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Conceptual Study of Efficacy of Shwadanshtrabala Vati in Garbhini Mutraroga W.S.R to Mild Urinary Tract Infections During Pregnancy

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ABSTRACT

Ayurveda has given care to the Stree (women) at every aspect of her life in the form of Rajaswala (menstrual care), Garbhini paricharya (antenatal care) and Sutika paricharya (postnatal care). Among all this, giving birth with healthy mother and baby is aim of antenatal care. Progressive changes (both anatomical and physiological) during pregnancy are not only confined to genital organs but also to various systems of the body. Some changes occurring inside woman's body can be felt as discomfort by a pregnant woman. During pregnancy due to these changes occurring inside mother's body many maternal illnesses are common among which urinary tract infection (UTI) is most common. pregnant woman having symptoms like burning micturition, frequency of micturition, urgency of micturition, pain during micturition, pain in suprapubic region is considered under garbhini mutraroga which can be correlated with urinary tract infection. The Mutraroga are widespread since the Vedic period. Our ancient acharyas had detail knowledge about their management and etiopathogenesis. In explanation of garbhini vyadhi, mutraroga is not described. but Acharya Kashyapa has opined that the etio-pathology of the physical and psychological disorders that occurs in pregnant women is same as in normal individuals i.e doshas, dushya are same in both.ⁱ

Keywords: Garbhini Mutra Roga Gokshur Bala

1. INTRODUCTION

Pregnancy is a period of immense joy coupled with excitement. Many maternal illnesses occur during pregnancy among which urinary tract infections is most common. Modern medical management chiefly includes antibiotics use. However, Antibiotics treatment, while at times life-saving, can also have detrimental consequences. There is limitation for use of antibiotics in pregnancy as it can cause undesired effects on maternal and fetoplacental microbiomes and organogenesis. Also, present day use of antibiotics on large scale has caused antibiotics resistance and therefore there is need to study and evaluate new drugs which are equally effective and with minimal side-effectsⁱⁱ. Symptoms of Urinary tract infections in pregnancy like burning micturition, frequency of micturition, urgency of micturition, pain during micturition, mild pain in suprapubic region is same in *Mutrakrichha vyadhi* as explained by Acharya Charaka and Acharya Sushrutaⁱⁱⁱ under *Mutravahastrotodushhti vikar*ⁱⁱⁱ

Aim

Study the efficacy of *Shwadanshtrabala vati* in *Mutraroga* w.s.r to mild urinary tract infections in pregnancy

Objectives

- To study *Garbhini mutraroga* in detail
- To review the urinary tract infections in pregnancy
- To study cost effective and safe medicine for treatment of urinary tract infections in pregnancy
- To study the side-effects of *Shwadanshtrabala vati* if any.

Previous work done

- 1) A clinical study of *mutragrahar yog* in *Garbhini mutragraha* W.S.R to urinary tract infection during pregnancy- Dr. Sandeep kumar rajan, Dr Aditi Gautam, Dr Kamini Dhiman-SSRG International journal of medical science-volume 4-issue 4-

April 2017

- 2) Phytochemical study of *gokshur* (*Tribulus terrestris* linn.) and evaluation of its antibacterial activity with special reference to *mutrakrichcha*-Dr.Rajashree D. Shelke, Dr.Ashok D. Ramteke,Dr.Rajani A Patankar-International journal of Ayurveda and pharma research-2014
- 3) Comparative study of effect of *chandraprabha vati & gudamalaka yoga* in *pittaja mutrakrichcha* w.s.r. to lower UTI-Dr Savitha v. kudari, Dr. Midhu Parvathy-journal of Ayurveda and Integrated Medical Sciences
- 4) Classification of *MUTRA ROGA* in *AYURVEDA* Bishnu kumar, Jyoti singh-International Journal of Advanced Research in Science, Engineering and Technology Vol. 5, Issue 6, June2018
- 5) A case study of *garbhini mutrashmari* with special reference to renal calculi-Noor Fathima,Sandhya K-IAMJ: Volume 7, Issue 6, June – 2019
- 6) A REVIEW ON *GARBHINI MUTRAKRICHCHA* ITS TREATMENT IN *AYURVEDA*- Jadhav Shrinivas, Kadam Bhagyalaxmi, VAsokan-JETIR June 2019, Volume 6, Issue 6

2. LITERATURE REVIEW

As mentioned in *Charaka Samhita*^{iv}, *Basti* is one of the three vital organs in the body, the other two being *Hridaya* and *Nabhi*. It is the most important organ maintaining the homeostasis by regulating the excretion of the metabolites and waste products, i.e *Dosha*, *Dhatu* and *Mala*. *Basti* has been considered as main seat of urinary disorder (*Mutrarogas*).

