



**International Journal of Biology, Pharmacy
and Allied Sciences (IJBPAS)**
'A Bridge Between Laboratory and Reader'

www.ijbpas.com

**INTERVERTEBRAL DISC PROLAPSE (GRIDHRASI) MANAGEMENT
BY MUSTADHI RAJYAPANA BASTI-A CASE STUDY**

VARSHA K¹, TOSHIKHANE SH^{*2} AND DIVYA B³

- 1:** PG-Scholar, Department of Panchakarma, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat, India-391760
- 2:** H.O.D & Professor, Department of Panchakarma, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat, India-391760
- 3:** Assistant Professor, Department of Panchakarma, Parul Institute of Ayurved, Parul University, Vadodara, Gujarat, India-391760

***Corresponding Author: Dr. Sangeeta H Toshikhane: E Mail: drsangeetaj@gmail.com**

Received 12th Dec. 2021; Revised 14th Jan. 2022; Accepted 7th Feb. 2022; Available online 5th March. 2022

<https://doi.org/10.31032/IJBPAS/2022/11.3.1010>

ABSTRACT

Intervertebral disc prolapse is a medical term for spinal disc herniation or slip disc. This condition can be correlated to the disease of *Gridhrasi* in *Ayurveda* which is one among *Vatavyadhi*. *Panchkarma* procedures like *Basti karma* (internal administration of medicine through rectal route) to correct vitiated *Vata Dosha*. *Gridhrasi* is the most common disorder caused by *Vata Dosha* and it's very difficult to manage in day to day clinical practise. Symptoms of *Gridhrasi* is almost described in various classical texts (*Samhitas*). The present case study explains about the efficacy of *Mustadhi Rajyapana Basti* and *Nirgundi taila Anuvasana Basti* in the management of intervertebral disc prolapse (*Gridhrasi*). A female patient of age 27years with long history of severe back pain and stiffness in low back along with radiating pain in right limb (right leg) and restricted movements visited to *Panchakarma* OPD of Parul Institute of Ayurved & Research, Vadodara, Gujarat. Patient was examined and diagnosed to have *Gridhrasi* and treated with *Basti Karma* and *Shamana Oushadhis*. Treatment adopted was *Kala Basti* schedule along with oral medication and physiotherapy. Patient got 80% relief in the signs and symptoms after treatment patient was able to sit and walk without any difficulty along with doing daily routine work.

Keyword's: IVDP, Gridhrasi, Basti, Ayurveda, Vata Dosha

INTRODUCTION

Intervertebral disc prolapse is emerging as a common problem in present time. The highest prevalence is in people aged between 30 - 50 years of age, with male and female ratio of 2:1. In *Ayurveda* low back pain which is radiating to lower limbs known as *Gridhrasi* and is correlated with intervertebral disc prolapse (IVDP). PIVD depends upon the nerve root involvement may radiate upto thigh, knee joint, calf muscle, ankle, feet. *Gridhrasi* symptoms include *Ruk* (pain), *Toda* (pricking sensation), *Stambha* (stiffness), *Muhuspandana* (twitching) in the gluteal region, pelvis, thigh region, knees and legs. The most important symptom of *Gridhrasi* is lumbosacral radicular leg pain. Here is a case report where we treated a female patient of *Gridhrasi* (IVDP). The patient got relief from the symptoms of *Gridhrasi* by incorporating *Panchakarma* treatment and oral medicine along with physiotherapy.¹

AIM: To evaluate the efficacy and effect of *Mustadhi Rajyapana Basti* and *Nirgundi taila Anuvasana Basti* in *Gridhrasi* (PIVD).

OBJECTIVES: To elicit the probable mode of action of the medicines utilized in *Mustaadhi Rajyapana Basti*.

MATERIAL AND METHODS:

MATERIAL: Literature includes *Ayurvedic* classics and modern available

texts, journals, Research papers and Internet source were referred for the complete review of the literatures.

Study Site: Parul Institute Of Ayurveda & Research, Khemdas Ayurved Hospital (Kah)

METHOD: A written consent was taken and subject was explained about medication and *Basti Karma*.

