



## A THERAPEUTIC APPROACH OF NARAYANA TAILA & DASHAMULA KWATHA IN VATASHTHEELA & MUTRAKRICHCHHRA

Dr. Shalini Patel<sup>1\*</sup>, Prof. Dr. Sunil Kumar Joshi<sup>2</sup>, Dr. Savita Sonkar<sup>3</sup> and Dr. Prashant Srivastav<sup>4</sup>

<sup>1</sup>P.G. Scholar, Third Year, P.G. Dept. of Shalya Tantra, Rishikul Campus, Uttarakhand Ayurved University, Haridwar.

<sup>2</sup>Honourable Vice Chancellor of Uttarakhand Ayurved University, Dehradun.

<sup>3</sup>Assistant Professor, P.G. Dept. of Shalya Tantra, Rishikul Campus, Uttarakhand Ayurved University, Haridwar.

<sup>4</sup>Private Practitioner.

Corresponding Author: Dr. Shalini Patel

P.G. Scholar, Third Year, P.G. Dept. of Shalya Tantra, Rishikul Campus, Uttarakhand Ayurved University, Haridwar.

Article Received on 14/07/2020

Article Revised on 04/08/2020

Article Accepted on 25/08/2020

### ABSTRACT

Human beings, in this fast-moving world is so busy that he/she is unable to take care of its own health and thus suffering from so many diseases due to improper care of their daily routine of life. There is a condition in which due to vitiation of the *Apana Vayu*, an elevated, mobile & glandular swelling is produces in between the rectum and urinary bladder or urethra known as *Vatashtheela*. In this condition obstruction of the passage of urine and faces occurs which produces the symptoms like *Sanga* (obstruction) etc. whereas, *Mutrakrichchhra* is said to be a *Vata Pradhana Tridoshaja Vyadhi* and “difficulty in micturition” is its characteristic feature. Current medical research provides multifold care modalities with their own drawbacks. So the society is looking for alternate system of medicine for a better life. There prevails a strong need to help the patients avoid surgery (in BPH) and antibiotics resistance (in UTI) and achieve health by a simple and minimally invasive measure. But the treatment should not disturb their reproductive and other metabolic functions. In *Ayurveda*, *Vata* is the root cause of all *Mutraghata* varieties (including *Vatashtheela*) and also *Mutrakrichchhra* being manifested. Therefore, two drugs- *Narayana Taila* & *Dashamula Kwatha* were elected for *Basti* (per rectum) in *Vatashtheela* (BPH) and *Mutrakrichchhra* (UTI).

**KEYWORDS:** *Narayana Taila*, *Dashamula Kwatha*, *Basti*, *Vatashtheela*, *Mutrakrichchhra*.

### INTRODUCTION

There is a condition in which due to vitiation of the *Apana Vayu*, an elevated, mobile & glandular swelling is produces in between the rectum and urinary bladder or urethra.<sup>[1]</sup> In this condition obstruction of the passage of urine and faces occurs which produces the symptoms like *Vibandha* or *Avarodha* (obstruction) etc. whereas, *Mutrakrichchhra* is a *Vata Pradhana*.

*Tridoshaja Vyadhi* and “difficulty in micturition” is its characteristic feature.<sup>[2]</sup> Difficulty may be in the form of *Ruja* (painful micturition), *Daha* (burning micturition), *Muhur-Muhur* (frequent micturition) with *Alpata* (reduced per voiding volume), etc. Therefore, the disease *Vatashtheela* may be correlated closely to BPH (Benign Prostatic Hyperplasia) both surgical anomaly and symptoms wise, whereas, *Mutrakrichchhra* correlate with UTI (Urinary Tract Infections) only symptoms wise. In *Ayurveda*, *Vata* is the root cause of all *Mutraghata* varieties (including *Vatashtheela*) and also *Mutrakrichchhra* being manifested. *Sushruta* has

mentioned that *Pratiloma Gati* of *Vata* or *Kupita Vayu* is responsible for various *Mutra Dosha*<sup>[3]</sup> or *Basti Roga*.<sup>[4]</sup> *Acharya Vagbhata* has classically divided the *Rogas* of *Mutra* into two categories viz, *Mutra Atipravrittija* and *Mutra Apravrittija Rogas*.<sup>[5]</sup> The disease *Prameha* comes under the first group where as *Ashmari*, *Mutrakrichchhra* and *Vatashtheela* (a type of *Mutraghata*) comes under the second category.