Charaka has described that the basic pathology of *Mutraroga* is vitiation of *Doshas* and accumulation of *Malas* which results in smell change, colour change, suppression or excessive elimination of *Malas*.

Sushruta states that the vitiated *Doshas* in the stage of *Sthansamsraya* reaches *Basti* & manifests various *mutrarogas* such as *mutrakriccha*, *mutrashmari*, *mutraghata*, *Prameha*, etc.^v

Acharya Vagbhata in *Rasa ratna samuccaya* has described the treatment as the present study has been taken on *Mutraroga* and mild type of Urinary tract infections during pregnancy using *Shwadanshtra* and *Bala* described in *Rasa ratna samuccaya*^{vi}. Although there are a lot of classical references of drugs on *Mutraroga* available in ayurvedic texts it is imperative for us to prove the antimicrobial properties of the mentioned drugs using scientific parameters.

Nidana of mutraroga

Acharaya Charaka has mentioned etiology of *mutraroga*. *Madhavakara* and *Bhavaprakasha* have stated the causative factors but they are similar to those mentioned in *Charaka Samhita* such as *Tikshnaushadha*, *Ruksha aahar*, *Ati katu rasa*, *Ati amla rasa*, *Ati lavana rasa*, *Ati ushnaaahar*, *Adhyasana*, *Ajirna*^{vii}. In pregnancy women has various food cravings (*douhrud*), also pregnancy is state of *agnimandya*.

PURVARUPA OF MUTRAROGA

Purvarupa of *mutraroga* not directly mentioned can be referred as mild symptoms of urinary tract infection present before the complete manifestation of the disease.

Roopa (CLINICAL FEATURES)^{viii}

The vitiated *dosha* and *dushya* and *mala* causes following clinical features

1. *Saruja Mutrata* (Painful Micturition)
2. *Sadaha Mutrata* (Burning Micturition)
3. *Basti Shoola* (Suprapubic Pain)
4. *Muhurmuhur Mutrapravrutti* (Frequency of micturition)

Samprapti Ghataka

Dosha and *dushya*: *Aapan Vayu*, *kledak kapha*, *Aap dhatu* *Dushya*: *Rasa*, *meda*

Mala: *mutra*

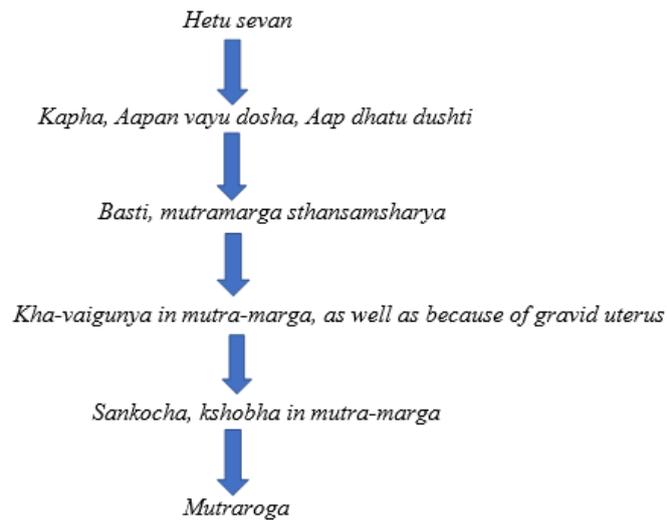
Agni: *Pachakagni* (*jatargni*), *Rasadhatuagni* *Udbhava Sthana*: *Pakwashaya*

Adhishtana: *Basti*, *mutramarga*

Srotas: *Mutravahasrotas*, *Rasavahasrotas*

Srotodushti Prakara: *granthi sanga*, *Vimargagammana* *Rogamarga*: *Madhyama Vyadhi*

Samprapti



3. PATHOPHYSIOLOGY ACCORDING TO MODERN VIEW

Physiologically Adaptive changes occurring in renal vasculature during pregnancy:

1. The primary adaptive changes occurring is marked fall in systemic vascular resistance (SVR). The 40% fall in SVR also affects the renal vasculature. Despite massive fall in systemic vascular resistance, the physiological increase in plasma volume creates a state of arterial underfilling (as 85% of volume resides in venous circulation). The arterial underfilling is physiological and unique in pregnancy.
2. Relaxin, a peptide hormone produced by corpus luteum, decidua and placenta play an important role in hemodynamic and water metabolism during pregnancy. Relaxin stimulates formation of endothelin which in turn mediates vasodilation of renal arteries via nitric acid synthesis.
3. Despite activation of Renin Angiotensin aldosterone system in pregnancy, a simultaneous relative resistance to Angiotensin II develops counterbalancing the vasoconstrictive effect and allowing profound vasodilation
4. Placental Vasodilators are also important in creating and maintaining vasodilatory state

Changes in renal anatomy and function during pregnancy:

As a result of vasodilation there is increase in both Renal Plasma flow and Glomerular filtration rate (GFR). In addition, the increase in plasma volume causes decreased oncotic pressure in glomeruli, with subsequent rise in GFR.

