch test.

INTRODUCTION:

A large majority of women are affected by gynaecological disorders at least once during their lifespan, reflecting variations in reproductive organ function and overall reproductive health. These disorders may be minor or severe and often manifest as abnormal or excessive menstrual bleeding, pelvic pain, uterine masses, painful menstruation, endometriosis, or atypical vaginal discharge. Their impact extends beyond physical symptoms, influencing reproductive outcomes, sexual wellbeing, and mental health at various stages of a woman's life. In more severe cases, they may even necessitate surgical interventions such as a hysterectomy. Moreover, gynaecological disorders remain important contributors to maternal and neonatal morbidity and mortality worldwide. (1) Women's health forms the foundation of societal wellbeing, and Ayurveda places profound emphasis on the protection and care of Stree (women). According to the classical Ayurvedic dictum: "Striyāḥ śarīram rāṣṭrasya mūlam" – the health of women is the root of a

healthy society. Yoni—the vaginal and reproductive passage—has been described extensively because of its anatomical location and its direct connection to the Garbhashaya (uterus). Any disorder affecting the Yoni can influence the integrity of the Kshetra, the essential site for conception, implantation, and the healthy development of the embryo. Therefore, preserving Yoni health is considered crucial, as it plays a central role in maintaining reproductive well-being and preventing pathological or unhealthy vaginal conditions. (2,3)Despite advancements in modern medical systems, many women still face challenges in accessing appropriate and timely reproductive healthcare. This has contributed to a rising incidence of gynaecological disorders such as Shweta Pradar (leucorrhea), Yoni Kandu (pruritus), Yoni-Paka (vaginitis), Durgandhya (malodour), and recurrent vaginal infections.

Ayurvedic literature describes a specialised group of localised therapeutic interventions under Sthanik Chikitsa, traditionally employed for managing a wide range of Stree-Roga (gynaecological disorders). These treatments provide focused local action, reduce systemic drug exposure, and are historically considered safe and effective.

In this context, the present study explores the therapeutic potential of Sthanik Chikitsa and underscores the need for rigorous scientific safety evaluation to enable its broader acceptance in global healthcare. This article reviews classical Sthanik Chikitsa modalities, discusses their clinical indications, and proposes laboratory-based models for systematic safety assessment.

Need of Study:

Although classical Ayurvedic texts ensure safety through meticulous formulation principles, the expectations of modern integrative healthcare require measurable, evidence-based safety assessments. To bridge the gap between traditional practice and contemporary scientific standards, it is essential to generate systematic safety data for Ayurvedic local (Sthanik) therapies.

The present study is necessary because:

1. Rising global utilisation of Ayurveda has created a critical need for standardised and scientifically validated safety data for traditional gynaecological formulations.
2. The vaginal mucosa is a sensitive and highly absorptive surface, necessitating rigorous evaluation of biocompatibility, local tolerability, and product stability.
3. Preventing irritation, allergic responses, microbial contamination, and cytotoxicity is essential to ensure patient safety and to meet modern regulatory expectations.
4. Safe Ayurvedic vaginal therapeutics require integration of classical safeguards with modern scientific testing, ensuring protection against irritant reactions, microbial growth, and mucosal toxicity.
5. A combined classical–scientific validation framework is essential to bridge the gap between traditional practice and contemporary biomedical standards, thereby enabling wider clinical acceptance and societal trust in Ayurvedic local therapies.

Thus, this study aims to establish a scientifically grounded safety evaluation model for Ayurvedic Sthanik Chikitsa, creating a robust bridge between traditional wisdom and modern evidence-based practice.

Materials and Methods:

The literature review was undertaken using a comprehensive approach that included classical Ayurvedic Samhitas and related texts, along with contemporary scientific evidence. Relevant research articles published in peer-reviewed journals were examined, and online scholarly databases such as PubMed, Scopus, Google Scholar, and AYUSH research repositories were systematically searched to gather current

data and research advancements about the topic.

