WORLD JOURNAL OF PHARMACEUTICAL RESEARCH
Coden USA: WJPRAP Impact Factor 8.63
Volume 15, Issue 16, 1244-1257. Case Study ISSN 2277–7105

THERAPEUTIC EFFECT OF *PUNARNAVADI BASTI* IN *TRIKGRAH* (ANKYLOSING SPONDYLITIS): A CASE STUDY

Dr. Sakshi Sharma*[1], Dr. Shivani Mahajan[2], Dr. Amit Tiwari[3]

[1]P.G Scholar, Dept. of Panchakarma, Patanjali Bhartiya Ayurvigyan Evum Anusandhan Sansthan, Haridwar.

[2]Professor, Dept. of Panchakarma, Patanjali Bhartiya Ayurvigyan Evum Anusandhan Sansthan, Haridwar.

[3]Assistant Professor, Dept. of Panchakarma, Patanjali Bhartiya Ayurvigyan Evum Anusandhan Sansthan, Haridwar.

Article Received on 15 July 2026,
Article Revised on 05 August 2026,
Article Published on 16 August 2026,

https://doi.org/10.5281/zenodo.21978396

***Corresponding Author**

Dr. Sakshi Sharma

P.G Scholar, Dept. of Panchakarma, Patanjali Bhartiya Ayurvigyan Evum Anusandhan Sansthan, Haridwar.

How to cite this Article: Dr. Sakshi Sharma*[1], Dr. Shivani Mahajan[2], Dr. Amit Tiwari[3]. (2026). Therapeutic Effect of Punarnavadi Basti In Trikgrah (Ankylosing Spondylitis): A Case Study. World Journal of Pharmaceutical Research, 15(16), 1244–1257.

ABSTRACT

Ankylosing Spondylitis (AS) is a chronic, immune-mediated inflammatory disorder belonging to the spectrum of spondyloarthropathies. It primarily affects the axial skeleton, especially sacroiliac joints, peripheral joints and extra articular structures, resulting in inflammatory back pain, progressive stiffness, restricted spinal mobility, and varying degrees of functional disability. In *Ayurveda*, the clinical manifestations of Ankylosing Spondylitis resemble *Trikgrah*, a condition characterized by pain, stiffness, and restricted movements involving the lumbosacral region (sacroiliac joint) due to *Vata* alone or aggravated *Vata* associated with *Kapha* and *Ama*. This case report describes the *Ayurvedic* management of a 21-year-old male patient diagnosed with ankylosing spondylitis, presenting with chronic inflammatory low back pain**,** spinal stiffness, and restricted range of motion. The criteria of assessment were based on the scoring of Bath Ankylosing Spondylitis Metrology Index (BASMI), ESR and CRP. The treatment protocol was planned according to the principles of *Vatvyadhi Chikitsa* and included *Punarnavadi Basti* aimed at alleviating aggravated *Vata Dosha*. Following the intervention, the patient demonstrated marked clinical improvement, including reduction in pain and stiffness, restoration of spinal mobility, conversion of the

Schober's test from positive to negative, and significant improvement in lumbar flexion. *Basti* therapy is regarded as the principal treatment modality for *Vata* disorders, *Punarnavadi Basti* possesses *Vata-Kapha shamaka*, *Shothahara*, *Deepana*, and *Rasayana* properties that may prove beneficial in such conditions.

KEYWORDS: Ankylosing Spondylitis, *Trikgrah*, *Punarnavadi Basti*, *Panchakarma*, *Vata Vyadhi*, *Ayurveda*.

INTRODUCTION

Ankylosing Spondylitis[1,2] (AS) is a chronic, progressive inflammatory disease that primarily affects the axial skeleton, especially the sacroiliac joints, peripheral joints and extra articular structures. It is a form of seronegative spondyloarthropathy characterized by inflammatory back pain, morning stiffness, restricted spinal mobility, and progressive functional impairment. The prevalence of AS is more in males as comparison to females. The disease commonly begins in young adults, significantly affecting their physical function, work productivity, and overall quality of life. If left untreated, persistent inflammation may lead to new bone formation, spinal ankylosis, and irreversible deformities.