Modern medical research has multifold care modalities with its own drawbacks. Taking into consideration various demerits of treatment of modern medicine, an effort has been undertaken, which may prove that it is helpful in relieving the various *Rogas*, including *Vatashtheela* and *Mutrakrichchhra*. In *Ayurveda*, *Vata* is the root cause of all *Mutraghata* varieties (including *Vatashtheela*) and also *Mutrakrichchhra* being manifested. *Basti*, mentioned in *Ayurvedic* texts, is the treatment of choice in *Vata* pre-dominant diseases. The beauty of *Basti* has been defined by *Acharya Charaka* as “*Chikitsa-ardhamiti*”.<sup>[6]</sup> Various beneficial modalities of *Ayurvedic* management regarding *Vatashtheela* and

Mutrakrichchhra have been evaluated in the past, but further scope of research always existed. So, there are several drugs in different dosage forms and combinations are tailored, in Ayurvedic classics for treating Vatashtheela & Mutrakrichchhra. Among these, Narayana Taila and Dashamula Kwatha was selected for the treatment of Vatashtheela and Mutrakrichchhra in the form of *Basti* per rectum.

The present effort is an attempt to find a more effective, safe, non-invasive, without any adverse effect and a good alternative treatment modality with the help of *Narayana Taila and Dashamula Kwatha Basti*, for those elderly male patients who are worried about their Lower Urinary Tract Symptoms (LUTS) due to *Vatashtheela* (BPH) & *Mutrakrichchhra* (UTI)."

### Ingredients of Narayana Taila<sup>[7]</sup>

**Table 1: According to Bhaishajya Ratnavali 'Narayana Taila' contains 32 ingredients. These ingredients are listed below.**

Sr. No.	Kalka Dravya	Botanical Name	Sr.No.	Kwatha Dravya	Botanical Name
1.	Vacha	<i>Acorus calamus</i>	1.	Brihati	<i>Solanum indicum</i>
2.	Tagara	<i>Valeriana wallichii</i>	2.	Kantakari	<i>Solanum surattense</i>
3.	Devadaaru	<i>Cedrus deodara</i>	3.	Bala	<i>Sida cordifolia</i>
4.	Chandana	<i>Santalum album</i>	4.	Atibala	<i>Abutilon indicum</i>
5.	Shaileyaka	<i>Parmelia perlata</i>	5.	Shyonaka	<i>Oroxylum indicum</i>
6.	Shatapushpa	<i>Anethum sowa</i>	6.	Patala	<i>Stereospermum suaveolens</i>
7.	Kushtha	<i>Saussurea lappa</i>	7.	Agnimantha	<i>Premna mucronata</i>
8.	Jatamansi	<i>Nordostachys jatamansi</i>	8.	Bilva	<i>Aegle marmelos</i>
9.	Ela	<i>Elattaria cardamomum</i>	9.	Prasarini	<i>Sida veronicaefolia</i>
10.	Prishniparni	<i>Uria picta</i>	10.	Paribhadra	<i>Erythrina variegata</i>
11.	Shalaparni	<i>Desmodium gangeticum</i>	11.	Ashwagandha	<i>Withania somnifera</i>
12.	Mashaparni	<i>Terasmus labialis</i>	12.	Gokshura	<i>Tribulus terrestris</i>
13.	Mudgaparni	<i>Phaseolus trilobus</i>	13.	Punarnava	<i>Boerhavia diffusa</i>
14.	Ashwagandha	<i>Withania somnifera</i>			
15.	Punarnava	<i>Boerhavia diffusa</i>			
16.	Rasna	<i>Pluchea lanceolata</i>			
17.	Saindhava lavan	Rock salt			

### Other ingredients

- Shataavari Kwatha or Swarasa (Decoction or juice of *Asparagus racemosus*).
- Tila Taila (oil of *Sesamum indicum*).
- Godugdha (Cow's milk).