Classical texts such as Charaka Samhita(4) , Sushruta Samhita(5) , and Ashtanga Hridaya/Sangrah (6) describe several localised interventions specifically for Yoni Rogas (vaginal disorders).

Sthanik Chikitsa described in Ayurveda classics, are as follows:

- Yoni Dhawana
- Uttar Basti
- Yoni Pichu Dharan
- Yoni Dhupan
- Yoni Lepana
- Yoni Varti
- Yoni Puran
- Yoni Parishek

1. **Yoni Dhawana / Yoni Prakshalana (Vaginal Cleansing/Douching)**

Definition

Yonidhawana is a therapeutic Ayurvedic procedure involving the controlled cleansing of the vaginal canal with water or medicated liquids. It aims to maintain vaginal hygiene, support cervical and reproductive health, and alleviate pathological secretions. The procedure may utilize plain water, Kwatha (herbal decoctions), Kshirapaka (milk-based formulations), or medicated oils. It is performed through three steps:

1. Poorva Karma – Pre-procedure preparation
2. Pradhana Karma – Vaginal irrigation using the selected medicated liquid
3. Paschat Karma – Post-procedure care

Irrigation is usually performed by pouring the medicated liquid from a douche pot and administering it through a rubber catheter to achieve effective cleansing.

Site - Prathamavarta (vaginal canal)

Time - Each irrigation session lasts 1 to 1.5 minutes

Duration - Typically performed for 7–8 days after cessation of menstruation

INDICATIONS

- Yoni Kandu (vulvovaginal itching)
- Yoni Srava (abnormal vaginal discharge)
- Yoni Kleda (excess vaginal moisture)
- Yoni Arsha (per-vaginal haemorrhoids)
- Yoni Paicchilya (vaginal laxity or prolapse).(7)

2. **Yoni Parisheka**

Definition:

Yoni Parisheka is a localised Ayurvedic fomentation therapy in which warm medicated liquids are gently poured over the external genital region. The procedure aims to provide Swedana (therapeutic fomentation) to the vaginal area, thereby alleviating pain, inflammation, and discomfort.

Procedure:

Lukewarm medicated oil or warm water is poured steadily from a height of approximately 4–5 inches over the external vaginal region. Care is taken to maintain a comfortable temperature throughout the procedure.

Time:

- 5–10 minutes per session

Therapeutic Effects:

- Reduces vaginal pain and swelling
- Relieves local inflammation and discomfort (8)

3. **Yoni Pichu**

Definition

Yoni Pichu is a localised Ayurvedic therapeutic procedure in which a medicated tampon is inserted into the vaginal canal to provide sustained contact of therapeutic substances with the vaginal mucosa. The Pichu is prepared from a sterile cotton swab wrapped in a gauze piece and tied with a long thread to facilitate easy insertion and removal. It is soaked in medicated oils, Kashaya (herbal decoctions), Taila, Ghrita, or Kalka-based preparations before administration. Depending on the depth of insertion required, elongated Pichu is used for deeper application and circular Pichu for superficial insertion.

Procedure of Pichu Dharana

1. Use sterile/autoclaved Pichu to maintain aseptic conditions.
2. The patient is positioned in a supine posture with knees flexed.
3. A sterile, oil-soaked Pichu is inserted gently into the vagina using the gloved index finger.
4. The thread must remain outside the vaginal opening to allow safe and easy removal after the prescribed time.
5. The Pichu is retained for a specified duration, usually until mild bladder fullness or for several hours, depending on therapeutic goals.

Time / Duration

- The Pichu is generally retained for 5–6 hours, or until the urge for urination arises.
- Duration may vary based on clinical condition and the physician's discretion.