The exact cause of AS is not known. Although a strong association exists with the HLA-B27 gene, additional genetic, environmental, and immunological factors contribute to disease development. Pro-inflammatory cytokines[3], particularly TNF-α, IL-17, and IL-23, play key roles in sustaining chronic inflammation and promoting structural damage.

Diagnosis is based on characteristic clinical features, radiological evidence of sacroiliitis, laboratory investigations. Disease severity and functional status are commonly evaluated using validated indices including BASDAI, BASFI, and BASMI.

Current management aims to relieve pain, suppress inflammation, preserve spinal mobility, and prevent disease progression. While NSAIDs, DMARDs, and biologic agents have improved clinical outcomes, their long-term use may be associated with adverse effects, high treatment costs, and the need for continuous therapy. Moreover, these treatments mainly control disease activity without reversing established structural changes. However, the benefits of these treatment approaches are often limited. Therefore, there is a growing need to explore safe, effective, and sustainable therapeutic options for the comprehensive management of ankylosing spondylitis.

Acharya Charaka has enumerated eighty *Vata Nanatmaja Vyadhi*[4], representing diseases chiefly caused by vitiated *Vata*. *Trikgrah* is recognized as one of these conditions, which is characterized by pain (*Shoola*), stiffness (*Stambha*), restricted movements (*Grah*), and functional impairment involving the *Trik* region (lumbosacral area).

According to *Ayurveda*[5], *Vata Vyadhi* may arise either as a result of depletion of bodily tissues (*Dhatukshaya*) or due to obstruction in the physiological channels (*Margaavrodha*), both of which lead to the aggravation of *Vata Dosha*.

Improper dietary habits including excessive intake of *Guru*, *Snigdha*, *Abhishyandi*, *Virudha*[6,7], and incompatible foods, combined with sedentary lifestyle, suppression of natural urges, irregular sleep, psychological stress, and diminished digestive capacity lead to *Mandagni* and subsequent formation of *Ama*. *Ama* circulates through the body and localizes within the *Sandhi*, *Asthi*, *Snayu*, and *Majja* due to *Khavaigunya*. Simultaneously, chronic aggravation of *Vata Dosha* promotes pain, stiffness, restricted mobility, and degenerative changes. *Kapha* contributes to heaviness, rigidity, and movement restriction, whereas persistent inflammatory processes ultimately impair normal joint architecture. Thus, the disease represents a complex interaction between *Vata* predominance, *Kapha* association, *Ama* accumulation, *Srotorodha*, and progressive *Asthi-Majja* involvement.

Various *Panchakarma* procedures, along with oral Ayurvedic medications, have shown encouraging results in the management of Ankylosing Spondylitis (AS). Accordingly, the principal therapeutic objectives include *Amapachana*, *Agni Deepana*, *Srotoshodhana*, *Vata-Kapha Shamana*, reduction of inflammation, nourishment of *Asthi* and *Majja Dhatu*, restoration of mobility, and prevention of further structural deterioration. Among all *Ayurvedic* therapeutic modalities, *Basti*[8] occupies the foremost position in the management of *Vata* disorders and is regarded as "*Ardha Chikitsa*" because of its profound systemic effects. Beyond its local action on *Pakwashaya*- the principal seat of *Vata-Basti* exerts systemic therapeutic influence through modulation of *Dosha*, improvement of tissue nutrition, enhancement of metabolic activity, and regulation of physiological functions.

Punarnavadi Basti is a classical formulation indicated in disorders associated with *Vata*, *Kapha*, inflammation, oedema, and musculoskeletal dysfunction. The formulation contains herbs possessing *Shothahara* (anti-inflammatory), *Vedanasthapana* (analgesic), *Deepana-Pachana* (digestive and metabolic enhancing), *Rasayana* (rejuvenative), Balya (strength

promoting), and *Vata-Kapha Shamaka* properties. *Punarnava*, the principal ingredient, has demonstrated anti-inflammatory, immunomodulatory, antioxidant, nephroprotective, and tissue restorative activities in experimental and clinical studies. When administered as *Basti*, the synergistic action of its constituent drugs may help alleviate inflammatory changes, reduce stiffness, improve spinal flexibility, facilitate tissue nourishment, and enhance functional capacity in patients suffering from chronic inflammatory spinal disorders.