### Ingredients of Dashamula Kwatha<sup>[8]</sup>

**Table 2: As per Sharangadhara Samhita, Dashamula Kwatha contains roots of 10 drugs which can be divided as given below.**

LAGHU PANCHAMULA			BRIHAT PANCHAMULA		
Sr.No.	Dravya	Botanical Name	Sr.No.	Dravya	Botanical Name
1.	Brihati	<i>Solanum indicum</i>	1.	Bilva	<i>Aegle marmelos</i>
2.	Kantakari	<i>Solanum surattense</i>	2.	Agnimantha	<i>Premna mucronata</i>
3.	Gokshura	<i>Tribulus terrestris</i>	3.	Shyonaka	<i>Oroxylum indicum</i>
4.	Shalaparni	<i>Desmodium gangeticum</i>	4.	Patala	<i>Stereospermum suaveolens</i>
5.	Prishniparni	<i>Uria picta</i>	5.	Gambhari	<i>Gmelina arborea</i>

### Preparation of Narayana Taila<sup>[9]</sup>

- Narayana Taila is prepared as per "Sneha Paka Kalpana" mentioned in classical texts.
- The prepared Narayana Taila is filtered and preserved in airtight glass bottles.

### Preparation of Dashamula Kwatha<sup>[10]</sup>

Dashamula Kwatha is self-prepared daily as per the "Kwatha Kalpana" mentioned in classical texts.

### Methodology

**Table 3:**

Formulation	Dose	Route	Time	Duration
Narayana Taila & Dashamula Kwatha	Kwatha 200ml/ 60ml alternate day + Taila- 20ml per day	Basti per rectum	In morning hours	For 21 days

### Required Equipments

Sterilized plane Rubber catheter (18 no size), Sterilised Dispovan (50/60cc), Gloves, Gauze pieces, Bowl, *Narayana Taila*, Prepared *Dashamula Kwatha*, Table/Bed, etc.

### Selection of Drugs

*Narayana Taila* & *Dashamula Kwatha* possesses *Mutrala guna*. *Mutrala guna* is completed by two main process, *Mutrarajana* (i.e. *Mutra Nirmana Prakriya*) and *Mutravirechana* (i.e. *Mutra Nihsarana Prakriya*). These two whole processes are accomplished by the action of *Prakrita Vata* (*Vyana* & *Apana Vayu*) which is altered in *Vatashtheela* & *Mutrakrichchhra*. Therefore, elected drugs should be *Vata shamaka*, *Bastishodhaka*, *Shothahara*, *Mutrala*, *Balya*, etc. that pacify provoked *Vata dosha* and normalise the all function of urinary system. *Narayana Taila* & *Dashamula Kwatha* having these properties, so these two drugs are selected for *Basti*.

### Properties of Drugs

These above-mentioned properties of formulated drugs under the heading “**Selection of Drugs**” are supported scientifically as given below -

#### 1. *Agnidipana* (Metabolism Enhancer)

- Most of the ingredients of formulated drugs having *Deepan*, *Pachana*, *Anulomana* etc. properties, which improves the *Jatharagni*, due to improvement in *Jatharagni*, *Dhatvagnies* also had comes down in normal state. Due to normal *Dhatvagni* (i.e. *Mansa Dhatvagni*) *Basti Snayu* might have been improved and finally *Mansa* & *Meda vriddhi* had been returned to normal state and ultimately leads to reduction in enlarged prostate gland size because of *Ama Pachana*, *Lekhana* and *Shothahara* action of ingredients.
- Gross saponins of the ingredients of the formulated drugs (like *Gokshura* etc.) can ameliorate injured liver cells that may promote metabolism. Which may be corelate with *Agnidipana guna* & Liver is considered as seat of *Dhatvagni*.

