Int. J. Ayur. Pharma Research, 2014; 2(7): 25-31 **ISSN: 2322 - 0910**

International Journal of Ayurveda and Pharma Research

Review Article

PROBABLE MODE OF ACTION OF *STHANIKA CHIKITISA* (LOCAL TREATMENT) IN *YONIVYAPADA* – AN AYURVEDIC INSIGHT

Parmar Meena[1]*, Parmar Gaurav[2]

*[1]Medical officer, Department of Prasuti tantra and Stri roga, Chaudhary Brahm Prakash Ayurved Charak Sansthan Khera Dabar, New Delhi, India.

[2]Clinical Registrar, Department of Shalya tantra, Chaudhary Brahm Prakash Ayurved Charak Sansthan, Khera Dabar, New Delhi, India.

Received on: 01/11/2014 Revised on: 13/11/2014 Accepted on: 28/11/2014

ABSTRACT

The physiology of reproductive system of women is different from her male partner to a greater extent as she has to punctuate many functions like, achievement of conception, child birth etc. These physiological changes make her prone to pathological disorders. That's why reproductive health is just as important as other aspects of health. In classics, for the management of various *Yonivyapadas* (gynaecological disorders) the *Sthanika chikitsa* (local treatment) i.e. Douching, Tampooning per vaginum, local use of pessaries and fumigation has been mentioned and is effective in curing the diseases. But, how these drugs act has not widely explained. As vaginal administration of drug gain recognition as a potential route for drug delivery, that's why it is important to pay attention that how the drug act through vagina.

KEYWORDS: *Yonivyapada, Sthanika chikitsa,* Drug delivery.

INTRODUCTION

The female body is one of the natures most wonderful and complex creations. In classics, for the management of various gynaecological disorders, the local treatment i. e. drug administration through vagina has been mentioned. In modern science, also wider choices of sites for drug administration are being continuously explored and the vagina being one of them. Vaginal route can be used for local as well as systemic effect, attaining sustained therapeutic levels composed to conventional oral route. Vaginal administration permits rise of prolonged dosing with continuous release of medicaments and hence, longer interval between doses, which improves user compliance. Vagina exhibits a degree of dynamism, the benefit of exploring it as one of the potential route for drug administration cannot be overlooked.

ABSORPTION OF DRUG THROUGH VAGINA[1]

Vagina is preffered as a route for drug delivery because of its anatomical position which favours secure retention of vaginal formulations. The vaginal defense (i.e. epithelium, flora, immune cells and ph), microbiology and vascularity make it ideal for absorbing drugs. Now, potential for systemic delivery through vagina was explored due to its large surface area, high vascularity and permeability to a wide range of compounds including peptides and proteins.

Physiological factors affecting absorption of drug through vagina:

a) The vaginal epithelium undergoes cyclic changes under the influence of hormones such as esterogen, progesterone, LH, FSH. These changes are associated with aging, biphasic menstrual cycle and pregnancy. These cyclic changes effect the epithelial thickness, porosity, ph, amount and composition of vaginal secretions.
   In late follicular phase, there is increase in epithelial thickness due to proliferation of cells in basal layer stimulated by esterogens and also number of desmosomes gets increased rendering the epithelium more cohesive and thick. Thus, in this phase, the absorption of drug will be less. Luteal phase

is characterized by the desquamation of the epithelial layer. Epithelium becomes loose, porous and thin due to loosening of intercellular grooves and widening of intercellular channels. So, there is increased possibility of absorption of even high molecular weight hydrophilic drugs during this phase. Post menopause, consequent upon the reduced mitosis in the basal epithelial layers and the decline in small blood vessels leads the vaginal epithelium extremely thin and there is increase in the permeability of the tissue. vaginal absorption of esterogen is reported to be higher in postmenopausal women compared to premenopausal women.

b) Volume, viscocity and PH of vaginal fluid have a considerable influence on vaginal drug absorption. Elevated volume favours absorption of poorly water soluble drug, while the same may dislodge the drug from the vaginal cavity and subsequently, reduce the absorption. The presence of excessively viscous cervical mucous may hinder drug absorption. Any change in the vaginal PH may affect the release profiles of PH sensitive drugs from vaginal formulations.