Therefore, the present case study was undertaken to evaluate the therapeutic efficacy of *Punarnavadi Basti* in a patient diagnosed with Ankylosing Spondylitis (*Trikgrah*) through comprehensive clinical assessment using both modern and Ayurvedic parameters. The report aims to highlight the potential of this classical *Panchakarma* intervention in improving symptoms, reducing disease activity, enhancing spinal mobility, and improving overall quality of life.

CASE PRESENTATION

A 21-year-old male presented to the Outpatient Department of Panchakarma of Patanjali Ayurvedic College, Haridwar, with complaints of persistent inflammatory low back pain, prolonged morning stiffness, restricted spinal movements, bilateral hip pain, fatigue, and disturbed sleep for the past four years. The pain had gradually progressed in severity over time and was associated with marked stiffness lasting approximately 90-120 minutes after walking. The symptoms significantly affected his ability to perform occupational activities and daily routines.

The patient had been diagnosed with Ankylosing Spondylitis according to clinical and radiological criteria. He had been receiving non-steroidal anti-inflammatory drugs intermittently for symptomatic relief, which produced only temporary improvement. However, recurrence of symptoms after discontinuation of medication, concerns regarding long-term drug use, and progressive functional limitation prompted him to seek Ayurvedic treatment.

The patient consumed a mixed diet, had irregular meal timings, prolonged sitting hours as he was preparing for civil service exam, inadequate physical exercise, and disturbed sleep due to chronic pain. These factors were considered contributory to impaired digestive function and chronic *Vata-Kapha* aggravation.

Chief Complaints

The patient presented with the following complaints:

- Chronic low back pain involving the lumbosacral region for four years
- Morning stiffness lasting approximately 90-120 minutes
- Restriction of forward bending and spinal movements
- Bilateral hip pain aggravated after prolonged rest
- Neck stiffness
- Fatigue and generalized weakness
- Disturbed sleep due to nocturnal pain
- Difficulty in prolonged standing, walking, and climbing stairs

Personal History

Parameter	Findings
Appetite	Moderate
Diet	Mixed
Bowel Habit	Regular
Micturition	Normal
Sleep	Disturbed
Addiction	Nil
Physical Activity	Sedentary
Occupational Stress	Present

Past History

- No history of diabetes mellitus.
- No hypertension.
- No major surgical illness.
- No tuberculosis.
- No history of fracture or spinal injury.
- No previous *Panchakarma* treatment.

Family History

No significant family history of autoimmune disorders, inflammatory arthritis, psoriasis, inflammatory bowel disease, or Ankylosing Spondylitis was found.

General Physical Examination

Parameter	Observation
Consciousness- Alert and oriented	Temperature- Afebrile
Pulse Rate- 74/min	Height- 175.26cm
Blood Pressure- 122/70mm Hg	Weight- 57kg

Respiratory Rate-15/min	BMI- 23.9 kg/m^2

The patient was moderately built and moderately nourished. No pallor, icterus, cyanosis, clubbing, edema, or generalized lymphadenopathy was observed.

Systemic Examination Respiratory System

Chest movements were symmetrical. Bilateral air entry was equal without adventitious sounds.

Cardiovascular System

Heart sounds S1 and S2 were normal without murmurs.

Central Nervous System

Higher mental functions were intact. Muscle tone, power, superficial sensations, and deep tendon reflexes were within normal limits.

Musculoskeletal Examination

Examination revealed tenderness over both sacroiliac joints and paraspinal muscles. Lumbar lordosis appeared reduced. Forward flexion and lateral spinal movements were markedly restricted.

Clinical Assessment

Bath Ankylosing Spondylitis Metrology Index (BASMI)

Significant restriction of spinal mobility.