Site of Pichu Dharana

1. Prathamavarta – Elongated Pichu for deeper vaginal insertion
2. Dwitiyavarta – Circular Pichu for superficial placement within the vaginal canal

Indications

Yoni Pichu is beneficial in a wide range of gynaecological conditions, especially those involving Vata and Pitta aggravation:

Primary Indications

- Yonidaha (burning sensation in vagina)
- Yoni Kandu (vulvovaginal itching)
- Yoni Paka (inflammatory conditions)
- Vivrutta Yonivyapad
- Yoni Paicchilya (excessive mucoid discharge)
- Yoni Strava (abnormal vaginal discharge)
- Yoni Karkashata (dryness/roughness)
- Vataja Yonivyapad
- Pittaja Yonivyapad
- Vamini and Upapluta Yonivyapad
- During the ninth month of pregnancy (as per classical indications for perineal softening)

- Retention of placenta (as supportive therapy under supervision)(9)

4. **Yoni Varti**

Definition

Yoni Varti are medicated intravaginal suppositories prepared by compacting finely powdered herbal formulations (Churna) with suitable binding agents into wick-like structures. Their design enables targeted delivery of therapeutic substances directly to the vaginal mucosa, ensuring prolonged retention, sustained release, and enhanced local action. Due to these characteristics, Yoni Varti are effective in a range of gynaecological disorders, particularly those involving infections, excessive discharge, and mucosal imbalance.

Size and Shape

- Prepared according to Tarjani-Angula Pramana (approx. the length and thickness of an index finger).
- Constructed in an elongated wick form to facilitate easy insertion and deeper reach.

Procedure of Varti Dharana

a. Use only sterile/autoclaved Varti for the procedure.
b. Cleanse the external genital area thoroughly to maintain aseptic conditions.
c. Insert the oil-smeared Varti into the vagina, ensuring that the attached thread remains outside for safe removal.
d. Retain the Varti until the natural urge for urination or for the prescribed therapeutic period.
e. Remove the Varti as soon as the urge to urinate is felt.
f. Perform Yoni Dhawana (vaginal wash) using lukewarm water immediately after removal.
g. Discard the Varti after single use.

Duration / Time

- 2–3 hours, or until bladder fullness signals removal.
- Post-procedure care includes washing with lukewarm water approximately 1 Muhurta (48 minutes) after removal.

Application Site - Prathamavarta (vaginal canal)

Indications

Yoni Varti are indicated in the management of the following gynaecological conditions:

1. Yoni Paicchilya (excess mucoid discharge)
2. Kaphaja Yonivyapad
3. Vipluta Yonivyapad
4. Karnini Yonivyapad
5. Shveta Pradara (leucorrhoea)
6. Yoni Kandu (itching)
7. Anartava (amenorrhoea)
8. Conditions requiring restoration of optimal vaginal health and pH balance.(10)

5. **Yoni Lepana (Vaginal painting)**

Paste is prepared by mixing fine powders with water. Then it is applied to the required area. Type: Pradeha, Pralepa, Aalepa

Duration: until the lepa dries

Procedure: The Affected part is first cleaned with fresh water, and a freshly prepared paste is applied uniformly over the affected part. It should be removed after drying. If there is any irritation or itching, the lepa should be removed.

Indications

- Yoni Arsha – With powder of Tuttha, Gairika, Lodhra, Ela, Rasanjana, Harenu, Pushpakasis, salt mixed with honey.4
- Vivrutta Yonivyapada - With powder of Palashbeeja and Udambarphala mixed with Tila Taila and honey.(11)

6. **Yoni – Poorana (Vaginal Packing)**

In this, the vagina is filled with pastes, oils and powdered medicines. It is used in the management of inflammation and infectious conditions.

Application site – Prathamavarta (vagina)

Duration – 7 to 8 days after cessation of menses

Indications

- Mahayoni -with fat of bear, crab or cock medicated with the Madhura group of drugs
- Prasansini Yoni - with Vesawara (minced meat or oleo mixed with drug).(12)

7. **Pinda Chikitsa (Yoni Pinda Dharana)**

Definition:

Pinda Chikitsa is an intravaginal therapeutic procedure in which a warm, medicated bolus prepared from boiled herbal drugs is inserted into the vaginal canal. The medicated paste is wrapped in a sterile cloth and shaped into a circular form to facilitate sustained local action.

