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A comparative clinical study to access the role of *Basti* and *Virechana Karma* followed by *Rasayana* in postmenopausal *Asthikshaya* (Osteoporosis)

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ABSTRACT

Rajonivrutti condition manifests in the end phase of *Jarawastha*; but its *Samprapti* begins from the *Sandhikala* of *Madhyamawastha* and *Jarawastha* due to *Vatavruddi* in women reaching *Rajonivrutti*. Postmenopausal *Asthikshaya* is a disabling disease, which renders women a bedridden life. Here 40 subjects diagnosed with postmenopausal *Asthikshaya* fulfilling the inclusion criteria were selected for the study and randomly categorized into two groups as group A and group B each consisting of 20 subjects. Group A received *Amapachana* with *Hinguvachadivati*, *Yastimadhu Siddha Ksheerabasti* administered in *Yoga Basti* schedule followed by *Tritiyatriphala Rasayana*. Group B received *Amapachana* with *Hinguvachadivati*, *Sadhyosnehapana* with *Amrita Ghrita*, *Sarvanga Abyanga* with *Murchita Tilataila* followed by *Sarvanga Swedana* and *Sneha Virechana* was administered with *Eranda Taila* followed by *Tritiyatriphala Rasayana* was given. *Tritiya Triphala Rasayana* selected for the present study by adapting all the general principles of prevention and management of *Asthikshaya* and as it is a well known *Rasayana*.

Key words: *Virechana Karma*, *Basti*, *Rasayana*, *Asthikshaya*, *Tritiyatriphala Rasayana*.

INTRODUCTION

Ayurveda is an ancient science of life deals with the preventive as well as curative aspect. It explains human body as a 'congenial homeostasis' of *Doṣa*, *Dhatu* and *Mala*. The function of *Dhatu* is *Dharaṇa* of the *Sharira*.^[1]

Ageing is a complex multifactorial and inevitable process. It is physiological and psychological phenomenon which results because of the

involutionary changes. Problems of different age group of women are still present and the most suffering age group is forty-plus due to change in reproductive life by permanent cessation of menstruation called as Menopause. This phase of life is more vulnerable for women, as along with aging. With increasing life expectancy, women spends one third of her lifetime under postmenopausal period. The postmenopausal period is associated with significant increase in the incidence of age related medical conditions like cardiovascular diseases and osteoporosis.

Osteoporosis is a major public health problem worldwide and is the second most common metabolic bone disease in India.^[2] Low calcium intake which leads to vitamin-D deficiency, early menopause, genetic predisposition, lack of diagnostic facilities and poor knowledge of bone health have contributed towards the high prevalence of Osteoporosis. World Health Organization defines Osteoporosis as "Progressive systemic skeletal disease characterized by low bone mass and micro architectural

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deterioration of bone tissue, with a consequent increase in bone fragility and susceptibility to fracture".^[3] Low levels of Estrogen causes imbalance in bone reabsorption and remodeling which leads to accelerated bone loss.^[4]

Osteoporosis is one of the major sign that has increasingly been perceived as serious disabling disease in women aged above 40 years reaching *Rajonivritti*. It is not mentioned as disease in classical texts of Ayurveda. Yet, according to *Acharya Sushruta* it can be considered under *Swabhavabala Pravritta Vyadhi*^[5] and *Acharya Charaka* said it as 'Swabhavonishpratikriyaha' i.e. *Svabhavikavyadhi* are *Yapya* in nature. *Chakrapani* while commenting on the word 'Nishpratikriya' says that these diseases cannot be managed with any treatment other than *Rasayana*.^[6] *Rajonivritti* occurs at *Sandhikala* of *Praudhawastha* and *Jarawastha*, where *Vata* starts overpowering *Pitta Dosha* and leads to *Kshaya* of all *Dhatu*s.^[7]

According to the principles of *Ashrayaashayibhava* by *Acharya Vagbhata*,^[8] *Asthidhatu* is the seat of *Vatadosha*^[9] and is inversely related to each other i.e. if there is *Vatavruddi* there is *Asthikshaya*.

Asthikshaya occurs due to two main mechanisms, the first is deficiency of nutrients suitable for nourishing the bone because of malnutrition or the catabolic activity of *Vatadosha* and the second is *Srotoavarodha* responsible for conveying the nutrition to the *Asthivahasrotas* as a result of imbalanced *Agni* i.e. with *Jatharagnimandhya* and *Dhatwagnimandhya* that leads to formation of *Ama*. It can also occur due to a combination of both.