Ayurvedic Examination

Dashavidha Pariksha

Prakriti-Vata Kapha	*Satmya- Madhyama*
Vikriti- Sama Samyaya	*Satva- Madhyama*
Sara- Madhyama	*Ahara Shakti- Madhyama*
Samhanana- Madhyama	*Vyayama Shakti- Avara*
Pramana- Madhyama	*Vaya-Madhyamavastha*

Ashtavidha Pariksha

Nadi- Vata-Kaphaja	*Shabda- Prakriti*
Mala- Nirama	*Sparsha-* Warm over affected joints
Mutra- Prakriti	*Drik- Prakrit*
Jihva- Nirama	*Akriti- Visham*

Samprapti Ghataka

Dosha	*Vata associated with Kapha*
Dushya	*Rasa, Asthi, Majja, Snayu, Sandhi*
Udbhava sthana	*Pakwashyaya*
Vyakta sthana	*Trik Sandhi*
Marga	*Madhyam rog marga*
Strotas	*Rasavaha asthivaha majjavaha*
Stroto dushti	*Sanga*
Agni	*Manda*

Investigations

Investigation	**Findings**
CBC	14.3gm/dl
ESR	25 mm/hr
CRP	39.06 mg/dL
Rheumatoid Factor	2.90 IU/ml
HLA-B27	Positive

Radiological Findings

Plain radiograph of the pelvis demonstrated bilateral sacroiliitis with irregularity and sclerosis of the sacroiliac joints.

MRI of sacroiliac joints revealed inflammatory marrow edema consistent with active sacroiliitis.

Radiological findings were suggestive of Ankylosing Spondylitis.

Diagnosis

Ankylosing Spondylitis according to Modified New York Criteria.

Ayurvedic Diagnosis

Trikgrah with *Vata-Kapha* predominance involving *Asthi-Majja* and *Sandhi*.

Therapeutic Intervention

Considering the chronicity of disease, predominance of *Vata* associated with *Kapha*, involvement of *Asthi* and *Majja Dhatu*, and classical indication of *Basti* in *Vata* disorders, *Punarnavadi Basti* was selected as the principal line of management.

The treatment protocol was planned according to the principles of *Panchakarma* with the objectives of:

- *Vata-Kapha Shamana*
- *Shothahara* (anti-inflammatory effect)
- *Vedanasthapana* (pain relief)
- Improvement of spinal flexibility
- Nourishment of *Asthi* and *Majja Dhatu*
- Prevention of further functional deterioration

- **Poorva Karma**

Before administration of *Basti*, the patient underwent appropriate preparatory procedures.

Sarvanga Abhyanga

Whole-body massage using *Murchit Tila Taila* was performed daily to pacify aggravated *Vata*, improve circulation, and reduce muscular stiffness.

Sarvanga Swedana

Following *Abhyanga*, *Sarvanga Swedana* was administered to relieve stiffness, liquefy aggravated *Dosha*, and facilitate their movement towards the gastrointestinal tract.

- **Pradhan karma Punarnavadi Basti**
- Punarnavadi *Basti* was administered according to classical *Ayurvedic* principles under strict aseptic precautions.

Panchakarma Procedure	Drug	Dose	Duration
Sarvanga Abhyanga (Whole body massage)	*Murchita Tila Taila*	Q.S	35-40 minutes for 8 days
Sarvanga Vashpa Swedana (Steam Bath)	*Dashmoola Kwatha*	Q.S	Till *Samyaka Swedana* For 8 days
Yoga Basti (Therapeutic Enema)			For 8 days

Anuvasana Basti was given with *Murchit Tila Taila* (96ml) and *Punarnavadi Niruha basti* (768ml) was given alternatively for 8 days.

1st Day	2nd Day	3rd Day	4th Day	5th Day	6th Day	7th Day	8th Day
A	A	N	A	N	A	N	A

Paschat Karma

The patient was instructed to consume light, easily digestible food before the procedure. *Basti* was administered in the left lateral position using a sterile disposable catheter. After administration, the patient remained in the supine position for approximately fifteen minutes

to facilitate uniform distribution of the medicine.