Application Site:

- Prathamavarta (vaginal canal)

Duration:

- Performed for 7–8 days after the cessation of menstruation

Retention Time:

- 3–4 hours, or until the urge for micturition is felt

Procedure:

Finely powdered medicinal herbs are mixed with water and boiled thoroughly. Medicated oil is added during the process to obtain the desired paka (consistency). Once the appropriate semi-solid consistency is achieved, heating is discontinued. The warm medicated paste is then placed in a sterile, disinfected cloth, shaped into a circular bolus, and secured with a thread at the upper end before vaginal insertion. (13)

Table No.1 - Classical Therapies to Modern Safety Parameters

Ayurvedic Procedure	Primary Action	Potential Modern Evaluation
Yoni Dhavan	Cleansing, antimicrobial	pH compatibility, microbial reduction test
Yoni Pichu	Lubrication, healing	Patch test, cytotoxicity assay, sterility testing
Uttar Basti	Deep intrauterine action	Biocompatibility, aseptic validation
Yoni Dhupan	Fumigation	VOC analysis, microbial load assessment
Yoni Lepana	Anti-inflammatory	Irritation test, wound healing assays
Yoni Varti	Astringent, Antimicrobial	Disintegration profile, safety on vaginal cells
Yoni Parisheka	Soothing, anti-inflammatory	Temperature safety, mucosal irritation studies

Modern Safety Evaluation Approaches Relevant to Ayurvedic Vaginal Therapies

Contemporary safety assessment methodologies play a crucial role in validating Ayurvedic vaginal formulations for their use in integrative clinical settings. Among these,

1. **Patch testing** is a well-established diagnostic and safety assessment tool used to evaluate the potential of a substance to cause skin irritation or allergic contact dermatitis. It is a critical component of preclinical safety evaluation for topical and transdermal formulations. Originally introduced in the late nineteenth century and now a standard tool for evaluating contact dermatitis, it is relevant for assessing the irritant or allergenic potential of Ayurvedic oils, gels, lepa, and varti ingredients. Such testing is recommended before large-scale clinical trials to ensure dermal safety.(14)
2. **Vaginal irritation and sensitivity studies**, particularly those employing validated animal models such as the rabbit vaginal irritation test, provide important insights into mucosal tolerance. International standards, including ISO 10993-10, offer applicable guidelines for evaluating irritation and sensitisation of mucosal tissues and are pertinent to vaginal formulations.(15)
3. **Cytotoxicity and biocompatibility assays**, including the MTT assay and agar diffusion tests conducted on epithelial cell lines, are essential for confirming that herbal extracts and compounded formulations do not induce cellular damage to the vaginal epithelium. These assays provide objective evidence of cellular safety. Cytotoxicity tests are primary biocompatibility tests that determine the lysis of cells, the inhibition of cell growth and other effects on cells caused by test substances. This means that cytotoxicity only describes one single aspect of biocompatibility. (16)
4. **Microbiological evaluation** Microbiological evaluation is a critical component of safety and quality assessment for pharmaceutical, herbal, and traditional formulations. It ensures that products intended for human use are free from harmful microbial contamination and are safe throughout their shelf life. Microbiological evaluation is essential in vaginal therapeutics to ensure safety, preserve vaginal microbial homeostasis, prevent infection, and maintain product quality throughout its shelf-life. It constitutes another critical component of safety validation. This includes antimicrobial sensitivity testing (e.g., Kirby–Bauer method) and pH assessment to ensure compatibility with the physiological vaginal environment (pH 3.5–4.5). Equally important is the assessment of the formulation's impact on Lactobacillus species, which are fundamental to maintaining vaginal microbial homeostasis. (17)
5. **Stability and contamination assessments** are mandatory for ensuring product safety and quality. These include heavy metal analysis using techniques such as atomic absorption spectroscopy (AAS) or inductively coupled plasma mass spectrometry (ICP-MS), particularly for formulations containing Bhasma or mineral components. Microbial contamination testing, including total aerobic microbial count (TAMC) and total yeast and mould count (TYMC), along with shelf-life determination and preservative efficacy testing, further strengthens product reliability.(18)
6. **pH compatibility** testing is essential to confirm that a formulation does not disrupt the normal physiological environment of the target tissue. Biological surfaces such as skin and vaginal mucosa possess a narrow physiological pH range that supports epithelial integrity and indigenous protective microflora. Deviation from this range may lead to irritation, mucosal damage, inflammation, or alteration of normal microbial balance. Therefore, assessing pH compatibility is a primary safety requirement before clinical or consumer use.
8. **Microbial reduction (challenge) tests** evaluate the ability of a formulation or preservative system to inhibit or reduce microbial growth during storage and use. This is particularly important for non-sterile products that may be exposed to repeated handling. Demonstrating effective microbial control ensures