#### 2. *Mutrala* (Diuretic)

Most of the ingredients of formulated drugs having *Mutrala* (diuretic) property (due to chemical constituent Flavonoids etc.) that increases blood flow in the kidneys. In addition, this increases the glomerular filtration rate (GFR) and hence the urinary output. As it increases water excretion, it does not increase the removal of electrolytes such as sodium, chloride & bicarbonate as certain other diuretic drugs do.

#### 3. *Krimighna* (Antibacterial/Antiviral/Anthelmintic)

- Most of the ingredients of formulated drugs possesses *Krimighna* action due to the chemical constituents such as kaempferol & some glycosides of it, steroidal saponin, flavonoids, alkaloids, tannins, & terpenoids etc.
- According to a research methanol extract has the highest inhibition zone for *E. coli*, *Staphylococcus*

*aureus*, which is also possessed by the ingredients of this formulated drugs (e.g. *Gokshura*, *Mashaparni*, *Prasarini*).

#### 4. *Bastishodhaka*, *Balya* & *Shothahara* (Bladder Purifier, Tonic & Anti-inflammatory)

- Most of the ingredients of the formulated drugs having *Bastishodhaka* (bladder purifier), *Balya* (Tonic, which enhancing bladder tone), and *Shothahara* (anti-inflammatory) properties.
- The chemical constituents such as kaempferol,  $\alpha$ -amyirin,  $\beta$ -sitosterol, luteolin, saponins, triterpenes, tannins, essential oils, etc. possessed anti-inflammatory actions. Whereas, ethanolic extract inhibits the expression of mediators related to inflammation & expression of inflammatory cytokines, that has a beneficial effect on various inflammatory conditions.
- $\alpha$ -amyirin is a precursor of ursolic acid (UA). Ursolic acid increased skeletal muscle mass, as well as grip strength and exercise capacity.<sup>[11]</sup>
- This formulated drug having chemical constituents such as linoleic acid & oleic acid which are the inhibitors of 5- $\alpha$  reductase &  $\alpha$ -blockers activity.<sup>[12]</sup> Conversion of testosterone to Dihydrotestosterone (DHT) is controlled by the inhibition of 5- $\alpha$  reductase. Therefore, controlling in DHT, ultimately controls the size of prostate gland & relief in the symptoms.
- Diosgenin,  $\beta$ -sitosterol, saponin etc. are present in formulated drugs. In any herbs the active chemical component  $\beta$ -sitosterol is proved very effective in BPH. Anti-inflammatory effects, & anti-androgenic or anti-estrogenic effects of  $\beta$ -sitosterol have been scientifically proved.<sup>[13]</sup> It also directly inhibits the increased prostate size.
- Diosgenin show anti-proliferative action against prostatic cancer cells.<sup>[14]</sup> Oestrogen receptor conditions such as urinary incontinence & urogenital atrophy are also prevents by it.<sup>[15]</sup>
- Tannins increases the level of TSH, LH and serum testosterone. This increased level of testosterone inhibits the further growth of prostate gland. Saponin also act as an anti-inflammatory.<sup>[16]</sup>

#### 5. *Rasayana* & *Ojovardhaka/Vyadhikshamatva* (Immunity Enhancer)

An alcoholic extract exhibited a significant role in increasing the humoral antibody titre and delayed type hypersensitivity response, that indicate increased specific immune response.

### Method of *basti* procedure

#### *Poorva karma*

- The treatment with *Basti* procedure was explained to the patients and a **written informed consent** was taken before starting the procedure.
- Patient was advised to go through the natural urges in the morning before *Basti* is given in the morning hours.

- *Basti* materials such as prepared *Narayana Taila*, *Dashamula Kwatha*, sterilized Rubber catheter & Syringe (50/60cc), Gloves & Gauze pieces etc. were kept ready before the application, then after patient had been asked to lie down on the table in left lateral position.