To minimize the risk of complications and to assess potential treatment, management of *Asthikshaya* by *Shodhana* followed by *Rasayana* has been taken for the study. If the *Rasayanaprayoga* is done without *Shodhana* then it seems like dyeing a dirty cloth which does not yield to proper nourishment of *Rasadidhatu*s.^[11]

Hinguvachadi Vati is taken for *Aamapacana* which is having *Pachana*, *Anulomana* *Deepana* effect and helps in the better absorption of drug.

Basti is considered as *Ardha Chikitsa* among all therapeutic measures in *Ayurveda*.^[12] *Ksheera Basti* is one among *Brimhana Basti*. *Ksheera* is the best natural *Dhatuposhakadravya*, qualities like *Jeevaniya*, *Medhya*, *Vrishya*, *Shodhaniya*, *Balya*, *Sara* and *Vatapittahara*.^[13] It is a good source of Calcium and also increases the intestinal absorption of Calcium by facilitating paracellular absorption.

Snehana provides *Snigdhatva* to the body, liquefies *Dosha* and increases *Kledata* in the body.^[14] *Guduchi* having the properties of *Tikta* and *Kasaya in Rasa*, *Laghu* and *Snigdha* in *Guna*, *Ushna Veerya*, *Madhura Vipaka* does the soothing effect in *Asthivikara* as said by *Acharya Charaka*.^[15] So *Amrita Ghrita* has been selected for *Snehapana*.

Virechana Karma is one of the prime treatment modality for *Pitta Dosha*. It also has a significant role in *Anulomana* of *Vatadosha*. It is one of the *Shodhana Karma* advocated prior to administering *Rasayana* and *Vajeekarana*.^[16] *Eranda Taila* has been selected for the study, it acts as *Sneha Virechana*, *Srotovishodhana*, *Vayasthapana*, *Balakara*, *Vata Kaphahara*, *Yoni Vishodhaka*.^[17]

Tritiya Triphala Rasayana which is said to be good in *Jaravyadhijanyavikara*. *Vamshalochana* being one of the ingredient helps in nourishing *Asthi Dhatu* as it contains calcium, silica, protein, fibre, iron, thiamine, riboflavin, carbohydrates. *Triphala* works on every organ in the body restores the natural functions and reduces blockage. *Pippali* and *Yastimadhu* being *Rasayana* helps in *Pacana*, *Deepana*, *Sandaniya*, *Jeevaniya*, *Sroto Shodana*.

OBJECTIVES OF THE STUDY

1. To study postmenopausal osteoporosis in Ayurveda and in modern Medicine.
2. To study the efficacy of *KsheeraBasti* along with *Rasayanain* Group A.
3. To study the efficacy of *Virechana Karma* along with *Rasayanain* Group B.
4. To study the efficacy of *Shodhana* followed by *Rasayana*.

- To study the Comparative effect of *KsheeraBasti* along with *Rasayanain* Group A and *Virechana Karma* along with *Rasayana* in Group B.

Inclusion Criteria

- Patients presenting with classical features of *Asthikshaya* in Postmenopause.
- Patients with age group between 40-60 years.
- Patients of *Asthikshaya* diagnosed by Bone Mineral Density Test.
- Patients fit for *Ksheera Basti*, *Virechana* and *Rasayana*.

Exclusion Criteria

- Patients who do not fulfil the inclusion criteria were excluded from the study.
- Patients who are on Hormonal therapy, Avascular necrosis, Carcinoma of bone.
- Patients with known case of metabolic disorders such as uncontrolled Diabetes Mellitus & Hypertension, fractures, other systematic disorders were excluded.
- Patients who are unfit for *Ksheerabasti*, *Virecana* and *Rasayana*.

Parameters of Study

Subjective Parameters

- Asthishula / Toda / Bheda*
- Sandhi Shaithilya*
- Mamsa Kshaya*
- Parvanam Bheda*
- Aswapna*

Objective Parameters

- Bone Mineral Density Test
- Serum Calcium.
- X-ray (if necessary)

Study Design - A Randomized Clinical Study

Sample size - A minimum of 40 subjects diagnosed with *Asthikshaya* in post menopausal women fulfilling the diagnostic and inclusion criteria will be selected and randomly categorized into two groups as Group A and Group B each consisting of 20 subjects for the clinical study, excluding the drop outs.