product safety throughout its intended shelf-life.

9. **VOC analysis** is a part of a comprehensive microbiological and chemical safety evaluation. It ensures that manufacturing processes, adhesives, fragrances, and preservatives do not release harmful volatile chemicals, maintaining the overall quality of the product. Detection of VOCs in feminine hygiene products is critical for safeguarding sensitive mucosal tissues, assessing chemical exposure risks, ensuring product quality and regulatory compliance, and guiding the development of safer formulations(19),(20).
10. **Disintegration Profile** The disintegration profile of a vaginal dosage form (e.g., Yoni Varti, suppositories, gels, or pessaries) determines how quickly and efficiently the formulation releases its active constituents upon administration.(21)
11. **Temperature safety** in vaginal therapeutics is essential to ensure that formulations retain their bioactivity, preserve mucosal integrity, protect the vaginal microbiome, and provide patient comfort during use. Vaginal formulations, including Ayurvedic preparations such as Yoni Varti, Pichu, oils, gels, and suppositories, are intended for application on sensitive mucosal tissues, making temperature a critical factor influencing their efficacy and safety. Exposure to temperature extremes can disrupt the natural vaginal microbiota, particularly Lactobacillus species, which are vital for maintaining acidity and preventing infections. Therefore, appropriate temperature safety measures help preserve microbial homeostasis, prevent dysbiosis, and ensure that applied temperatures are therapeutic without causing mucosal damage.(22)

Discussion:

Need for Laboratory and Clinical Safety Validation

Although classical Ayurvedic texts emphasize safety through meticulous formulation methods, contemporary integrative healthcare necessitates quantifiable and reproducible safety data. Laboratory and clinical validation is therefore essential for the following reasons:

1. The growing global acceptance of Ayurveda requires standardized and scientifically validated safety profiles.
2. The vaginal mucosa is highly sensitive, necessitating robust evidence of biocompatibility.
3. Systematic evaluation helps prevent adverse effects such as allergic reactions, irritation, or cytotoxicity.

Need for an Integrative Research Framework

A critical review of classical Ayurvedic guidelines alongside modern laboratory protocols indicates that Ayurvedic vaginal therapies possess significant potential as natural, safe, and cost-effective interventions for various gynaecological disorders. However, effective translation into mainstream practice requires a structured integrative research framework that includes:

1. Standardization of formulations in accordance with classical Ayurvedic procedures.
2. Comprehensive laboratory-based safety validation prior to clinical application.
3. Well-designed clinical trials adhering to CONSORT-Ayurveda guidelines.
4. Interdisciplinary collaboration among Ayurvedic physicians, gynaecologists, pharmacologists, and microbiologists.
5. Development of Standard Treatment Protocols (STPs) that integrate Ayurvedic and contemporary biomedical perspectives.