Increased renal blood flow, increases renal size of 1-1.5 cm. The kidney, pelvis, calyceal systems dilate due to compressive factors on ureters. Progesterone reduces ureteral tone, peristalsis and contraction pressure mediates anatomical changes. The increase in renal vasculature, urinary dead space associated with increase renal flow also dilation of ureters, pelvis and calyces altogether leads to physiological hydronephrosis^x. Dilated collecting system causes urinary stasis which causes multiplication of bacteria which in turn causes influx of infected urine into ureter and renal pelvis predisposing pregnant women with urinary tract infection.^x

4. MATERIALS

Gokshur

Latin name: *Tribulus terrestris*

Family: *Zygophyllaceae*

Synonyms:

Sanskrit: *shwadanshtra, swadukanthak, trikanthak, kankathki.*

English: puncture vine, bull's head, caltrops Hindi: *gokharu*

Prayojang (parts used) *phala*(fruit)

Morphology of *gokshur* fruit

- Colour: fruits are greenish to grey.
- Odour: odourless
- Size: 1-1.5cm
- Shape: fruits are globose consisting of 5 to 10 woody cocci, each with two pairs of hard and sharp divergent shapes

gokshur is a tap rooted herbaceous plant that grows as a summer annual in temperate climates *gokshur* fruit – Its carpel fruits are of characteristic, stellate shape, somewhat round-shaped, compressed, five cornered, and covered with prickles of very light-yellow color. Fruity is weapon wheel shaped containing 5 parts. Each part has 2 long sharp rigid spines, several shorter spines and covered with many hairs

Rasa Panchak:

- *Rasa* (taste based on activity): *Madhura* (sweet)
- *Guna* (properties): *Guru* (heavy to digest), *Snigdha* (unctuous) acts as vatashamak
- *Veerya* (potency): *Sheeta* (cooling)
- *Vipaka* (taste after digestion based on activity): *Madhura* (sweet)
- *Karma* (pharmacological actions):

Deepana: helps in *jataragnideepana* helps in *agnimandya* in *garbhini* *Brumhana* (nourishing), *Vatanut* (pacifies *Vata-dosha*), *Vrusya* (aphrodisiac), *Ashmarihara* (removes urinary stone), *bastishodhana* (cures bladder ailments).

Chemical constituents in *gokshur* fruit

saponins, flavonoids, glycosides, alkaloids,

Phytopharmacological activities:^{xi}

The diuretic properties of *gokshur* are due to large quantities of nitrates and essential oil present in its fruits and seeds. The diuretic activity can also be attributed to the presence of potassium salts in high concentration. Saponins such as furostanol and spirostanol isolated from the *gokshur* fruit demonstrated dose-dependent increase in phagocytosis, indicating stimulation of nonspecific immune response. *gokshur* fruit acts as cyclooxygenase-2 (COX-2) inhibitor and suppress the expression of proinflammatory cytokines inhibits the expression of mediators related to inflammation and expression of inflammatory cytokines and acts as anti-inflammatory. methanolic extract such as beta-Amyrin of *gokshur* fruits shows analgesic effect. saponin mixture may be useful for smooth muscle spasms or colic pains and acts as anti-spasmodics. methanolic extract of *gokshur* fruit acts as Antibacterials.

Bala

Latin name: *Sida cordifolia* Family: *malvaceae* Synonyms:

Sanskrit: *bala*, *vatvalika*, *Bhadra*, *sahadeva*

English: country mallow Hindi: *bartiyar*, *khiriti*

Prayojang (parts used) moola (root) Morphology of *bala* moola (roots) –

1. Macroscopy: Root occurs in variable sized pieces, 5-15 cm long with few lateral slender rootlets of smaller size, tap root branched at the tip; outer surface buff to grayish-yellow minutely striated or smooth; odorless; taste slightly bitter.
2. Microscopy: Transverse section is circular with a very wide central woody part and a thin outer bark. Cork consists of 4-6 rows of thin-walled, tangentially elongated cells, outer 1-2 rows light brown in color; phellogen consisting of single row, cortex very narrow comprising 3-4 rows of comparatively large polygonal or slightly tangentially elongated thin walled cells, containing few clustered crystals of calcium oxalate and small starch grains.

Rasa Panchak:

- *Rasa* (taste based on activity): *Madhura* (sweet)
- *Guna* (properties): *laghu* (easy to digest), *Snigdha* (unctuous) acts as vatashamak, pichilla.
- *Veerya* (potency): *Sheeta* (cooling)
- *Vipaka* (taste after digestion based on activity): *Madhura* (sweet)
- *Karma* (pharmacological actions):

Brumhana (nourishing), *Vatapittahara* (pacifies *Vata-pitta dosha*), *Vrusya* (aphrodisiac), *balya* (provides strength), mutral (diuretic).