### Pradhana Karma

#### Position

- In the classics, the position that must be followed is left lateral. Charaka has given explanation that Grahani and Guda are coming in the same direction. Therefore, one must follow the same position.<sup>[17]</sup>
- Logical thinking says that only in the left lateral position due to the gravitation the drugs may inter into the colon. In the medial side, the middle rectal valve is there which controls the sphincter continence which may get injured when the enema is given in the right lateral position.
- Left lateral position (i.e. with extended left lower limb, flexed right knee & hip towards chest, on a comfortable table or bed. Perianal area was exposed.

#### Procedure<sup>[18]</sup>

- First of all, *Dashamula Kwatha* was prepared as per *Kwatha Kalpana Vidhi*. After that, 20ml *Narayana Taila* (every day) and 200ml/60ml [in alternate day ie.200ml in first day, 60ml in second day,200ml in third day and so on ...] lukewarm *Dashamula Kwatha* was taken in a bowl/container and mixed well to form a colloidal mixture, now with the help of 50/60 ml sterile syringe, the nozzle of which was connected with plain rubber catheter no. 8.
- Now, the tip of the rubber catheter was lubricated by oil. Gently the tip of the rubber tube was introduced into the anal orifice for about four *Angula Pramana* (10 cms). Patient was asked to be in relaxed state and then slowly medicament was pushed into the rectum by avoiding entry of air in a slow steady manner.
- Then slowly the catheter was withdrawn with little quantity of medicament remaining inside the syringe. Then patient was advised to lie down in supine position, keeping pillow below buttock, and a gentle tap given over the buttocks. Further the patient was instructed to lie down in supine position for a while.

### Paschata Karma

- After given *Basti*, the patient was instructed to lie down in the left lateral position or in prone position for 10-30 minutes and to hold the *Basti* material as possible. As the patient gets urge for defecation, patient could pass the stool.
- During the course of treatment patient was advised to have *Laghu & Ushna Ahara* on the same day evening and to avoid *Sheet* (to cold), *Vidaahi* (causing burning sensation), *Vishtambhi* (slow movement in G.I. tract), *Ruksha* (too dry & causes aggravation of

- *Vata*).

### Probable Mode of Action

#### *Narayana Taila*

The oil contains total **33 ingredients**. In which most of the ingredients possess **Tikta (66.66%), Madhura (51.51%), Katu (42.42%) & Kashaya (33.33%) Rasa**. Most of the ingredient having **Laghu (72.72%), Ruksha (33.33%), Guru (27.27%), Tikshna (15.15%) Guna**, followed by maximum **63.63% Ushna (& 36.36% Sheeta) Virya**, and **57.57% Katu (& 42.42% Madhura) Vipaka**. Most of the ingredient shows **V-K (48.48%)** [18.18% V-P, 9.09% P-K] & **Tridosha Shamakata (24.24%)**.