Drug permeation across the vaginal epithelium takes place via two routes i.e. paracellular and transcellular; which can occur either by passive diffusion, carrier mediated transport or endocytic processes. Generally, hydrophilic compounds prefer the paracellular route, with its molecular size being inversely related to its absorption rate. Hydrophobic drugs compounds prefer the transcellular route, most commonly by passive diffusion through the epithelium down the concentration gradient according to Fick's law. The diffusion rate is inversely proportion to the molecular size. However, these generalizations regarding drug absorption may not stand good with the cyclic changes in the vaginal epithelium, which has a substantial effect on vaginal drug absorption.

- Vaginal permeability is much greater to lipophilic drugs than to hydrophilic drugs.
- Generally, absorption of low molecular weight lipophilc drugs is much more than large molecular weight lipophilic or hydrophilic drugs.
- The type of dosage form affects the rate of dissolution. For example: drug which is already dissolved in aqueous vaginal gel, will be more rapidly absorbed than a drug which is in solid form within vaginal tablet preparation.
- The prolonged contact time of the drug with the absorbing surface of vagina make the better drug absorption. The extent of flow and retention of the medicament within the vaginal cavity depends on the type of formulation.
- Rate of absorption via passive diffusion can be increased by increasing drug concentration in vaginal fluid. This makes the vaginal fluid highly saturated ensuring better absorption and sustained drug delivery throughout the intended time of application. Hence, vagina still has its own place as a unique site for drug administration.

PROBABLE MODE OF ACTION OF DRUG THROUGH VAGINA

Main pharmacological action of local application in *Yoniroga*:

The drugs which are used locally in *Yonirogas* are mostly:

- *Kasaya* (astringent) and *Tikta* in *rasa*, *Katu* in *Vipaka* and *Laghu* and *Ruksha* in *guna*
- *Kapha-pitta shamaka*
- *Shodhaka* (detoxifier) and *ropana* (wound-healer)
- *Dhotha pratikara* (anti-inflammatory)
- *Yoni doshhara*
- *Kledashoshaka*
- *Jantughana* (anti-microbial)

***Aacharyas* has explained the mode of action of drugs in samhitas in three ways:** [2]

- *Dravya prabhava*
- *Guna prabhava*
- *Dravya guna prabhava*

1. On the basis of *Rasa*

Kasaya rasa [3]

Vayavia → *Vrana shodhana* (as *Kledashoshaka*) → *Sravashoshkar* → Symptomatic relief to the patient

(Decrease white discharge per vaginum)

Parthvian → *Ropana* (due to its astringent action) → healing by the formation of granulation tissue

Tikata rasa [4] → *Pittaghana*

(Helps in *Pachana* of *Doshas*) → *Raga*, *Daha* and *Sravhara* → Reduce inflammation and give symptomatic relief to the patient

2. On the basis of *Vipaka* and *Guna*

Vipaka and *Guna*

Katu vipaka → *Kaphaghana* → *Srava* and *kledhara* → *Lakshnaupshamana*

Laghu and *Ruksha guna* → *Kaphaghana* → *Srava* and *kledhara* → *Lakshnaupshamana*

3.On the basis of dravya- prabhava

Prabhava - Krimighana

Local therapeutic treatments have a lot of potential in treating gynaecological disorders. In classics, various local therapeutic measures have been described for Yonivyapadas, which are as follows:

1. *Yonidhawana* (Douching per vaginum):

In this procedure, the medicated decoctions and oil are used to wash the vaginal canal. According to Sushruta, as water helps in extinguishing the fire, in the same manner use of *Kasaya* for *Parisheka* helps alleviating the aggravated *Doshajagni*. Thus, helps to reduce inflammation, does purification and checks further progress of the disease. [5]

Formulations which are commonly used for *Yonidhawana* are: *Panchvalkala kwath*[6], *Triphala kwath*[7], *Nimbapatra kwath*[8], *Guduchi-danti kwath*.[9]

Pharmacological action of drugs: Most of the drugs used for *Yonidhawana* are astringent, wound healing, antimicrobial and anti-inflammatory in action.