Dietary regulations emphasizing *Laghu*, *Ushna*, freshly prepared food along with avoidance of *Guru*, *Abhishyandi*, cold, fermented, and excessively oily food were advised throughout the treatment period.

Treatment Protocol

Composition of *Punarnavadi Basti*[9]

Ingredient	Quantity	Therapeutic Role
Madhu[10]	130ml	*Yogavahi*, facilitates homogenization and enhances drug penetration
Saindhava Lavana[11]	12gm	*Vatahara*, Sukshma, facilitates absorption and relieves obstruction
Murchit Tila[12] *Taila+Goghrita*[13]	160ml	*Vatahara*, *Snigdha*, nourishes *Asthi* and Majja Dhatu
Kalka- Vacha, Shatahva, Devdaru, Kushth, Mulethi, Sasharp, Pippali, Ajwain, Madanphala	84gm	Anti-inflammatory, *Deepana*, *Rasayana*
Kwatha- Punarnava, Eranda, Vasa, Pashanbheda, Vrishcheer, Bhootik, Bala, Yava, Badira, Kulatha, Dhanyaka, Bilwa, Agnimantha, Shyonak, Patla, Gambhari,	250ml	Principal therapeutic component providing systemic action
Shalparni, Prishnaparni, Brihati, Kantakari, Gokshura, Madanphala		
Guda[14]	12gm	*Vatashamak, Balya, Vrishya*
Godugdha[15]	120ml	*Brimhana, Grahi, Jivaniya, Rasayana,*

Following administration, the patient was advised to retain the *Basti* as long as comfortably possible and to avoid strenuous activity immediately after the procedure.

Therapeutic Rationale of *Punarnavadi Basti*

The selection of *Punarnavadi Basti* was based on the Ayurvedic understanding of ***Trikgrah*** as a disorder predominantly involving ***Vata Dosha*** associated with ***Kapha***, ***Ama***, and obstruction of ***Asthivaha*** and ***Majjavaha Srotas***. The formulation aims to:

- Pacify aggravated *Vata* and *Kapha*.
- Reduce inflammation (*Shotha*).
- Improve *Agni* and metabolic activity.
- Nourish *Asthi* and *Majja Dhatu*.

- Restore mobility and functional capacity.
- Prevent progression of joint stiffness.

Assessment Criteria

The therapeutic response was evaluated using both subjective and objective parameters.

Subjective Parameters

Sandhishool **(Pain in axial skeleton and peripheral joint)**

Symptoms	Score
No pain	0
Mild pain but no difficulty in walking	1
Moderate pain but slight difficulty in walking	2
Severe pain with severe difficulty in walking	3

Sandhi Jadyata **(Stiffness)**

Symptoms	Score
No stiffness	0
Sometime for 5-10 minutes	1
Daily for 10-30 minutes	2
Daily for 30-60 minutes/more than 1 hrs	3

Angamard**(Fatigue)**

Symptoms	Score
No *Angamard*	0
Occasional *Angamard* but patient is able to do usual work	1
Continuous *Angamard* but patient is able to do usual work	2
Continuous *Angamard* which hamper's patient routine work	3
Patient is unable to do any work	4

Quality of Sleep

Symptoms	Score
Sound sleep	0
Can sleep sound, even after interruption	1
Can't sleep properly after interruption	2

Each symptom was graded using a predefined scoring system before and after treatment.

Objective Parameters

1.	**ESR**	**B.T. 25 mm/hr**	**A.T. 10 mm/hr**
2.	**CRP**	**B.T. 39.06 mg/L**	**A.T. 12mg/L**

3. BASMI (Range of Movements Bath Ankylosing Spondylitis Metrology Index)

B.T. 4.7	**A.T. 3.9**

- **Outcome Assessment**
- **Table 2. Subjective Assessment.**

Symptom	Before Treatment	After Treatment	% Improvement
Sandhishoola	2	0	100%
Sandhi Jadyata	3	1	66.67%
Angamard	2	0	100%
Quality of Sleep	1	0	100%

Objective Assessment

Parameter	Before	After	% Improvement
BASMI	4.7	3.9	17.02%
ESR	25 mm/hr	10 mm/hr	60%
CRP	39.06 mg/L	12 mg/L	69.27

Overall Clinical Improvement

Following treatment, the patient showed marked improvement in low back pain, morning stiffness, spinal mobility, sleep quality, fatigue, and functional activities. BASMI and inflammatory markers also improved, with no adverse effects. Overall, the patient demonstrated moderate to marked clinical improvement, indicating a favourable response to *Punarnavadi Basti*.