#### *Dashamula Kwatha*

The decoction contains total **10 ingredients**. Most of the ingredient possess **Tikta (80%), Madhura (60%), Katu (50%) Rasa**. Maximum ingredient having **Laghu (80%), Guru (20%), Ruksha (60%), Snigdha (30%) Guna**, followed by maximum **80% Ushna (& 20% Sheeta) Virya**, and **70% Katu (& 30% Madhura) Vipaka**. Maximum **50%** ingredient show **V-K & 40% Tridosha Shamakata**. For the disease *Vatashtheela & Mutrakrichchhra*, *Basti* should be prepared with drugs of choice for that disease. When *Lekhana Dravyas* are used, then the *Basti* does *Karshan* and when *Brihana Dravyas* are used, they will do *Brihana*. The drug we used for *Basti* is *Narayana Taila & Dashamula Kwatha*. The maximum ingredients in this formulation have **Katu, Tikta & Madhura Rasa**. **Madhura Rasa** having the property viz. *Anulomana* and *Vata-Pitta Shamaka*, **Tikta Rasa** having *Dipana, Pachana* and *Kapha Shamaka* property and **Katu Rasa** having *Agni Dipana, Ama Pachana* and *Kapha Shamaka* property. **Laghu Guna** is *Kapha Shamaka* in nature, which possesses the *Agni Dipana* and *Srotoshodhana* properties, **Snigdha Guna** having capacity to pacify *Vata* and *Pitta Doshas*. **Katu Vipaka**; vitiated *Kapha* is to be normalised by *Katu Vipaka*. These properties, exerted pharmacological actions viz. *Dipana, Pachana, Lekhana, Vilayana, Shothahara, Mutrala, Krimighna, Basti-Shodhana* and *Srotoshodhana* etc. Further, in *Mutravaha Srotasa Sanga* is removed by these actions, specifically at *Basti shira* that leads to reduction in enlarged prostate gland and simultaneously *Agni Dushti's* correction took place. Since *Mutravaha Srotasa* becomes free from *Avarana* (by vitiated *Kapha*), *Avarodha* (obstruction) and vitiated *Vata* comes to their normal state.

Therefore, the functions of *Apana Vayu* is normalised, that results proper clearing of urine in the form of increased urine flow rate.

### DISCUSSION

A comprehensive holistic natural management that aims at correcting the core pathology as well as improvising the prognosis is the need of today. Keeping it in mind, the *Narayana Taila & Dashamula Kwatha Basti* is taken as treatment of choice in the disease *Vatashtheela & Mutrakrichchhra*.

Incidence of *Vatashtheela* is high in old age i.e. in *Vridhdhavastha* (senile age), which is natural period of *Vata Vridhdhi* in the body. *Doshaja Mutrakrichchhra* is also a *Vata Pradhana Tridoshaja Vyadhi* said by *Acharya Charaka*. *Narayana Taila* and *Dashamula Kwatha* both are mentioned in *Vatavyadhi Chikitsa* in *Bhaishajya Ratnavali*, which indicates the importance of these drugs in *Vatavyadhi*. *Acharya Charaka* says *Basti* as “*Chikitsa-ardhamiti*”. When we used combination of these two drugs, in the form of *Basti* per rectum, then it definitely works. *Kupita Vata* is pacified by formulated drugs which is used as *Basti* per rectum. Since *Narayana Taila* and *Dashamula Kwatha* possess the properties such as *Srotoshodhana*, *Lekhana*, *Shothahara*, *Krimighna*, *Bastishodhaka*, *Mutrala*, *Dahashamaka*, *Shulahara*, etc. along with *Agnidipana*, *Pachana*, *Anulomana*, *Balya*, *Rasayana*, *Ojovardhaka*, *Tridosh-shamaka* (esp. *V-K shamaka*). Therefore, these two formulations are selected for *Basti* P/R which removes *Agnimandya* & *Sroto-avarodha* in the minute channels of the body & thus maintains normal mechanisms of the urine formation & excretion.

It also removes *Shotha* from *Basti* (i.e. urinary bladder by decreasing prostate size & removing cystitis) and *Mutrapraseka*, vitalizes bladder to regain its strength, storage capacity, contractibility & other normal function. So that patients got relief from the disease.

## CONCLUSION

Lastly, full article is summarized and concluded that “The present effort is an attempt to develop a more effective & safe, cast effective, without any side effects and a good alternative treatment modalities with the help of *Narayana Taila* & *Dashamula Kwatha Basti*, for those patients of *Vatashtheela* (BPH) & *Mutrakrichchhra* (UTI), who are worried about their symptoms (LUTS).