***Panchvalkala*:**

It is astringent in taste, coolant, cures burning. The decoction is extensively acts as anti-inflammatory, has wound healing and free radical scavenging property. [10]

***Triphala*:**

Alcoholic extract of *Triphala* has shown in vitro antimicrobial activity against wound pathogens such as staphylococcus aureus, pseudomonas aeruginosa and streptococcus pyogenes. [11]

The ointment prepared from *Triphala* has shown antibacterial, wound healing and antioxidant activities[12].

Methanolic extract of *Triphala* in vitro has indicated their strong ability to scavenge free radicals such as DPPH and superoxide. [13]

***Nimba*:**

Nimbidin has shown antinflammatory effect in acute paw edema of rats[14].

Petroleum ether extract of oil has stronger antimicrobial activity against bacteria, fungi and Poliovirus. It inhibited the growth of E. coli. The extract was active against Candida albicans and antiviral activity against Poliovirus replication. [15]

In Bacterial vaginosis 5ml oil into the vagina daily was reported to cure the symptoms of the infection.[16]

For the better absorption of drug, the appropriate time for douching per vaginum is lutenizing phase because during this phase, loosening of intercellular grooves and widening of intercellular channels occurs, epithelium becomes loose, porous and thin. so, during this phase, there is increased possibility of absorption of even high molecular weight hydrophilic drugs.

2. *Yonipichu* (Tampooning per vaginum)

In this procedure, tampoon is made from sterile swab and soaked in medicated luke warm oil, ghee or decoction and then inserted in vagina to be retained for few hours. According to *Sushruta*, *Pichu* helps in *Lekhana karma* and thus, removes slough[17]. In *Yonipichu*, mostly medicated *Kashaya*, *Sarpi* and *Taila* is used. These preparations have two main functions i. e. Shodhana (purification) and *Ropana* (healing). [18]

Formulations commonly used in *Yonipichu* for *Yonivyapadas* are: *Ksheerbala taila*, *Dhatakyadi taila*[19], *Udambara taila*[20], *Kranja taila*, *Jatyadi taila/ghrita*, *Triphala ghrita*, *Shatavari ghrita*, *Goghrita*.[21]

Pharmacological action :

***Bala*:** Acts as styptic, astringent, wound healer, analgesic, anti- inflammatory and potent antioxidant.

Diwan and Kulkarni studied anti-inflammatory activity of ethyl acetate and alcohol extract of S. cordifolia in rat. wound healing activity was studied by Jaiswal et al, 2004. Mahesh et al (2008) reported that S. cordifolia leaf extract showed highest antibacterial activity against F. verticilloides. Dhalwal et al (1983) studied that all extracts of Sida cordifolia have effective free radical scavenging activity. The highest antioxidant activity was observed in the root extract. [22]

***Dhataki*:** Its extracts and metabolites from flowers and leaves possess antibacterial and free radical scavenging property. It acts as astringent, refrigerant, haemostatic and wound healer by promoting granulations. [23]

***Udambra*:** The methanol extract of stem bark has shown potent in vitro antioxidant activity when compared to methanol extracts of its roots.[24]

Ethanol extract of of stem bark showed a potent wound healing effect in excised and incised wound model in rat. [25]

Ethanol extract of leaves exhibited maximum anti-inflammmatory effect in induced rat paw edema models. [26]

The plant possess potent inhibitory activity against six species of fungi; eg-Candida albicans, Candida krusei etc. [27]

Petroleum ether extract out of different extracts of leaves was the most effective extract against the tested microorganisms i. e. E. coli, Bacillus pumitis, Bacillus subtilis, Pseudomonas aeruginosa and staphylococcus aureus. [28]

***Jatyadi* oil**- It contains flavonoids, tannins, steroids, alkaloids and glycosides which helps in faster healing of wounds. The oil is anti microbial, anti bacterial and non- irritant. [29]

Importance of *Ghrita* and its pharmacological action-In Charak samhita, it is mentioned that *Ghrita* is the only *Sneha* which occupies all the pharmacological properties of drugs from which it is prepared, that's why it is said to be the best *Sneha*. Traditionally prepared cow ghee has two properties i. e. *Sanshodhna* (detoxifier) and