Group A:

<i>Aama Pachana</i>	<i>Hinguvachadi Vati</i> <i>Matra</i> : 5g twice a day with warm water before food. (Till <i>Nirama Laxana</i>)
<i>Purva Karma</i>	<i>Sthanika Abhyanga</i> with <i>Murchita Tila Taila</i> followed by <i>Swedana</i> .
<i>Basti</i>	<i>Yastimadhu Siddha Ksheerabasti</i> for 8 days in <i>Yoga Basti</i> schedule.
<i>Rasayana</i>	<i>Tritiya Triphala Rasayana</i> <i>Matra</i> : 10-12 gms with <i>Ghrita</i> and <i>Ksheera</i> as <i>Anupana</i>

Group B:

<i>Ama Pachana</i>	<i>Hinguvachadi Vati</i> . <i>Matra</i> : 5g twice a day with warm water before food. (Till <i>Nirama Laxana</i>)
<i>Abhyantara Snehana</i> <i>Vishrama Kala</i>	<i>Sadhya Snehapana</i> with <i>Guduchi Ghrita</i> . <i>Matra</i> - As per <i>Agni, Kostha</i> of patient. <i>Abhyanga</i> with <i>Murchita Tila Taila</i> followed by <i>Swedana</i> .
<i>Sneha-Virechana Karma</i>	<i>Eranda Taila</i> <i>Matra</i> - As per <i>Kostha</i> of patient.
<i>Paschat Karma</i>	<i>Samsarjana Krama</i> depending on <i>Vega/Shuddhi</i> .
<i>Rasayana</i>	<i>Tritiya Triphala Rasayana</i> <i>Matra</i> : 10-12 gms with <i>Ghrita</i> and <i>Ksheera</i> as <i>Anupana</i> .

Overall assessment of treatment

The Overall Assessment of both the groups was measured according to the Grades given below;

Overall Assessment	Grade of Improvement
Complete Relief	100 % Improvement
Marked Relief	75 to 99 % Improvement
Moderate Relief	50 to 74 % Improvement
Mild Relief	26 to 49 % Improvement
Unchanged	<25 % or No Improvement

OBSERVATIONS AND RESULTS**Distribution of subjects according to Asthishoola Lakshana.**

Asthishoola	Group A	%	Group B	%	Total	%
No Pain	00	00	01	05	01	2.5
Mild pain/Easily Tolerable	00	00	02	10	02	5
Discomforting pain/Tolerable	08	40	07	35	15	37.5
Distressing pain/Horrible pain/difficult to Tolerate	09	45	07	35	16	40
Distressing pain/ horrible pain/ not tolerable	03	15	03	15	09	15

Distribution of subjects according to Sandhi Shaithilya Lakshana

Sandhi Shaithilya	Group A	%	Group B	%	Total	%
No Laxity	00	00	01	05	01	2.5
Laxity but can perform activities	03	15	00	00	03	7.5

More Laxity and difficult to perform activities	08	40	10	50	18	45
Excessive Laxity can perform activities	08	40	06	30	14	35
Excessive laxity cannot perform activities	01	05	03	15	04	10

Distribution of subjects according to Mamsakshaya Lakshana

Mamsa Kshaya	Group A	%	Group B	%	Total	%
Mamsakshaya Laxanas are absent.	00	00	00	00	00	00
Presence of only 1 laxana of Mamsakshaya.	04	20	01	05	05	12.5
Presence of 2 laxanas of Mamsakshaya.	08	40	09	45	17	42.5
Presence of 3 laxanas of Mamsakshaya.	05	25	08	40	13	32.5
All symptoms of Mamsakshaya Laxanas are present.**	03	15	02	10	05	12.5

** (Mamsala Pradesha Suskata, Spiksushkata, Sandhi Vedana and Shrama)

Distribution of subjects according to Parvana Bheda Lakshana

Parvana Bheda	Group A	%	Group B	%	Total	%
No Pain	01	05	02	10	03	7.5
Involvement of 2 joints and mild pain	03	15	01	05	04	10
Involvement of 2 joints and moderate pain	08	40	07	35	15	37.5
Involvement of all joints and moderate pain	06	30	07	35	13	32.5

Involvement of all joints and severe pain	02	10	03	15	05	12.5
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Distribution of subjects according to Aswapna Lakshana

Aswapna	Group A	%	Group B	%	Total	%
Sleeps comfortably	01	05	01	05	02	05
Sleeps more than 4 hours	00	00	00	00	00	00
Sleeps 3 hours due to mild pain	09	45	10	50	19	47.5
Sleeps 2 hours due to moderate pain	08	40	07	35	15	37.5
Sleeps 1 hour due to severe pain	02	10	02	10	04	10

Distribution of subjects according to BMD (Bone Mineral Density) Value.