## REFERENCES

1. Prof. Vasant C. Patil & Dr. Rajeshwari N. M., *Sushruta Samhita*, edited with English translation of text and Dalhana's Commentary with Critical notes; Vol-III, Uttara Tantra, 2018; 58/7: 457-458; Chaukhambha Publications, New Delhi; edition-1 reprint.
2. Sri Vijayarakshit and Sri Kantha Datta, *Madhava Nidanam* with *Madhukosh Sanskrit commentary* with *Vidyotani Hindi commentary* and notes by Sri Sudarshan Shastri, revised and edited by Prof. Yadunandana Upadhyaya. Part-I, *Mutrakrichchhra Nidanam*, 30.
3. 552. Published by Chaukhambha Prakashan, Varanasi. Reprint, 2006.
4. Kaviraja Ambikadutta Shastri, *Sushruta Samhita*, Hindi commentary of *Ayurveda Tatva Sandipika* Vol-I, *Nidana Sthana*- 3/27-28, p. no. 315. Published by Chaukhambha Sanskrita Sansathana, Varanasi; reprint, 2012.
5. *Ibid.* Su. *Nidana Sthana*, 1/19: 298.
6. Kaviraja Atridev Gupta, *Ashtanga Sangraha*, *Nidana Sthana* 9/40. Published by Chaukhambha Krishnadas Academy, Varanasi; reprint, 2005.
7. Agnivesh, *Charaka Samhita*, revised by Charaka and Dridhbala, with introduction by Sri Satya Narayana Shastri with elaborated *Vidyotani Hindi Commentary*, Part -2, *Cha. Kalpa*. 1/39, p. 971. Chaukhambha Bharati Academy; Varanasi; reprint, 2012.
8. Kaviraj Shri Ambikadutta Shastri & Shri Rajeshvaradatta Shastri, *Bhaishajya Ratnavali*, *Vidyotani Hindi byakhya vimarsha parishishta sahita* *Vatavyadhi Chikitsa*, chapter 26/332- 337, p.no. 396-397. Chaukhambha Sanskrita Sansathana, Publications; Varanasi, ed, 1987; 8.
9. Dr. Smt. Shailaja Srivastava, *Sharangadhara Samhita*, with *Jiwanprada Hindi Commentary*; *Madhyama khanda*, chapter 2/30, p. no. 140. Published by Chaukhambha Orientalia, Varanasi; reprint ed, 2015.
10. Kaviraj Shri Ambikadutta Shastri & Shri Rajeshvaradatta Shastri, *Bhaishajya Ratnavali*, *Vidyotani Hindi byakhya vimarsha parishishta sahita* *Vatavyadhi Chikitsa*, chapter 26/332- 337, p.no. 396-397. Chaukhambha Sanskrita Sansathana, Publications; Varanasi, ed., 1987; 8.
11. Dr. Smt. Shailaja Srivastava, *Sharangadhara Samhita*, with *Jiwanprada Hindi Commentary*, *Madhyama khanda*, chapter 2/1, p. no. 135. Published by Chaukhambha Orientalia, Varanasi; reprint ed, 2015.
12. Apple Pomace extract improves endurance in exercise performance by increasing strength & weight of skeletal muscle. *Journal of medicinal food*, 18(12): 1380-1386.
13. Therapeutic role of ursolic acid on ameliorating hepatic steatosis and improving metabolic disorders in high fat diet induced non-alcoholic liver diseases rates.
14. *European Urology Supplements*, 2006; 5(4): 430-440. www.Sciencedirect.com.
15. T. wilt, A. Ishani, G Stark. www.wileyonline library.com
16. *Medicinal chemistry research*, Sept, 2011; 20(7): 817-825. www.sciencedirect.com.
17. www.ayurstate.com/howitworks.html.
18. www.stdpioneer.org/uti.html.
19. Pandit Kashinath Pandey and Gorkshnath Chaturvedi, *Charaka Samhita*, *Vidyotani Vyakhyopeta*, Chaukhambha publication, Reprint, 2012; 2, Ch. Si.3/24: 994.
20. Dr. Vasant C. Patil, *Principles and Practice of Panchakarma*, Chaukhambha Publications, New Delhi. Edition: reprint. Chapter 13 (*Basti Karma*), 2019; 143-144.