Sansamana (palliative). *Ghrita* alone and in combination is useful in treating wound, inflammatory swellings and helps in promotion of quick healing [30]. Cow ghee is a rich source of essential fatty acids, which regulates P. G. synthesis and hence, induce wound healing. Deficiency of EFA's results in poor wound healing. Thus, omega-3 and omega-6 EFA's are important for maintenance of normal epidermal structure. The oil and *Ghrita* preparations used in *Yonpichu* are more effective in curing gynaecological diseases because vaginal permeability is greater to lipophilic drugs than to hydrophilic drugs. Generally, absorption of low molecular weight lipophilic drugs is much more than large molecular weight lipophilic or hydrophilic drugs.

3. *Yonidhoopan* (Fumigation)

In this therapeutic procedure, the medicated smoke is used to sterilize the vulval and vaginal area. Fumigation (medicated smoke) creates an aseptic environment, kills microbes and thus, prevents infection. [31]

Probable mode of action: It dilates blood vessels and helps in oxidation of blood. It leads to adequate tissue perfusion and oxygenation. Thus, reduces inflammation, itching and eliminates infection.

Drugs used for *Dhoopan karma* and its pharmacological properties:

Agaru: It is anti-inflammmatory in action and its volatile oils reduces itching and pruritis.

***Mustaka*:** The essential oil obtained on steam distillation of rhizomes and roots of plants possess antibacterial, antifungal, analgesic and spasmolytic activity. The plant is widely used as an astringent, anti-inflammatory and antimicrobial.[32]

***Nimba*:** It is antinflammatory, bacteriostatic-cidal and antifungal in action.

***Khadira*:** The extracts of Acacia catechu exhibit various pharmacological effects like anti-inflammatory, antioxidant, antimicrobial activities. The chief phytoconstituents of the heartwood are catechin and epicatechin. Catechins have significant antioxidant and antimicrobial effects. A study conducted in ethanolic and aqueous heartwood extract of Acacia catechu, proved its efficacy as a potent anti-bacterial agent. Taxifolin presents in heartwood of Acacia catechu are found to be responsible for its antibacterial effect. [33]

***Shala* (*sarjarasa*):** It is antiseptic, astringent and bitter in properties. Acts as an analgesic, anti-inflammatory, wound healing and bactericidal in action.

The ethanolic extract of S. robusta resin (10 and 30%w/w applied locally in excised and incised wounds) produced a dose dependent acceleration in wound contraction and increased hydroxyproline content and tensile strength of wounds in rats. [34]

4. *Ksharakarma* (Chemical cauterization)

Kshara are the substance that acts as a corrosive agent for any growth when used externally. *Ksharakarma* is said to be superior to any other surgical or parasurgical measures due to its functions like *Chedana*, *Bhedana*, *Lekhana* and *Patanakarma*. It can be applied in a narrowest place and internally where surgical procedures cannot be performed. [35]

Probable mode of action of *Kshara* (*Apamarga*, *Snuhi*) after application in cervical erosion:

Death of superficial cells (due to vasoconstriction) regeneration of basal cells (formation of granulation tissue) growth of squamous epithelium. [36]

Kshara has *Tikshna guna* and *Ushna virya* with predominance of *Vayu* and *Teja mahabhuta*. *Vayu* helps in fast action while *Tejas* produces caustic effect.

CONCLUSION

The main function of the drugs used through vagina is to minimize the tissue damage, provide adequate tissue perfusion, oxygenation and restore the disrupted anatomical continuity and function of an affected part. The formulations mostly used locally are antimicrobial (*Nimba, Dhataki, Mustaka* etc.), anti-inflammatory (*Sarjarasa, Agaru, Bala* etc.), antioxidant and wound healing (*Triphala, Bala, Nimba* etc.) in action. As vaginal permeability is greater to lipophilic and hydrophilic drugs, so *Ghrita* or oil preparation and medicated decoctions should be used in luteal phase through vagina for better action of local treatment. Thus, local application of drugs through vagina will help to check the further progress of disease at the door step.

