

**TO EVALUATE THE ADDED EFFECT OF TRANSCUTANEOUS ELECTRIC NERVE STIMULATION THERAPY (TENS) WITH NIRGUNDI KASHAYA BASTI IN GRIDRASI****<sup>1</sup>Dr. Jeena Rajeevan T. and <sup>2</sup>Dr. Sangnor Smita Laxman Rao**<sup>1</sup>2<sup>nd</sup> Year PG Scholar, <sup>2</sup>Professor<sup>1,2</sup>Department of PG Studies in Panchakarma, GAMC, Bangalore, <sup>2</sup>RGUHS, Bangalore.**\*Corresponding Author: Dr. Jeena Rajeevan T.**

2nd Year PG Scholar, Department of PG Studies in Panchakarma, GAMC, Bangalore.

Article Received on 26/09/2021

Article Revised on 15/10/2021

Article Accepted on 05/11/2021

**ABSTRACT**

Sciatica is a clinical condition characterized by low back ache with pain radiating to either lower limb. It can be associated with numbness or paresthesia of lower extremities. Not all cases of lower back ache can be termed as sciatica, but all the cases of sciatica will have lower back ache. In the modern world, because of the daily grind and household chores, lower back problems have become a common occurrence. Considering sciatica as an autonomous illness, it is generally a typical condition with the life time occurrence fluctuating from 1.6– 43.4%. (2) It is an agonizing condition influencing the low back region with radiating pain towards legs, either one leg or bilaterally. In Ayurveda, these manifestations have similarities with that of the disease *Gridhrasi*. The *Vyaktha Stana* of *Gridhrasi* is *Adha Kaya* starting from *Kati* region and *Uru, Janu, Janga* and *Pada* which is also the *Stana* of *Vayu*. So *Basti* can be adopted as best treatment opinion. In the *Samprapti* of *Gridhrasi Rasa, Rakta, Mamsa, Medas, Asti, Majja, Dhatus* are affected. To manage vitiated *Doshas* that are situated in *Asthi*, and *Majja Dhathu* Acharya have advocated giving nine to ten *Basti*. Hence *Nirgundi kashaya Basti* in *Kala Basti* schedule was selected. TENS is physio-Therapy modality which will provide electric nerve stimulation to affected region and helps to relieve pain and muscular spasm. For getting better result in the management of sciatica TENS physiotherapy also considered along with *Basti* in 2<sup>nd</sup> group. **Methodology:** A comparative clinical study done on 40 subjects of both sexes between the age group of 20–60years of age who randomly assigned to 2 groups, namely Group A where *Nirgundi Kashaya Basti* in *Kalabasti* schedule was given and in GroupB a course of *Nirgundikashayabasti* in *kalabasti* schedule along with TENS physiotherapy was given. **Result:** Even though both groups provide statistically significant results, the percentage of relief was observed more in group B, overall result was 81.67%.

**KEYWORDS:** *Gridhrasi*, sciatica, *Basti*, *Nirgundi Kashaya Basti*, TENS physiotherapy.**INTRODUCTION**

Changing life style of modern human being has created several disharmonies in his biological system as the advancement of busy, professional and social life. Improper sitting posture in office, in factories continuous and over exertion, jerky movements during travelling and sports – all these factors create an undue pressure to the spinal cord and play a chief role in producing lower backache and sciatica. Similar progressive disorders affecting the pelvis and nearer structure are also precipitating in this condition. In this way, this disease is now becoming a significant threat to the working population.

Sciatica is relatively common condition with lifetime incidence varying from 13% to 40%. The corresponding annual incidence of an episode of sciatica ranges from 1 to 5%.<sup>[1]</sup> In contemporary system of medicine, management of sciatica is still a medical problem where no permanent medical treatment is available except some

palliative measures. Chances of recurrence is high after surgery also.

*Gridhrasi* is a *Rujapradhana, Nanatmajavatavyadhi*.<sup>[2]</sup> There will be *Stamba, Ruk, Toda, graham* and *Spandana* in *Sphik, Kati, Uru, Janu, Janga, Pada* and *Saktiutshapanigrah*. *Kapha* also occasionally found as *Anubandhadasha* in which *Arochaka, Tandra, Gourava* are found.<sup>[3]</sup> *Gridhrasi* can be compared to sciatica as there is close resemblance in the manifestation of both conditions.