CASE HISTORY: A Female patient of age 27 years with the chief complaints of

- 1: Pain in lower back since 1 and half year.
- 2: Restricted movements.
- 3: Pain in right leg for 6month.

ASSOCIATED COMPLAINTS:

Disturbed sleep and difficulty in walking.

PAST HISTORY: No significant medical history.

HISTORY OF PRESENT ILLNESS:

Patient was said to be asymptomatic one and half years back owing to nature of activities which involves lifting house hold objects and with good exercise then she gradually developed pain in the lower back region and stiffness without any specific reason. After few months the pain got aggravated and she found restricted movements in lower limb with severe stiffness. Patient underwent treatment of contemporary science along with physical therapy and found slight relief (30%).

After one-year similar symptoms were noticed again and condition worsened. Pain was there in low back region radiating to right leg. For the same complaints she came to KAH and she was examined in detail; recommended oral medication and Panchakarma treatment along with physiotherapy.

FAMILY HISTORY: All the family members are said to be healthy.

PERSONAL HISTORY:

Diet: vegetarian, Time and frequency of intake: Regular, Appetite: good
 Bowel: regular, Sleep: Disturbed due to pain, Micturation: 4-5 times per day, Addiction: nil
 Menstruation: regular, Nature of work: sitting and standing, Working hour: 8-9hours

GENERAL EXAMINATION:

GAIT: unaltered, PALLOR: absent, ICTERUS: absent, CLUBBING: absent, CYANOSIS: absent, ODEMA: absent, LMPHADENOPATHY: absent

VITALS:

BP :120/80 mm/hg, PULSE: 74/min, R.R: 18/min, SPO2: 98%

SYSTEMIC

EXAMINATION:

Locomotor system

Grading Pattern- Inspection Shape of spine: normal S shape, no scar marks, Swelling: minimal swelling in L1_ L5, Palpation: Temp: Normal, Tenderness: Moderate grade to Severe Grade tenderness in L5_S1 region lumbosacral region.

Before physiotherapy: Severe Grade (III)

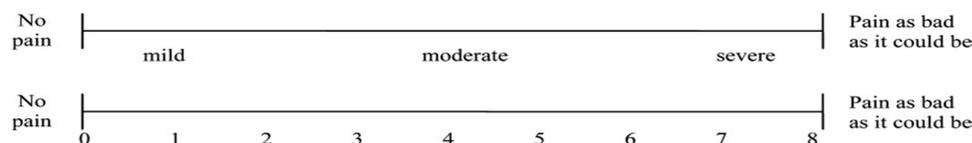
After physiotherapy: Moderate Grade (II)

After Basti: Mild Grade (I)

Grade I	Grade II	Grade III
Mild	Moderate	Severe

Assessment Parameters of Pain

Visual Analogue Scale (VAS Scale)



RANGE OF MOVEMENTS:

Assessment done on supine position.

LUMBAR:

Lateral Movements:

R (restricted), U.C (uncomplete), U.R (unrestricted), C (complete)

(The range of motion and flexibility in the lateral motions were improved with a combination of stretching and exercise. By physical activity the oblique and side muscles, including lateral flexion into the

correct workouts were aid to enhance trunk strength.)²

- Present, Restricted right leg movement.
- Backward Bending: unrestricted
- Forward Bending: Restricted at 40 degrees.

TESTS:

- ❖ Straight leg test (SLR) : positive
- Right leg at - 45degree positive
- Left leg at - 70 degrees.
- ❖ **COIN PICK TEST:** Positive
- ❖ **FABERS TEST:** Positive

BLOOD- INVESTIGATIONS:

- CRP- Negative

- CBC- NORMAL

RADIOLOGICAL TEST:

- X-ray L-S spine <AP, LT view shows normal findings.