REFERENCES

1. Iyer Vidya, Bendgude N, Poddar SS, vaginal drug delivery, www. Express pharmaonline.com, 1-15 July 2008.
2. Kaviraj Ambikadutta Shastri, editor, Shushruta samhita of Maharishi Susruta edited with 'Ayurveda-Tatva Sandipika'Hindi Commentary, part-1, Chaukambha Sanskrit Sansathan, Varanasi, 11th edition-1997, Su-40/17, p-152.
3. Dr. Brahmanand Tripathi, editor, Charakasamhita of Agnivesha edited with Charaka Chandrika Hindi Commentary, part-1, Chaukambha Surbharti, Varanasi, Su-26/40, p-480
4. Dr. Brahmanand Tripathi, editor, Charakasamhita of Agnivesha edited with Charaka Chandrika Hindi Commentary, part-1, Chaukambha Surbharti, Varanasi, Su-26/42-4, p-484.
5. Kaviraj Ambikadutta Shastri, editor, Shushruta samhita of Maharishi Susruta edited with 'Ayurveda-Tatva Sandipika' Hindi Commentary, part-1, Chaukambha Sanskrit Sansathan, Varanasi, 11th edition-1997, chi-1/8p-4.
6. Va.Harish Chandra Singh Kushwaha, Charaka Samhita- second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/62, p-807.
7. Va.Harish Chandra Singh Kushwaha, Charaka Samhita-second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/82-84, p-811.
8. Va.Harish Chandra Singh Kushwaha, Charaka Samhita-second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/82-84, p-811.
9. Va.Harish Chandra Singh Kushwaha, Charaka Samhita-second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/58, p-807.
10. Anandjiwala, Sheetal;Bagul M;Parabia, M;Rajani M; Evaluation of Free radical scavenging activity of an Ayurvedic formulation, Panchvalkala, research paper (report), Indian Journal of Pharmaceutical Sciences, January 1, 2008.
11. Muthusamy SK, Krirubandhan S, Sripriya R, Sehgal PK, Triphala promotes healing of infected full thickness dermal wound, Journal of Surgical Research, 144 (1):94-101, (2008).
12. Muthusamy SK, Krirubandhan S, Sripriya R, Sehgal PK, Triphala promotes healing of infected full thickness dermal wound, Journalof Surgical Research, 144 (1):94-101, (2008).
13. Naik GH, Priyadarsini KI, Bhagirathi RG, Mishra B, Mishra KP, Banvalikar MM, Mohan H, In Vitro antioxidant studies and free radical reactions of Triphala, an Ayurvedic formulation and its constituents, Phytother Res, 19 (7):582-586, (2005).
14. Pillai NR, Santhakumari G, Anti-arthritic and antiinflammmatory actions of Nimbidin, Planta Med, 1981;43:59-63.
15. SaiRam M, Ilavazhagan G, Sharma SK, Dhanraj SA, Suresh B, Parida MM, et al, Antimicrobial activity of a new vaginal contraceptive NIM-76 from Neem Oil (Azadirachta indica)J Ethanopharmacol. 2000;71 (3):377-382 (Pub Med).
16. Chinnasamy N, Harishankar N, Kumar PU, Toxicological studies on debitterized Neem oil (Azadirachta indica), Food chem Toxicol. 1993;31 (4):297-301. (Pubmed).
17. Kaviraj Ambikadutta Shastri, editor, Shushruta samhita of Maharishi Susruta edited with 'Ayurveda-Tatva Sandipika' Hindi Commentary, part-1, Chaukambha Sanskrit Sansathan, Varanasi, 11th edition-1997, chi-1/40, p-7.
18. Kaviraj Ambikadutta Shastri, editor, Shushruta samhita of Maharishi Susruta edited with 'Ayurveda-Tatva Sandipika' Hindi Commentary, part-1, Chaukambha Sanskrit Sansathan, Varanasi, 11th edition-1997, chi-1/9, p-4.
19. Va.Harish Chandra Singh Kushwaha, Charaka Samhita-second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/78-82, p-811.
20. Va.Harish Chandra SinghKushwaha, CharakaSamhita- second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/73-78, p-811.
21. Va.Harish Chandra Singh Kushwaha, Charaka Samhita-second part, Chaukhambha Orientalia, Varanasi, First edition-2009, chi-30/113, p-815.
22. Jain Ankit, Choubey Shreya, Singour P.K, Rajak H.and PawarR.S., Sida cordifolia (Linn)-An overview, Journal of Applied Pharmaceutical Science 01 (02);2011:23-31.
23. Santosh S. Bhujbal, Clarine A. Providencia, et al. Effect of Woodfordia fruticosa on dexamethasone induced insulin resistance in mice. Revista Brasileria de Farmacognosia, 2012;22 (3).