Adopting such an integrative approach will not only enhance the scientific credibility and clinical

acceptance of Ayurvedic vaginal therapies but will also facilitate advanced research, evidence-based product development, and individualized patient care.

Conclusion:

Sthanik Chikitsa represents one of the most significant and clinically relevant contributions of Ayurveda to women's healthcare, offering localized, minimally invasive, and therapeutically effective interventions for a wide range of vaginal and reproductive disorders. Rooted in classical Ayurvedic principles of safety, customization, and tissue compatibility, these therapies have demonstrated sustained clinical relevance across centuries. When supported by systematic scientific validation, this traditional knowledge holds considerable potential to enhance women's health outcomes, particularly in low-resource and underserved settings where access to advanced medical care may be limited.

The present review underscores the need for rigorous laboratory-based validation of Ayurvedic vaginal therapeutics using contemporary safety assessment tools, including patch testing, cytotoxicity and biocompatibility assays, microbiological evaluation, and mucosal irritation studies. Establishing such an evidence base is essential for addressing concerns related to vaginal mucosal sensitivity, microbial balance, and formulation safety, thereby ensuring reproducibility and clinical reliability.

Integrating validated Sthanik Chikitsa modalities with modern gynaecological practice will enable clinicians to adopt these interventions with greater confidence and ethical responsibility. Moreover, this integrative approach can serve as a foundation for the development of standardised treatment protocols, facilitate regulatory acceptance, and stimulate interdisciplinary research involving Ayurveda, pharmacology, microbiology, and gynaecology. Ultimately, bridging classical Ayurvedic wisdom with modern scientific frameworks has the potential to transform women's healthcare by delivering safe, effective, and culturally acceptable therapeutic solutions grounded in both tradition and evidence.

References

1. Amina Mashal et al. Assessment of Gynecological Problems in Working Women with Reproductive Age; A Cross-Sectional Survey.
2. Sushrut Samhita, Volume 2, Sharir Sthan,5/44.Pg no 83, By Dr Anant Ram Sharma, Foreword by Acharya Priya Vrat Sharma , CHAUKHAMBA SURBHARATI PRAKASHAN VARANASI. In.
3. Agnivesha, Charaka Samhita, redacted by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta, edited by Vaidya Yadavji Trikamji Acharya, Marathi translatory by Dr Vijay Shankar Kale, Published by Chaukhambha Surabharati Prakashana, Varanasi, Uttar Pradesh. Cha. Chi.. 30/ 07Pg no 739. In.
4. Agnivesha, Charaka Samhita, redacted by Charaka and Dridhabala with Ayurveda Dipika commentary by Chakrapanidatta, edited by Vaidya Yadavji Trikamji Acharya, Marathi translatory by Dr Vijay Shankar Kale, Published by Chaukhambha Surabharati Prakashana, Varanasi, Uttar Pradesh. Cha. Chi.. 30. In.
5. Sushrut Samhita, Volume 3, Uttar Sthan, 380.Pg no.228 , By Dr Anant Ram Sharma, Foreword by Acharya Priya Vrat Sharma , CHAUKHAMBA SURBHARATI PRAKASHAN VARANASI. In.
6. Astanga Samgraha with Hindi commentary by Kaviraj Atrideva Gupta Chowkhamba Krishnadas Academy Varansi edition 2011 Uttar tantra 39. In.
7. Susruta Samhita of Susruta with the Nibandha sangraha Commentary of Sri Dalhan Acharya edited by Vaidya Jadavji Trikamji Acharya Chaukhamba Surbharti Prakashan Varanasi Sharira Sthana,