While dealing with the treatment of *Gridhrasi*. *Basti* has been mentioned.<sup>[4]</sup> *Basti* is one among *Panchakarma* is considered as *Chikisardha*.<sup>[5]</sup> *Basti* when administered, enters into *Pakwashaya* and removes the vitiated *Doshas* situated in the body from *Padatala* to moordh.<sup>[6]</sup> *Nirgundi kashaya* being indicated in *Gridhrasi* according to *Bhavaprakasha*.<sup>[7]</sup> Acharya Charaka mentioned that whatever the *Oushadha beshaja* indicated in particular

disease that can be given in the form of *Basti*. *Basti* being *Sresta Vatahara* and *Nirgundi* being *Vatakaphahara*, help in *Samparapti Vighatana* of disease.

The use of conventional transcutaneous electric nerve stimulation is originally based on the gate control theory of pain, which suggested that counter stimulation of nervous system modify the perception of pain.

As *Basti* and TENS therapy consider as one of best treatment modalities in *Gridrasi*. The present study was aimed to evaluate the added effect of Transcutaneous electric nerve stimulation with *Nirgundi kashaya basti* with its clinical effectiveness and cost effectiveness.

#### METHODOLOGY

The present study entitled "To evaluate the added effect of transcutaneous electric nerve stimulation therapy (TENS) with *nirgundi kashaya basti* in *gridrasi*."

#### Source of data

For the present study patients were randomly selected from OPD and IPD of Shri Jayachamrajendra institute of Indian medicine hospital, Bengaluru.

#### Method of collection of data

40 patient who fulfilled the inclusive criteria were selected irrespective of sex, religion, economic status, and marital status and divided into 2 groups, each group having 20 patients. was made and subjects who fulfilled the criteria of diagnosis as per the performa were selected for the study.

#### Diagnostic criteria

A special performa incorporating all points of history taking and physical examinations mentioned in Ayurveda as well as modern science were prepared. The diagnosis will be done based on the signs and symptoms of *Gridrasi* as follow.

#### Symptoms

##### *Pratyatma lakshanas of Gridrasi*<sup>1b</sup>

- *Ruk* in *sphik, kati, uru, janga, pada*.
- *Toda* in *sphik, kati, uru, janu, janga, pada*.
- *Spandana* in *sphik, kati, uru, janu, janga, pada*.
- *Stamba* in *sphik, kati, uru, janu, janga, pada*.

#### Sign

*Sakthi utkshepa nigraha*<sup>3b</sup> (restricted movements of affected limb)

#### Inclusion criteria

- Patients of both gender between the age of 20-60 years will be selected.
- Patients with classically mentioned signs and symptoms of *Gridrasi*.
- Patient fit for *Bastikarma*.
- Patient fit for TENS physiotherapy.

#### Exclusion criteria

1. Patients with evidence of congenital anomalies of spine, spinal tuberculosis, neoplasms, traumatic fracture and epidural abscess.
2. Patients where surgical intervention needed.
3. Patient with other systemic disorder like Diabetes mellitus, Cardiac diseases, Renal failure.
4. Pregnant and lactating women, patients with Ano-rectal disorders.

#### Parameters of the study

The subjective and objective parameters of base line data to pre and post medications will be compared for assessment of the results.

#### Subjective parameters

1. *Ruk* in the *sphik, Kati, Prista, Uru, Janu, Jangha* and *Pada*.
2. *Stambha* in the *sphik, Kati, Prista, Uru, Janu, Jangha* and *Pada*.
3. *Toda* in the *sphik, Kati, Prista, Uru, Janu, Jangha* and *Pada*.
4. *Spandana* in the *sphik, Kati, Prista, Uru, Janu, Jangha* and *Pada*.
5. *Tandra*
6. *Gaurava*
7. *Aruchi*
8. *Daha*
9. *Staimitya*

#### Objective parameters

1. S.L.R. test
2. Visual Analogue Scale
3. Lasegue's sign
4. Bowstring's test
5. Walking time (Time taken to cover 21 meters)
6. Movements of lumbar spine

#### TREATMENT PLAN

##### GROUP- A

Patients of this group will be given a course of *nirgundikashayabasti* in *kalabasti* schedule with *nirgunditaila* for *anuvasanabasti*.

##### GROUP-B

Patients of this group will be given a course of *Nirgundikashayabasti* in *kalabasti* schedule with *Nirgunditaila* for *anuvasana* along with TENS physiotherapy.

#### Materials required for the study

The present clinical study was done using the following materials.