BMD	Group A	%	Group B	%	Total	%
Normal 0	0	0	0	0	0	0
't' score between -1to -1.5	2	10	1	5	3	7.5
't' score between -1.6 to -2	4	20	9	45	13	32.5
't' score between -2.1 to -2.5	8	40	7	35	15	37.5
't' score greater than -2.6	6	30	3	15	9	22.5

Distribution of subjects according to Serum Calcium Value.

Serum Calcium	Group A	%	Group B	%	Total	%
8.5- 10mg/dl	5	25	2	10	7	17.5
8-8.4 mg/dl	1	5	0	0	5	2.5
7.5-7.9 mg/dl	1	5	5	25	6	15
7-7.4 mg/dl	5	25	6	30	11	27.5
<7	8	40	7	35	15	37.5

Showing comparative efficacy of therapies on subjective individual parameters of Group A & Group B

Group A (Basti karma)				Group B (Virechana)			
BT Mean	AT Mean	Relief in %	Remark	BT Mean	AT Mean	Relief in %	Remark
2.42	0.57	76.45%	Marked relief	3	1	66.67	Moderate relief
2.57	0.57	77.82%	Marked relief	2.86	1	65	Moderate relief
2.57	0.57	77.82%	Marked relief	2.57	1	61	Moderate relief
2.57	1.14	50.64%	Moderate relief	3.14	1.43	54.46	Moderate relief
2.57	0.71	72.37%	Moderate relief	2.71	1.14	57.93	Moderate relief
2.71	0.71	73.8%	Moderate relief	2.43	1	58.85	Moderate relief
3	0.86	71.33%	Moderate relief	2.57	0.86	66.54	Moderate relief
2.57	0.57	77.82%	Marked relief	2.86	1.43	60.49	Moderate relief
3.29	1	69.61%	Moderate relief	2.71	1	63.1	Moderate relief
2.71	1.14	57.93%	Moderate relief	2.43	1	58.85	Moderate relief
2.29	0.43	81.22%	Marked relief	2.29	0.71	69	Moderate relief

			relief				relief
3	1	66.67%	Moderate relief	2.57	1.29	49	Mild relief
2.29	0.86	62.45	Moderate relief	2.43	0.71	70.78	Moderate relief
1.71	0.29	83	Marked relief	2.29	0.86	62.45	Moderate relief
2.14	0.71	66.82	Moderate relief	2.71	0.71	75	Marked relief
2.14	0.71	66.82	Moderate relief	2	0.86	57	Moderate relief
1.43	0.14	90.21	Marked relief	1.86	0.57	69.36	Moderate relief
2.29	0.71	69	Moderate relief	2.29	0.71	67.69	Moderate relief
2.57	1	61	Moderate relief	2.29	0.86	62.45	Moderate relief
3.43	1.29	62.39	Moderate relief	2.71	1.14	57.93	Moderate relief

Showing comparative efficacy of therapies on objective parameters in Group A & Group B.

Objective Parameters	Group- A			Group- B			Unpaired 't'	P value	Remark
	Mean	S.D	S.E	Mean	S.D	S.E.			
BMD	1.0	0.67	0.14	0.9	0.68	0.15	0.46	>0.05	s.s
Serum Calcium	1.2	0.98	0.21	1.05	0.74	0.16	0.54	>0.05	s.s

Showing the Overall effect of study on both Group A & Group B

Group A	No.	%	Group B	NO.	%	Total	%
Complete relief	00	00	Complete relief	00	00	00	00
Marked relief	07	35	Marked relief	01	05	06	20
Moderate relief	13	65	Moderate relief	18	90	31	77.5
Mild relief	00	00	Mild relief	01	05	03	2.5
Unchanged	00	00	Unchanged	00	00	00	00

DISCUSSION

Discussion improves the knowledge and discussion with science becomes base establishment of the concept. Thus discussion is the most essential phase of any research work.

Postmenopausal phase is vulnerable time for women. This increasing life expectancy and rise in population of elderly have contributed a rise in prevalence of age related medical conditions which includes Osteoporosis more common in women. Post menopausal *Asthikshaya* was selected for present study as condition is unique in women manifesting in their later half of life. This study was an attempt to understand the disease in *Ayurvedic* concept and find an effective therapy in preventing the disease.