MRI FINDINGS:

- Sacralization of L5 vertebrae is considered.
- Early disc desiccation postero-central and right postero paracentral focal herniation. Rest of the disc shows subtle bulge Bilateral early facet arthropathy and ligamentum flavum hypertrophy Narrowing of spinal canal (Dural sac diameter 4.2 x 9.2mm). Compression over right transversing L5 nerve root.

PART	FLEXION	EXTENSION	ABDUCTION	ADDUCTION
RIGHT HIP	R/U.C	R	R/U.C	R/U.C
LEFT HIP	U.R/C	C/U.R	U.R	U.R
LUMBOSACRAL	R/U.C	R	R	R
RIGHT LEG	R/C	C/R	R	R
LEFT LEG	U.R	U.R	U.R	U.R

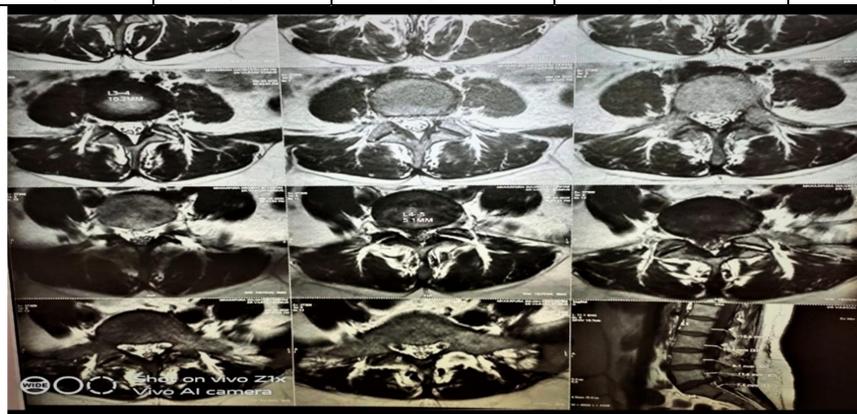


Figure 1: Magnetic Reasonance Report (M.R.I)

- **Samprapti Ghatakas in Summary**
- *Nidana* - *Vataprakopaka Nidana*
- *Dosha* - *Vyana* and *apana vata, kapha*

- *Dushya* - *Rasa, Rakta, asthi, majja, sira, kandara, snayu.*
- *Agni* - *Jatharagni* and *Ama ,Jatharagnijanya* and *dhatwagnijanya*

- *Udhhava sthana* - Pakwashaya
- *Sancharasthan* - Rasayani.
- *Adhithana* - prista, kati, sphik
- *Srotas* - Rasa, rakta, mansa, medo, asthi and majjavaha srotas
- *Vyakta* - Sphik, katti,prstha, uru, janu jangha and pada
- *Bheda* - Vataja and VataKaphaj.
- *Rupa* - Ruk, toda, stambha arochaka, suptata, bhaktadwesa, tandra, gaurava.

Preparation of Mustadi Rajyapana Basti

Ingredients Used in Mustadhiraj Yapana Basti Acc. to Acharya Charaka

DRUG NAME	BOTANICAL NAME	ACTION
<i>Musta</i> ³	<i>Cyperus rotundusum</i>	Anti-Convulsions
<i>Ushira</i> ⁴	<i>Andropogon murricatus</i>	Antipyretic
<i>Bala</i> ⁵	<i>Sida cardifolia</i>	Aphrodisiac
<i>Aragvadha</i> ⁶	<i>Cassia fistula</i>	Analgesic
<i>Rasna</i> ⁷	<i>Allium sativum</i>	Anti-Inflammatory
<i>Manjistha</i> ⁸	<i>Rubia cardifolia</i>	Antidiabetic
<i>Tryamana</i> ⁹	<i>Gentiana kurroa</i>	Antipyretic
<i>Punarnava</i> ¹⁰	<i>Boerhavia diffusa</i>	Diuretic
<i>Patha</i> ¹¹	<i>Cisempelus pareira</i>	Anti-Inflammatory
<i>Bibhataki</i> ¹²	<i>Terminalia bellerica</i>	Blood Coagulant
<i>Guduchi</i> ¹³	<i>Tinospora cardifolia</i>	Anti-Inflammatory
<i>Shalparni</i> ¹⁴	<i>Desmodium gangeticum</i>	Anti-Inflammatory
<i>Bruhati</i> ¹⁵	<i>Solanum indicum</i>	Diuretic
<i>Tikta</i> ¹⁶	<i>Picrorrhiza kurroa</i>	Anti-Inflammatory
<i>Kantkari</i> ¹⁷	<i>Solanum xanthocarpus</i>	Neuro Stimulant
<i>Prushnaparni</i> ¹⁸	<i>Ureria picta</i>	Astringent
<i>Gokshura</i> ¹⁹	<i>Tribulus terrestris</i>	Analgesic
<i>Madanphala</i> ²⁰	<i>Randia dumetorum</i>	Astringent