**Table no: 1. Materials required for the present study.****Materials required for Basti:**

Serial no	Names
1	Vaiswanara choorna, gandarahastadi eranda taila, nirgundi kwatha, madhu, nirgundi kalka, saindava lavana, nirgundi taila.
2	Glycerin syringe (100ml, capacity), enema can (1500 capacity)
3	Gas stove
4	Rubber catheter
5	Latex hand gloves
6	Khalva yantra
7	Basti table
8	Cotton swabs
9	Big and small vessels
10	Abhyanga table
11	Bhaspa sweda yantra

**Materials required for 'TENS' physiotherapy**

- 'TENS' physiotherapy machine -low frequency
- Conductive gel
- Cotton swab
- Surgical adhesive tape

**Table no 2: showing treatment plan in both groups.**

	GROUP A	GROUP B
<b>POORVA KARMA</b>	<i>Deepana, pachana</i> with vaiswanara choorna 3gms BD till <i>niramavasta Kosta shodhana</i> with Gandarva hastadi eranda taila. <i>Sarvanga abhyanga</i> with nirgundi taila <sup>1d</sup> followed by <i>bashpa sweda</i>	<i>Deepana, pachana</i> with vaiswanara choorna 3gms BD till <i>niramavasta Kosta shodhana</i> with Gandarva hastadi eranda taila. <i>Sarvanga abhyanga</i> with nirgundi taila <sup>1d</sup> followed by <i>bashpa sweda</i>
<b>PRADHANA KARMA</b>	<i>Niruha basti</i> in <i>kala basti</i> Schedule. Dose -566ml  <i>Anuvasana with Nirgundi taila</i> Dose 70 ml	<i>Niruha basti</i> in <i>kala basti</i> Schedule. Dose -566ml TENS physiotherapy 20-30 minutes followed by <i>Niruha basti</i> . <i>Anuvasana with Nirgundi taila</i> . Dose 70 ml.
<b>PASHCHATH KARMA</b>	After <i>niruha basti pratyagamana ushnajala snana and laghu bhojana</i> . After <i>Anuvasana basti, sphiktadana, mardana</i> of soles and Palms.	After <i>niruha basti pratyagamana ushnajala snana and laghu bhojana</i> . After <i>Anuvasana basti, sphiktadana, mardana</i> of soles and Palms.

After administration of *kashaya basti* in group B, after *basti dravya pratyagamana, ushnajala snana, laghu bojana* and taking rest for 1 hour, administration of TENS therapy for 20 to 30 minutes for 10 days.

**Follow up on**

- Group A – 30 days,
- Group B – 30 days.

**Basti pattern****GROUP- A.****Table no 3: showing Basti schedule in group A and B.**

DAYS	1	2	3	4	5	6	7	8	9	10
BASTI	A	A	N	N	N	N	N	N	A	A
			A	A	A	A	A	A		

**Study duration**

- Group A- 30Days, GroupB-30 Days

**Observation period**

- Initially first day before treatment
- On the 10<sup>th</sup> day after treatment
- On 30<sup>th</sup> day

**Dosage –Niruha Basti****Table no 4: showing Basti quantity of each drugs.**

DRAVYA	DOSAGE
<i>Makshika</i>	70ml
<i>Saindhavalavana</i>	6gms
<b>Sneha</b> <i>Nirgunditaila</i>	90ml
<b>Kalka</b> <i>Nirgundi</i>	40gms
<i>Nirgundi kwatha</i>	360 ml
<i>Anuvasna with nirgundi taila</i>	70 ml for both groups

**Statistical tests**

The analysis of the effects of the therapy was based on “t-test” applications. the added affect of TENS physiotherapy nirgundi Kashaya basti were compared with nirgundi Kashaya basti alone. the significance was discussed on the basis of mean score, percentages, SD,SE, t and p- values.

Level of significance

P >0.05 is statistically insignificant.

P= <0.05 and P= <0.01 is statistically significant.

P= <0.001 is statistically highly significant.