Shukrashonita shuddhi sharira Adhyaya, 2. In.
8. Agnivesha, Charaka Samhita, Vidyotini Hindi Commentary by Kashinath Sastri, Dr. Gorakhanath, Chikitsa sthan: 30, Chaukhamba Bharati Academy: Publisher, Part-2, 2005. In.
9. Susruta Samhita of Susruta with the Nibandha sangraha Commentary of Sri Dalhan Acharya edited by Vaidya Jadavji Trikamji Acharya Chaukhamba Surbharti Prakashan Varanasi Uttartantra, Adhyaya, 38. In.
10. Astanga Samgraha with Hindi commentary by Kaviraj Atrideva Gupta Chowkhamba Krishnadas Academy Varanasi edition 2011 Uttar tantra 39/83. In.
11. Susruta Samhita of Susruta with the Nibandha sangraha Commentary of Sri Dalhan Acharya edited by Vaidya Jadavji Trikamji Acharya Chaukhamba Surbharti Prakashan Varanasi Sutra Sthan, Adhyaya, 18/11.
12. Joshi Y, Ray S, Singh Parihar E, Hajare P, Role of Sthanik Chikitsa in Stri Roga. J Ayu Int Med Sci. 2024; 9(2): 100-108.
13. Kaviraj Ambikadatta Shastri, Sushrut Samhita of maharshi Sushruta, Chaukhambha Sanskrit sansthan, Varanasi, Reprint edition 2012, Chikitsasthana, 6/2, page no. 46.
14. Lazzarini R, Duarte I, Ferreira AL. Patch tests. An Bras Dermatol. 2013 Nov-Dec;88(6):879-88. doi: 10.1590/abd1806-4841.20132323. PMID: 24474094; PMCID: PMC3900336.
15. Marijke M.M. Dhondt, Els Adriaens, Jens Van Roey, Jean Paul Remon, The evaluation of the local tolerance of vaginal formulations containing dapivirine using the Slug Mucosal Irritation test and the rabbit vaginal irritation test, European Journal of Pharmaceutics and Biopharmaceutics, Volume 60, Issue 3, 2005, Pages 419-425.
16. O. A. Peters, Research that matters – biocompatibility and cytotoxicity screening, Volume 46, Issue 3, March 2013, Pages 195-197.
17. Liu S, Chen Y, Zhang K, Tang D, Zhang J, Wang Y, Zhao J, Li D, Wang T. Exploring vaginal microbiome: from traditional methods to metagenomic next-generation sequencing-a systematic review. Front Microbiol. 2025 Aug 14;16:1578681. doi: 10.3389/fmicb.2025.1578681. PMID: 40895484; PMCID: PMC12391137.
18. Alhabardi, Samar & Edris, Sherif & Bahieldin, Ahmed & al-hindi, Rashad. (2021). The composition and stability of the vaginal microbiome of healthy women. Journal of the Pakistan Medical Association. 71. 1-20. 10.47391/JPMA.1465.
19. Feminine Hygiene Products and Volatile Organic Compounds in Reproductive-Aged Women Across the Menstrual Cycle: A Longitudinal Pilot Study Ning Ding, PhD, MPH, Nan Lin, PhD, Stuart Batterman, PhD, Sung Kyun Park, ScD, MPH,Volume 31, Issue 2, February 2022, Pages 210-218.
20. Nan Lin, Ning Ding, Emily Meza-Wilson, Amila Manuradha Devasurendra, Christopher Godwin, Sung Kyun Park, Stuart Batterman, Volatile organic compounds in feminine hygiene products sold in the US market: A survey of products and health risks, Environment International, Volume 144, 2020, 105740, ISSN 0160-4120.
21. Indian Pharmacopoeia. Disintegration test for suppositories and vaginal dosage forms. Government of India; 2020. In.
22. Liu Z, Yu W, Sun T, Li M, Li X, Qin L, Liu X, Bian Y, Zhao S, Zhao Q, Zhao H, Feng Q. Ambient temperature affects the composition of the vaginal microbiome, and temperature-sensitive vaginal microbes influence assisted reproductive technology outcomes. Microbiome. 2025 Nov 29;14(1):3. doi: 10.1186/s40168-025-02212-9. PMID: 41316495; PMCID: PMC12763940.