Follow-up

The patient was followed for one month after completion of treatment. During follow-up, symptomatic improvement was largely maintained. The patient was advised to continue appropriate dietary modifications, regular stretching exercise and yoga to and minimize the risk of relapse.

DISCUSSION

Ankylosing Spondylitis is a chronic inflammatory disorder associated with pain, stiffness, restricted spinal mobility, and progressive structural changes. From an Ayurvedic perspective, its clinical features may be correlated with *Trikgrah*, involving predominant *Vata Dosha* with

the associated role of *Kapha* and *Ama*. Impaired *Agni* may lead to *Ama* formation and *Srotorodha*, contributing to musculoskeletal manifestations. *Basti*, being the principal therapy for *Vata* disorders, was selected for its systemic and nourishing effects. *Punarnavadi Basti*, with its *Deepana*, *Pachana*, *Shothahara*, *Vata-Kapha Shamaka*, *Balya*, and *Rasayana* properties, may help reduce *Ama*, restore *Vata* balance, alleviate pain and stiffness, and improve functional mobility. *Tila Taila* provides *Sneha* and *Vatahara* effects, while *Saindhava* and *Madhu* facilitate the therapeutic action of the *Basti*. *Punarnava* contributes *Shothahara* and *Rasayana* effects. Collectively, these actions may reduce inflammation, pain, and stiffness while supporting *Asthi-Majja Dhatu* and improving spinal mobility and functional capacity.

RESULTS

The patient demonstrated considerable improvement in pain, stiffness, spinal flexibility, fatigue, sleep quality, and functional capacity. Reduction in inflammatory markers and improvement in spinal mobility further supported the therapeutic response. No adverse effects were observed during the treatment period.

CONCLUSION

The present case demonstrates a favourable clinical response to *Shodhana Chikitsa*, particularly *Punarnavadi Basti*, in the management of *Trikgrah* (Ankylosing Spondylitis).

Significant improvement was observed in pain, stiffness, restricted movements, spinal mobility, and overall functional status, with the benefits sustained at one-month follow-up. The findings suggest that an appropriately planned and individualized Ayurvedic approach, with emphasis on *Shodhana Chikitsa*, may be beneficial in the management of *Trikgrah*.

However, further clinical studies are required to substantiate these observations.

REFERENCES

1. Jameson, J. L., Fauci, A. S., Kasper, D. L., Hauser, S. L., Longo, D. L., & Loscalzo, J. (Eds.). (2015). *Harrison's principles of internal medicine* (19th ed., Vol. 2). McGraw-Hill Education.
2. Boon, N. A., Colledge, N. R., Walker, B. R., & Hunter, J. A. A. (Eds.). (2006). *Davidson's principles and practice of medicine* (20th ed.). Elsevier Churchill Livingstone.
3. Pournazari, P. (2012, November 10). *Ankylosing spondylitis: Pathogenesis and clinical*