24. Channabasavaraj kP, Badami S and Bohojraj S, Hepatoprotective and antioxidant activity of methanol extract of Ficus glomerata, Nat Med (Tokyo)2008, 62 (3), 379-383.
25. Biswas TK, and MukherjeeB, Plant medicines of Indian origin for wound healing activity-A review, Int J Low extrem wounds 2003, 2 (1), 25-39.
26. Li RW, Myers SP, Leach DN, Lin GD and Leach G, A cross-cultural study, anti-inflammatory activity of Australian and Chinesis plants, J. Ethnopharmacol 2003, 85 (1)25-32.
27. Vonshak A, Barazani O, Sathiyamoorthy P, Shalev R, Vardy D and Golan GA, Screening of South Indian Medicinal Plants for antifungal activity against cutaneous pathogens, Phytother Res, 2003, 17 (9), 1123-1125.
28. Mandal SC, Saha BP, and Pal M, studies on bacterial activity of Ficus racemosa leaf extract, Phytother Res, 2000, 14 (4), 278-280.
29. Shailajan Menon, Pednekar s. wound healing efficacy of Jatyadi taila: in vivo evaluation in rat using excision role model, Journal of Ethanopharmacol, 2011 Oct31;138 (1).
30. Dr. Brahmanand Tripathi, editor, Charakasamhita of Agnivesha edited with Charaka Chandrika Hindi Commentary, part-1, Chaukambha Surbharti, Varanasi, Ni. 1/39-40, p-596.
31. Vijaypall Shanti, Sthanika chikitsa in Yonivyapada, Yoni Dhupana, Ayurvedline, Published by Dr. Seetharam Prasad, Bangalore, 12th edition, 2012, P-150.
32. Kasna Bhawna, Sharma Satish Kumar, Singh Lalit, Mohapatra Sharmistha, Singh Tanuja, Cyperus scariosus: A potential Medicinal herb, International Research Journal of Pharmacy 2013, 4 (6).
33. Dinahar. S and Lakshmi. T, Role of Botanicals as antimicrobial agents in management of Dental infections-A review, International Journal of Pharma and Biosciences, vol-2, Issue-4, Oct-Dec-2011: B-692.
34. Wani TA, Chandrashekhar HH, Kumar D, Prasad R, Gopal A, Sardar KK, Tandan SK, Kumar D, Wound healing activity of ethanolic extract of Shorea robusta Geartn. f. resin, Indian J Exp Biol., 2012 Apr;50 (4):277-81.
35. Kaviraj Ambikadutta Shastri, editor, Shushruta samhita of Maharishi Susruta edited with 'Ayurveda-Tatva Sandipika' Hindi Commentary, part-1, Chaukambha Sanskrit Sansathan, Varanasi, 11th edition-1997, Su-11/3, 5, p-34.
36. Neelam, Management of cervical erosion by Ksharakarma, Journal of Ayurveda, Jan-March 2011, p-21.

Cite this article as:
Parmar Meena, Parmar Gaurav. Probable Mode of Action of Sthanika Chikitisa (Local Treatment) in Yonivyapada - An Ayurvedic Insight. Int. J. Ayur. Pharma Research. 2014;2(7):25-31.

Source of support: Nil, Conflict of interest: None Declared

***Address for correspondence**
Dr. Meena parmar
Medical officer
Dept. of Prasuti tantra and Stri roga
Choudhary Brahm Prakash Ayurved Charak Sansthan
Khera Dabar, New Delhi, India.
E mail: takshu2009@gmail.com
Ph: +918750235896