Rock salt =15gm

Cow's milk =300ml

Cow's ghee=100ml

Honey =200ml

Meat soup (*Mamsa rasa*) =100ml

Total quantity=1000ml

➤ *Kalka dravya* (30 gms):

1. *Shatapushpa*
2. *Yashtimadhu*
3. *Kutaja*
4. *Daruharidra*
5. *Priyangu*

➤ *Yavakuta* (coarse powder) of all *Kwatha Dravya* (herbs used for decoction) mention

above should be taken with powder of *Madanphala*. Decoction is prepared by adding water to it. Milk is further added to decoction and heated till milk part is left. The above medicated milk is mixed with already prepared *Mamsarasa* (meat soup) and added to the paste prepared by adding *Madhu* (honey), *Saindhava* (rock salt), *Ghrita* (ghee) and *Kalka* (paste) respectively. Mix all the contents well till fine emulsion is achieved and warm it. *Basti* (enema) is ready to use.

PROBABLE MODE OF ACTION

According to Acharya Charaka, the Virya (potency) of Basti (enema) medicine spreads all throughout the body through Srotas (channels), much as water poured at a plant's root gets up to the leaves and produces fruit. He went on to say that whereas Basti (enema) medications come out swiftly with the Mala (stool), Apana Vayu's effect spreads Virya (potency) throughout the body. Guda (anus) is the Moola (root) for all the Siras (veins) in the body, according to Prashara. As a result, the medication supplied through Guda (anus) reaches up to the head and nourishes the body. Basti (enema) is a therapeutic intervention that can be used to prevent, promote, or cure disease.²¹

Basti (enema) eliminates Dosha (humor) from the body, balances Vata, cleanses the channels, avoids sickness, improves health, and cures illness. Some of the Basti's (enema) are especially recommended for enhancing tissue health. "Yapana Basti" is one such kind. Sadyobalajanana (promotes power) and Rasayana (immunomodulation) are two properties of Rajyapana Basti. The majority of the medications in Mustadi Rajyapana Basti are Vata pacifying.

The five types of Vata in the body (Udana, Samana, Prana, Apana, Vyana) are responsible for numerous functions such as speech, digesting, blood circulation,

motions, passing urine and faeces, oxygenation, nerve stimulation, and so on. Mustadi Rajyapana Basti's Vata Shamaka (pacifying) virtue enhances the action of all Vata, hence all ailments caused by Vata vitiation can be treated with Mustadi Rajyapana Basti. Mustadi Rajyapana Basti's deepana (appetizer) and Pachana (digestive) properties aid in enhancing Agnibala (digestive fire).

The mucosa of the colon distributes iron, water, and tiny molecules between lumen and plasma in a systematic manner, allowing the Yapana Basti to exert its Rasayana (immunomodulation) impact while the drug metabolism takes place in the stomach. As a result, the body is nourished fast and for a longer period of time. After the blockage was removed, the medicine was able to reach the cell level (Srotorodha). Yapana Basti has the properties of both Shodhana (purification) and Brimhana (replenishing). The enteric nervous system is one of the nervous system's primary divisions, and it is made up of a mesh-like structure of neurons that controls the GIT system.