**RESULT****Table no 5. Comparative study of each treatment in all parameters.**

Signs and Symptoms	Group A (Mean Score)	Group B (Mean Score)	S.D (±)	S.E (±)	T Value	P Value
<b>Ruk</b>	2.21	1.85	0.565	0.130	2.03	<0.05
<b>Toda</b>	1.24	1.15	1.514	0.347	0.29	>0.05
<b>Stambha</b>	0.75	0.83	0.325	0.075	0.34	<0.05
<b>Spandana</b>	0.39	0.23	0.247	0.057	1.39	>0.05
<b>Tantra</b>	0.05	0.05	0.000	0.000	0.00	>0.05
<b>Gourava</b>	0.24	0.23	0.060	0.014	0.05	>0.05
<b>Aruchi</b>	0.15	0.15	0.000	0.000	0.00	>0.05
<b>Daha</b>	0.20	0.20	0.000	0.000	0.00	>0.05
<b>Sakti Utkshepa Nigraha</b>	0.65	0.48	0.422	0.097	1.81	<0.05
<b>Staimitya</b>	0.13	0.08	0.131	0.030	0.62	>0.05
<b>SLR Test</b>	1.50	0.91	0.694	0.159	3.17	<0.05
<b>Lasague Test</b>	0.59	0.74	0.522	0.120	1.09	>0.05
<b>Bregards Test</b>	0.34	0.34	0.000	0.000	0.00	>0.05
<b>Visual Analogue Scale</b>	2.21	1.40	0.633	0.145	5.02	<0.05
<b>Movement of Lumbar Spine-Forward Bending</b>	1.94	2.13	0.388	0.089	1.31	>0.05
<b>Movement of Lumbar Spine-Left Lateral Flexion</b>	1.94	2.13	0.388	0.089	1.31	>0.05
<b>Movement of Lumbar Spine-Right Lateral Flexion</b>	1.94	2.13	0.388	0.089	1.31	>0.05
<b>Movement of Lumbar Spine-Extension</b>	0.71	0.71	0.000	0.000	0.00	>0.05
<b>Time taken to cover 21 Meters</b>	2.21	1.69	0.643	0.148	3.61	<0.05

- The therapies under group A and group B, showed 0% improvement in objective parameters like Daha and Staimitya. These two symptoms are sign of nerve dysfunction and pathologically the stage of extrusion or sequestration.
- The subjective parameters like Ruk, Toda, Stambha, Gourava, showed marked improvements under group B.

**ASSESSMENT OF TOTAL EFFECT OF THERAPY**  
**Table no 6. Showing over all effect of treatment in Group A**

EFFECT OF TREATMENT IN GROUP – A		
Class	Grading	No of patients
0%	No improvement	0
1–30 %	Mild improvement	0
31 – 60%	Moderate improvement	5
61 – 99 %	Marked improvement	15
100%	Complete Relief	0

**Overall effect of Group-B****Table no 6: Showing over all effect of treatment in Group A.**

EFFECT OF TREATMENT IN GROUP – B		
Class	Grading	No of patients
0%	No improvement	0
1–30 %	Mild improvement	0
31 – 60%	Moderate improvement	1
61 – 99 %	Marked improvement	19
100%	Complete Relief	0

**Figure no 2: Comparative results of Group A and Group B.**

Group A	Group B	Mean Difference	SE (±)	T Value	P value
67.94	81.67	13.73	2.66	3.54	<0.05

Comparative analysis of the overall effect of the treatments in both the groups was done by statistically with Unpaired T Test. The test shows that the treatment is equally statistically significant in Group A when compared to Group B. Group A overall result is 67.84% and Group B overall result is 81.6%.

## DISCUSSION

According to classics *vata* is the main *dosha* for the manifestation of disease *Gridrasi* and *kapha* is *anubanda* in some cases. in *Gridrasi saktanath kshepa nigrath* is found. the karma like *kshepa*, *utkshepa* are being attributed by *vyana vayu*. *Apana vayu* is having its sites at *kati* and *sakti* and in *gridrasi* these sites are also involved. hence out of five types of *vata vyana* and *apana* are vitiated in *gridrasi*.

Dalhana gives a clear idea about the anatomical location of gridhrasi that he considered gridrasi nadi as kandara stated by susruta. He has mentioned it as maha snayu which runs from lumbar region to foot. he terms Gridrasi as 'Randhrinee' which means weak point or rupture-indicates pressure. It is the context it indicates the compression of sciatic nerve.

Pressure has also been shown to induce edema formation in nerve roots, especially in the segments tightly adjacent to the compressed site, which may contribute to circulatory compromise. pro-inflammatory cytokines such as TNF act to sensitize the nerve root and contribute to symptoms of both nerve dysfunction and radicular pain in lumbar radiculopathy. Components of the NP may induce an inflammatory reaction that is likely responsible for the production of these cytokines, and an autoimmune reaction to components of the NP may contribute to this reaction.