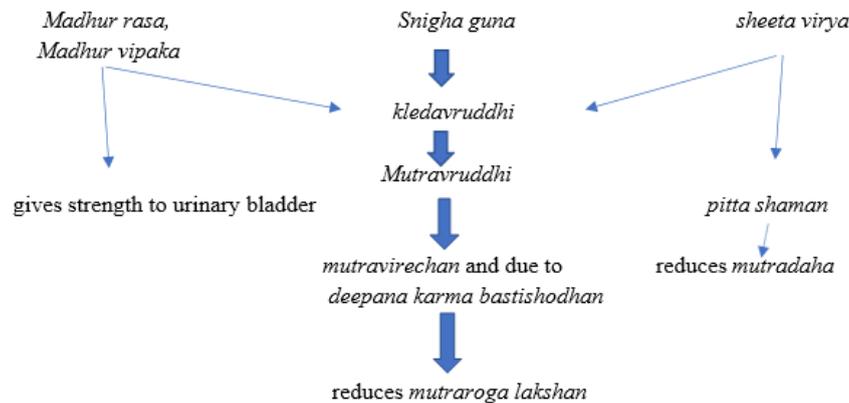
Phytopharmacological activities^{xii}

phenolic compounds in the roots indicates that this plant may have the ability as an anti-microbial agent. ethanol and methanol extracts in roots show anti-microbial properties. alkaloid and flavonoids in roots show analgesic and anti-inflammatory properties. ethanolic and aqueous extracts of *bala* roots showed nephron- protective activity.

Samprapti vighatan^{xiii}

Action of *gokshur* in *mutraroga*

Due to *Madhur rasa*, *Madhur vipaka*, *snigdha guna* and *sheeta virya* there is *kledavruddhi* which causes *mutravruddhi* that is increase in urine formation which leads to *mutravirechan* and *basti shodhan* reducing etiology of *mutraroga*. *Madhur rasa* and *Madhur vipaka* gives strength to urinary bladder by its *bruhan karma*. *Sheeta virya* causes *pitta shaman* reducing *mutradaha* symptom.



Action of *bala* in mutra roga

Vata is the main cause of pain, due to *Madhur rasa* and *snigdha guna* *bala* shows vata shamak property there by reducing pain. Due to *Madhura rasa* and *sheeta virya* it has *pitta shamak* property which reduces *mutra daha*. Also due to *Madhur vipak* and *snigdha guna* it has *vrana rophak* (wound healing) property.

5. TREATMENT DETAILS

A)	Dose	2 tablet/twice a day.
B)	Form	<i>Vati</i>
C)	Time	8AM --- 8PM
D)	<i>Anupan</i>	warm water
E)	<i>Kala</i>	<i>Apana</i>
F)	Follow up	After 5 days
G)	Route of Administration	Orally
H)	Duration	7 days

Dose:

MORNING	1 tablet of <i>Gokshur</i> and 1 tablet of <i>Bala</i> (500mg each)
NIGHT	1 tablet of <i>Gokshur</i> and 1 tablet of <i>Bala</i> (500mg each)

5. DISCUSSION

Acharya charaka mentioned *basti* as *trimarma* these *marma* are *sadya pranhar*. *Basti* is the main organ related to *antra*, *guda*, *seevani*, *shukravaha* and *mutravaha nadi* and provides support. *basti* is related with *jala mahabhut*. In *garbhini mutraroga* due to various etiology there is *vatadi dosha dushti* which leads to *doshavaishmya* causing *mutramarga kshobha and sankocha* leading to *mutra roga*. In pregnancy due to various anatomical and physiological changes such as renal vasodilation, Progesterone reduces ureteral tone, peristalsis and contraction pressure, leading to urinary stasis, which ultimately hamper body's normal mechanism leading to more susceptibility to infection most common being urinary tract infection. *Gokshur* possesses *mutral*, *bruhan*, *vrushya* property acts as *basti shodhan* and *mutravirechan* *bala* possesses vata shamak, vrana rophak property pacifies *vatadi dosha* causing *samprapti vighatan*. *Gokshur* and *bala* have analgesic, anti-inflammatory, anti-bacterial, anti-microbial, nephron-protective, anti-spasmodic, immuno-modulatory and diuretic property. Due to this property, *gokshur* and *bala* can work effectively in *garbhini mutraroga* w.s.r to mild Urinary tract infection.

6. CONCLUSION

Study is been conducted in *Bharti Ayurveda* hospital. The study will be analyzed, interpreted, observed and result will be published on completion of study.

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