The ENS is produced from the same tissue as the CNS during embryonic development. Because these two systems have a same ancestor, it's not unexpected that they have similar cell types, neurotransmitters, and brain proteins and

interact with one another. Serotonin, dopamine, glutamate, and norepinephrine are all major transmitters present in the stomach. Mustadi Rajyapana Basti's Sadyabalajanana (promoting power) and Rasayana (immunomodulator) effects allow neurons in the ENS to be directly fed. The medications in this Basti have a sour taste called Tikta Rasa, which aids in the repair of Asthi Dhatu (bone tissue) and Majja Dhatu (muscle tissue) (bone marrow).

Cow's milk has the properties of Madhura (sweet), Guru (bulky), and Jeevneey (longevity), which have the effects of Rasayana (immunomodulator), Vrishya (aphrodisiac), Balya (promote power), and Medhya (brain tonic). Honey's Yogvaahi, Rasayana (immunomodulator), and Tridoshhara properties aid in the nourishment of muscles and the scraping of adherent Doshas (humours) from Srotas (channels). Kalka (paste) added to the Basti (enema) provides it heft, allowing it

to stay in the stomach for longer. Rock salt's Sukshma (minute) characteristic allows Basti (enema) to enter minute channels. Rock salt's Tikshna (sharp) characteristic aids in the breakdown of morbid Doshas (humors). Sodium has an important role in the absorption process. Ghrita is a Vata Pitta Shamaka (calming) herb that improves Varna (texture), Bala (power), and Shukra (semen). Mamsa rasa (meat soup) is high in proteins and effective in the treatment of Mamsagata Vata Vyadhis (disorders of muscles). As a result, Mustadi Rajyapana Basti with Mamsa Kshaya is preferred in Vata diseases (deterioration of muscles).

TREATMENT PROTOCOL:

Kala Basti schedule

- TOTAL 16 *BASTI*- 10 *ANUVASANA*+ 6 *MUSTADHI RAJ YAPANA BASTI*.
- *ANUVASANA BASTI*: *Nirgundi taila 60ml*
[*AB=Anuvasana Basti, YB= Yapana Basti*]

ORAL MEDICATION

1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th	15 th	16 th
AB	AB	YB	AB	YB	AB	YB	AB	YB	AB	YB	AB	YB	AB	AB	AB

Drug - Tablet *Baladhi kashyam*,

Dose - Two tablets morning and evening after meal (2-0-2) (Bis a Day)

Anupana - Honey or Luke warm water.

Mode of Action of Drug-

Bala kashyam is a medication combination

that is used to treat neuropathic pain. The activation of calcium channels in nerve cells is modulated by this drug, which reduces pain. These drugs are used to treat long-term (chronic) pain caused by nerve

damage such as that caused by diabetes, shingles, or a spinal cord injury. It alleviates pain and its effects, such as mood swings, sleep issues, and exhaustion. It is considered to function by interfering with pain signals sent to the brain from injured nerves. Regular use of this drug improves physical, mental, and overall quality of life.²²

PHYSIOTHERAPY:

1. Lumbar Traction done for 7 days

Decompression treatment, such as spinal traction, relieves pressure on the spine. Spinal traction is a technique that extends the spine to relieve pressure on a compressed disc and straighten it. Spinal traction is a non-surgical method of relieving pain and correcting spinal issues.

2. Transcutaneous electrical nerve stimulation (TENS) -

It has a substantial impact in the treatment of lumbar disc herniation-induced sciatica, as it efficiently reduces pain, alleviates clinical symptoms and indications, regulates peripheral ROS levels, and protects cardiac tissues from oxidative damage.