The role of immunologic processes in the development of discogenic sciatica has also been described. Antibodies to glycosphingolipids (GSLs), which are present in central and peripheral nervous systems cells, were measured in patients with acute and chronic sciatica and those who had lumbar discectomy for disc herniation. In 71% of studied patients with acute sciatica, GSLs antibodies were elevated. These results encourage further studies of the pathophysiological and clinical relevance of autoimmune responses in patients with sciatica and disc herniation.

As autoimmune and inflammatory changes are observed in pathophysiology of sciatica. nirgundi Kashaya basti has properties of anti-inflammatory and analgesics property so I consider this study for the further research along with TENS physiotherapy.

## Mode of action of Nirgundi basti on neuropathic mechanism of sciatica

Stanika abyanga and swedana : the nerve endings in the back are transmitted by special peripheral nerves first to the spinal cord and then up to the brain .these messages can be over ridden by other signals due to treatment which can change the pain message due to some differences in nerve fibres. This is called Gate – control theory for chronic pain. The nirgundi taila used for abyanga which is having vedanastapana property.

*Nirgundi (Vitex negundo (L.))* contains many alkaloids and essential oils which has properties like, anti-inflammatory, antispasmodic, analgesic, anti- histamine releasing etc. It is *Tikta* (bitter), *Katu* (pungent), *Kashaya guna* (astringent) and *Ushna veerya* (hot potency) in nature. It possesses *Kaphashamaka* (pacifies kapha humor), *Vatashamaka* (pacifies vata humor), *shophahara* (anti-inflammatory), and *Anulomana* (laxative) properties. (16) This explains the exemplary effectiveness of *Nirgundi* in *Vata* vyadhis. It is generally used in the form of *swarasa* (juice) internally or as paste for external application. Main aim of the use is to reduce the swelling which aggravates the pain caused by inflamed sciatic nerves. In a study to evaluate Mast cell stabilising activity of various subfractions of leaves of *Vitex negundo*, it was found NaOH fraction of Ethyl acetate fraction of *Vitex negundo* leaves displayed mast cell stabilising activity. It was thought to be useful as anti- asthmatic, anti-inflammatory, and anti-allergic agent-the chemical constituents of nirgundi like flavonoids, tannins and alkaloids might be attributed to the peripheral and central analgesic activities.

## Probable Mode of action of TENS physiotherapy

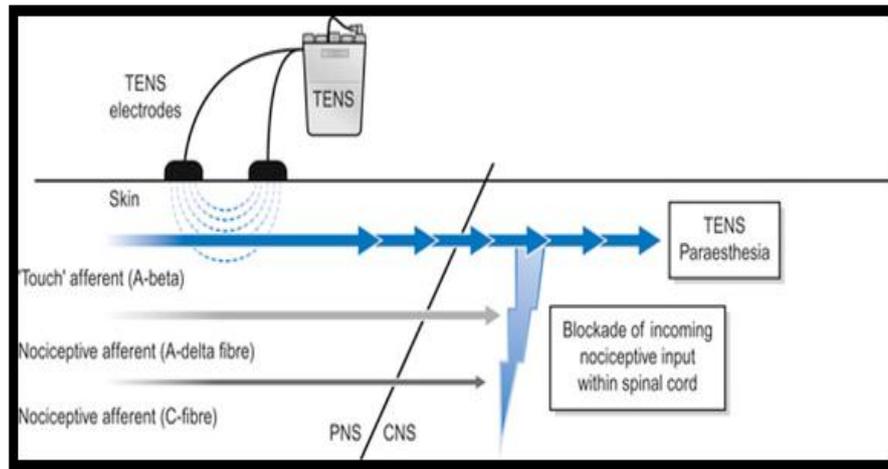
Mechanism of action of TENS can be explained under following headings.

There are 4 theories about the physiological effects of TENS.

1. Gate control theory
2. Opiate-mediated control theory
3. Local vasodilatation of blood vessels in ischemic tissues
4. Stimulation of acupuncture points causes a sensory analgesia effect

## Gate control theory (Melzack and Wall, 1985)

Evidence from animal studies shows that TENS reduces ongoing nociceptor cell activity and sensitization in the central nervous system when applied to somatic receptive fields. TENS-induced A-delta activity causes long-term depression of central nociceptor cell activity for up to 2 hours.