findings. The Calgary Guide. https://www.thecalgaryguide.com

4. The *Charak Samhita* of *Agnivesha* revised by *Charak* and *Dradhabala* with introduction by *Vadiya Samrata Shri Satya Narayan Sastri*, with elaborated Vidyotini hindi commentary by Pt. Kashinath Sastri Dr.G*orakha Natha Chaturvedi* part-1 Published by Chukhamba Bharti Academy Varanasi, Reprint, 2009. *Charaka Sutra Sthan Maharog adhyaye* chapter- 20/11, 399-400.
5. Vagbhata. Ashtanga Hridayam (K. A. D. Gupta Vidyalankar, Comm.; Y. Upadhyaya, Ed., Reprint ed.). Chaukhambha Prakashan. (Nidan Sthana, Vata Vyadhi Nidanam Adhyaya, 2014; 15/5–6: 537-538).
6. The Charak Samhita of Agnivesha revised by Charak and Dradhabala with introduction by Vadiya Samrata Shri Satya Narayan Sastri, with elaborated Vidyotini Hindi commentary by Pt. Kashinath Sastri Dr. Gorakha Natha Chaturvedi part-2 Published by Chukhamba Bharti Academy Varanasi Reprint 2011. Charaka Chikitsha Sthan Vata Vyadhi Chikitsha Adhyaye chapter - 28/58-60, 779-80.
7. Kayachikitsa by Prof Ajay Kumar Sharma & Dr. Parsuram Singh Yadav part-3 published by Chaukhamba Orientalia Delhi, edition 2010 Vata Vyadhi- Chapter-1, 3-4.
8. *Astanga Hridayam* of *Vagbhata* with the *Vidyotini* Hindi commentary by *Kaviraj Atrideva Gupta Vidyaalankar*, edited by *Vadiya Yadunandana Upadhyaya* published by ChaukhambaPrakashan Varanasi. Reprint 2014. *Astang Hridyam Sutra Sthan Ayushkaamiya Adhyaye* chapter-1/25-26, 14.
9. The *Charak Samhita* of *Agnivesha* revised by *Charak* and *Dradhabala* with introduction by *Vadiya Samrata Shri Satya Narayan Sastri*, with elaborated *Vidyotini* hindi commentary by *Pt. Kashinath Sastri* Dr.*Gorakha Natha Chaturvedi* part-2 Published by Chukhamba BhartiAcademy Varanasi, Reprint 2016. *Charaka Sidhi Kalpanasidhi* chapter- 3/65-68, 1004.
10. Agnivesha, Charaka, & Dradhabala. (2011). *The Charaka Samhita of Agnivesha revised by Charaka and Dradhabala with the Vidyotini Hindi commentary* (K. Sastri & G. N. Chaturvedi, Comms.; Part 1; Reprint ed.). Chaukhamba Bharati Academy. (*Sutrasthana, Annapana Vidhi Adhyaya*, 27/243–249, 554–555).
11. Agnivesha, Charaka, & Dradhabala. (2015). *The Charaka Samhita of Agnivesha revised by Charaka and Dradhabala with the Vidyotini Hindi commentary* (K. Sastri & G. N. Chaturvedi, Comms.; Part 1; Reprint ed.). Chaukhamba Bharati Academy. (*Sutrasthana, Annapana Vidhi Adhyaya*, 27/300, 561.
12. Govind Das. (2014). *Bhaishajya Ratnavali* (A. D. Shastri, Comm.; Reprint ed.).

Chaukhambha Prakashan. (*Jwara Chikitsa Adhyaya*, 5/1286–1287.

13. Agnivesha, Charaka, & Dradhabala. (2015). *The Charaka Samhita of Agnivesha revised by Charaka and Dradhabala with the Vidyotini Hindi commentary* (K. Sastri & G. N. Chaturvedi, Comms.; Part 1; Reprint ed.). Chaukhamba Bharati Academy. (*Sutrasthana*, *Annapana Vidhi Adhyaya*, 27/231–232, 552.
14. Agnivesha, Charaka, & Dradhabala. (2011). *The Charaka Samhita of Agnivesha revised by Charaka and Dradhabala with the Vidyotini Hindi commentary* (K. Sastri & G. N. Chaturvedi, Comms.; Part 1; Reprint ed.). Chaukhamba Bharati Academy. (*Sutrasthana*, *Annapana Vidhi Adhyaya*, 27/237–239, 553.
15. Sushruta. 2017; *Sushruta Samhita* (K. A. Shastri, Ed. & Trans.; P. M. Mehta, Foreword; Part 1; Reprint ed.). Chaukhambha Sanskrit Bhawan. (*Sutrasthana*, 45/50, 223).