DISCUSSION

The best therapy is basti, which is given directly to Vata's primary seat. Basti has been characterised as Ardhachikitsa by Acharya Charaka and Vagbhata. The

major seat of Vata is the large intestine. Vata is the primary governing system for all neurological functions. It activates and regulates latent Pitta and Kapha. The normal physiological actions of Vata are required for anabolism and catabolism. Basti is also known as Ardha Chikitsa for Vata Vyadhis, according to the Kashyap Samhita. The patient was diagnosed with Gridhrasi and was given the Shamana and Shodhana therapy lines. The individual had 80% improvement in pain and related symptoms after two rounds of Mustadi Rajyapana Basti administered over an 8-day period. Kati Basti and Mustadi Rajyapana Basti were used in the treatment. When Basti is used in Pakavasya, it produces an all-over effect. A well administered Basti remains in the Pakavasya, Sroni, and below Nabhi, and the Virya of Basti Dravya is distributed throughout the body by the Srotases. Similarly, although though Basti is only in the body for a brief time and is eliminated together with Mala owing to Virya's activity of Apana Vayu, it spreads to Vyana Vayu, Udana yu, and Prana Vayu. Basti Dravya's Prabhava extends across Tiryaka Pradesha due to Vyana Vayu, Adho Pradesh due to Apana Vayu, and Urdha owing to Prana Vayu, and the power of Basti Dravya spreads throughout the whole body thanks to Vata. The

exacerbated Doshas from head to foot are likewise ejected out of the body violently. Because Basti medicines are mostly water-soluble, their active ingredients may also be absorbed. Mustadi Rajyapana Basti has 17 medications, the majority of which belong to Ushna Veerya, has the Laghu and Rukshna Guanas, and mostly performs Deepana and Lekhana. In Shoola and kapha Avrutha situations, this is suggested. Nirgundi Taila, which has Ushna Veerya and Kapha Vatashamaka qualities, is utilised for Anuvasana Basti.

The symptoms of deranged Vata were significantly improved with Mustadi Rajyapana Basti. The impact of Basti on stiffness might be attributable to improved Prana, Udana, and Vyana Vata function. Yapna Basti, which has Rasayana, Balya, and Dhaturiddhikara qualities, aided in the treatment of Kati Graha symptoms, such as a reduction in back pain caused by medicines or improved feeding to the spine, which may have aided in disc

regeneration. Vata has an innate character of pain. The majority of the medications were Vata Kapha Shamaka with a hot potency, and Snehana (oleation property) of Nirgundi Taila's Anuvasana Basti may have soothed aggravated Vata. Furthermore, the use of Asthapana and Anuvasana Basti together increased the function of Vyana Vayu, which is responsible for movement.²³

RESULT-

The patient's symptoms, especially pain, improved from severe to moderate after 8 days of Physiotherapy, although the stiffness in the lumbar area remained relatively unchanged. The patient was then referred to the Panchakarma department for further treatment. Patient was admitted in Panchakarma IPD. In this period, he was treated with *Mustaadhi Rajyapana Basti* for 8 days, the pain reduces moderate to mild grade. And patient 80% got relief in pain.

Criterion	Before Treatment	After Treatment
Swelling	Severe Grade (+++)	Decreased, Mild Grade (+)
Tenderness	Severe Grade (+++)	Absent
Lateral movement of Leg	Restricted movement	Relieved movement
Forward Bending	40 Degree	70 Degree
Faber's Test	+VE (+++)	Decreased, Mild Grade (+)
Coin Pick Test	+VE (+++)	Negative
Overall relief	30%	80%

CONCLUSION

Mustadi Rajyapana Basti relieved Toda, Stambha, and Spandana symptoms

effectively. It also offered a higher level of relief in the SLR test, which included standing duration and walking distance. The patient received 80% of the benefits after two sessions of Mustadi Rajyapana Basti. Despite the patient having undergone L5 IVDP, this report was chosen for presentation to evoke the efficacy of Ayurvedic therapy in relieving most of the symptoms. Sciatica (Gridrasivata Pida) is a symptom in the third stage of the degenerative cascade of a degenerating spinal disc, according to the findings of the present case study. Symptoms such as Pada Harsha and Pada Gaurava. Pada Supti radiculopathy may have improved as a result of the reduction in inflammation. As it can be observed, Mustadi Rajyapana Basti offers out hopeful prospects as a non-invasive intervention in the management of Gridhrasi w.s.r. to I.V.D.P. Within 16 days of treatment, the combined combination of Kala Basti Schedule, oral medication, and physiotherapy reduced the intensity of the symptoms by around 80%.