### Mechanism of pain gate control

Information leading to pain generation passes through gate and depends upon the balance activity in large and small afferent nerve fibers and in the fibers descending down from higher centres. Both thin and large (touch, pressure, vibration) nerve fibers carry the pain signal from the site of injury to two destinations in the dorsal horn of the spinal cord. The activity in both thin and large diameter fibers excites transmission cells. Thin fiber activity impedes the inhibitory cells (tending to allow the transmission cell) and large diameter fiber activity excites the inhibitory cells (tending to inhibit transmission cell activity).

TENS and closing of gate: stimulation of large nerve fibers by TENS activates SG cell and inhibit the discharge of T cell probably by its effect via presynaptic or postsynaptic inhibition. This closes the gate and causes analgesia. The duration for which this gate remains closed varies and is directly proportional to the number of noxious impulses in small fibers. So, the more large fiber (touch, pressure, vibration) activity, the less pain is felt.

### Local vasodilatation of blood vessels in ischemic tissues

Leandri et al found that TENS causes local vasodilation to the ischemic area and therefore is thought to relieve pain through this mechanism.

### Neurochemicals

TENS effects are mediated by many neurochemicals including opioids, serotonin, acetylcholine, noradrenaline and gamma-aminobutyric acid (GABA). Low -frequency TENS has been shown to involve opioid, 5-HT<sub>2</sub>, 5-HT<sub>3</sub>, delta opioid receptors and reduce aspartate and glutamate levels in the spinal cord and produce analgesic effect.

### CONCLUSION

As in Vata dominant disorders Anuvrasana Basti can be given on the same day of Niruha Basti. the number of Sneha Basti recommended in Vata Vyadhis are 9 Or 11. Keeping this in mind Kala Basti pattern was considered.

Niruha and Anuvrasna Basti given on same day was very effective and safe without having any complication. Low frequency high intensity TENS physiotherapy 2-4 Hz was used in most of patients after Niruha Basti Pratyagamana, not having any impact on retention time, absorption and action of Basti. The therapies under group A and group B, showed 0% improvement in objective parameters like Daha and Staimitya. These two symptoms are sign of nerve dysfunction and pathologically the stage of extrusion or sequestration. The subjective parameters like Ruk, Toda, Stambha, Gourava, showed marked improvements under group B. After accessing the parameters, it is concluded that the both modalities of treatment are beneficial in both Vata kaphaja and Vataja type of Gridrasi with Ruk, Toda, Stambha as predominant symptoms.

Nirgundi is a drug which is safe potent cost affective, available in abundance at every time. Whereas TENS is one among physiotherapy intervention which is comparatively cheaper and indicated in sciatica. So, the combined effect of these two modalities were proved effective. So, it can be incorporated in clinical practice.

### REFERANCE

1. Agnivesha. CharakaSamhita- Revised by Charaka and Dridhabala with Ayurveda Deepika commentary of ChakrapaniDatta. Reprint 2004 ed. Chaukhamba Sanskrit Samsthan, Varanasi, 2004.
2. Sushruta. Sushruta Samhita – with Nibandha SangrahaSangraha commentar Sri. Dalhanacharya and Nayayachandrikapanjika of Sri. Gayadasa on NidanaSthana, Eight edition 2005 Varanasi: Chowkamba orientalia, 2005.
3. Vagbhata. Ashtanga Hridaya- with the commentaries of SarvangaSundara of ArunaDatta and Ayurveda Rasayana of Hemadri, Edited by Bhishagacharya harishastri Paradakara Vaidya, 9<sup>th</sup> edition. Varanasi: Chaukhamba orientalia 2995.
4. Vriddha Vagbhata. AshtangaSangraha- with the Shashilekha Sanskrit commentary by Indu, 1<sup>st</sup> ed. Varanasi: Chowkamba Sanskrit Series office, 2006.

5. Sharangadharacharya. Sharangadhara Samhita- with the commentaries Adhamalla's Deepika and Kashirama's Gudhartha Deepika, Reprint 2000. Varanasi: Krishnadas Academy, 2000.
6. Madhavakara. MadhavaNidana: with the commentary Madhukosha by Vijayarakshita and Srikanthadatta and Edited with Vimala- Madhudhara Hindi commentary by Brahmananda Tripathi Vol-1, Reprint 2003. Varanasi: ChaukambhaSurabharati Prakashana, 2003.
7. Bhava Mishra. BhavaPrakasha: including Nighantu portion, with Vidyotini Hindi Commentary, edited in Hindi by Sri BramhaShankara Mishra and Sri Rupalalaji Vaisya, 11th ed. Varanasi: Chaukhambha Sanskrit Sansthan, 2004. Part 1 and 2.