Conflict of interest – Nil

Source of Support- None

REFERENCES

- [1] <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4687237/>
- [2] <https://www.healthline.com/health/lateral-flexion>
- [3] M. Nagarajan,¹ Gina R. Kuruvilla,¹ K. Subrahmanya Kumar,^{1,2} and Padma Venkatasubramanian¹, Pharmacology of Ativisha, Musta and their substitutes, J Ayurveda Integr Med. 2015 Apr-Jun; 6(2): 121–133. doi: 10.4103/0975-9476.146551
- [4] <https://www.planetayurveda.com/library/ushira-vetiveria-zizanioides/>
- [5] <https://www.daburchyawanprash.com/immunity-boosting-foods/bala-sida-cordifolia-ayurvedic-herb-for-boosting-immunity.aspx>
- [6] <http://journalcmpr.com/issues/therapeutic-action-aragvadha-cassia-fistula-linn-literary-review>
- [7] <https://www.easyayurveda.com/2016/11/11/rasna-pluchea-lanceolata-vandax-roxburghii-alpinia-galanga/>
- [8] https://www.researchgate.net/publication/302902410_ManjisthaRubia_Cordifolia_A_helping_herb_in_cure_of_acne
- [9] <https://www.frontiersin.org/articles/10.3389/fpls.2019.00645/full>
- [10] Pooja* Verma A, Lal V.K, Punarnava- A Natural Remedy By Ayurveda, School Of Pharmaceutical Sciences, Iftm University, Moradabad, India. Int J Pharm Pharm Sci, Vol 6, Issue 8, 1-6review Article,
- [11] <https://www.myupchar.com/en/herbs/patha>

- [12] <https://www.planetayurveda.com/librariy/bibhitaki-terminalia-bellerica/>
- [13] Avnish K. Upadhyay, Kaushal Kumar,¹ Arvind Kumar,² and Hari S. Mishra³, *Tinospora cordifolia* (Willd.) Hook. f. and Thoms. (Guduchi) – validation of the Ayurvedic pharmacology through experimental and clinical studies, *Int J Ayurveda Res.* 2010 Apr-Jun; 1(2): 112–121. doi: 10.4103/0974-7788.64405
- [14] <https://www.lmg.com/ayurveda/shalparmi-183>
- [15] <https://www.iafaforallergy.com/herbs-a-to-z/bruhati-solanum-indicum/>
- [16] <https://www.easyayurveda.com/2014/01/08/kiratatika-swertia-chirata-benefits-dose-usage-side-effects/>
- [17] <https://vikaspedia.in/agriculture/crop-production/package-of-practices/medicinal-and-aromatic-plants/solanum-surattense-1>
- [18] <https://www.planetayurveda.com/librariy/prishniparni-uraria-picta/>
- [19] V Rajashekar, E Upender Rao, and Srinivas P*, Biological activities and medicinal properties of Gokhru (*Pedalium murex* L.), *Asian Pac J Trop Biomed.* 2012 Jul; 2(7): 581–585. doi: 10.1016/S2221-1691(12)60101-4
- [20] <https://www.planetayurveda.com/librariy/madanaphala-randia-dumetorum/>
- [21] <https://www.easyayurveda.com/2016/08/19/basti-chikitsa-benefits-types-indications/>
- [22] Vivek Verma, Nirmal Singh, and Amteshwar Singh Jaggi*, Pregabalin in Neuropathic Pain: Evidences and Possible Mechanisms, *Curr Neuropharmacol.* 2014 Jan; 12(1): 44–56. Published online 2014 Jan. doi: 10.2174/1570159X1201140117162802
- [23] K. P. Damayanthie Fernando, Anup B. Thakar,¹ and Vageesha Datta Shukla², Clinical efficacy of Eranda Muladi Yapana Basti in the management of Kati Graha (Lumbar spondylosis), *Ayu.* 2013 Jan-Mar; 34(1): 36–41. doi: 10.4103/0974-8520.115444.