In this study *Basti* and *Virechana Karma* is taken as *Shodhana Karma* which is advocated prior to administering *Rasayana Yogas*. If the *Rasayana Prayoga* is done without *Shodhana* then it seems like dyeing a dirty cloth which does not yield to proper nourishment of *Rasadidhatus*.

Basti Karma is the best choice of treating *Vatadosha*. *Ksheera Basti* is one among *Brimhana Basti*. According to commentator *Arunadatta*, the substance having *Snigdha* and *Shoshana Guna* produces *Kharatwa* increases *Asthi*, as *Asthi* is also *Khara* by nature. But no substance is available that has *Snigdha* and *Shoshana Guna*. So *Ksheera* and *Ghritha* which are

Snigdha in nature are advised to be used with substance which are *Tikta* and possess *Shoshana Guna*. It was advised that *Ksheera*, *Ghrita* and *Tikta Dravya* should be used together in the form of *Ksheera Basti*. This combination has ability to produce *Kharatwa*.

Hence, *Tikta Dravya Siddha Ksheera Basti* considered as the best treatment for joint disorders. So it prevents the bone degeneration and osteoporosis. Most joint disorders are arising due to deficiency of calcium, so by administering *Ksheera Basti*, calcium levels can be improved.

Virechana Karma is prime treatment modality for *Pitta* and also mitigation of *Vata*. *Amrita Ghrita* is given as *Snehapana* prior to *Virechana Karma*. *Eranda Taila* for *Virechanartha*, which acts as *Sneha Virechaka*, *Vatahara*, *Adhobhaga Doshahara*, *Yoni Shukravishodhaka*, *Vrushya*.

After *Shodhana Karma*, *Tritiyatriphala Rasayana* is administered in both the groups along with *Ksheera* as *Anupana*. *Vamshalochana* being one of the ingredient helps in nourishing *Asthi Dhatu* as it contains calcium, protein, fibre, iron, silica, thiamine, riboflavin, carbohydrates which help in minimizing bone loss in women by exerting *Rasayana* effect.

CONCLUSION

Asthikshaya is a disabling disease which renders women a bedridden life. The prevalence of postmenopausal *Asthi Kshaya* is more in people aged above 40 years. Peak bone mass is attained by the age of 30 years. Afterwards bone resorption and formation go hand in hand. Approximately at the age of 40 years, bone resorption exceeds formation leading to post menopausal *Asthikshaya*. *Acharya Susruta* has called the age of 40 and above as the age of *Parihaani*.

1. Women - because of specific characteristics, possess genetically and naturally weak *Asthidhatu*; are prone to *Asthikshaya*.
2. Hormone replacement therapy is questioned as gold standard treatment because of major risks than benefits.

3. Its occurrence in *Jarawastha*, location in *Gambhiradhatu* and *Bhedawastha* makes this disease *asadhya* and *Yapya* by *Rasayana*. The prevention and management of *Rajonivirittijanya Asthikshaya* should surround *Rasayana* therapy.
4. *Rasayana* therapy of Ayurveda is a comprehensive discipline having a multidimensional approach to provide physical, social and psychological support. It promotes preventive strategies and maintenance of good quality of life. The age related disabilities can be delayed or treated with this therapy and thus can make elderly healthier and happier.
5. Though both groups provided statistically significant results in subjects of postmenopausal *Asthikshaya*, but the overall percentage of improvement provided by group A *Yastimadhu Siddha Ksheerabasti* followed by *Tritiya Triphala Rasayana* 70.7%, while group B *Eranda Taila Virechana* followed by *Tritiya Triphala Rasayana* showed 62.6% of improvement.
6. In this study out of 40 subjects of Postmenopausal *Asthikshaya*, after treatment 13 Subjects in Group A and 18 subjects in Group B got moderate relief. 07 subjects in Group A and 01 subject in Group B had marked relief, 0 subject in Group A, 1 subjects in Group B had mild relief.

REFERENCES

1. Sushruta Samhita of Maharshi Susruta, Edited with Susrutavimarsini by Dr. Anant Ram Sharma, volume-I, Chaukhamba Surbharati Prakashan, Varanasi, reprinted edition 2017, Sutrasthana, Chapter 15th Verse 3, page no-114.
2. API Text book of medicine by Siddharth N Shah, The Association of Physicians of India, Mumbai, 8th edition 2008, volume 1, page no-226
3. World Health Organisation. Assessment of fracture risk and its application to screening for Postmenopausal Osteoporosis. Geneva, WHO, 1994. (Technical report series 843)
4. Khosla S, Riggs BL. Pathophysiology of age-related bone loss and Osteoporosis. *Endocrinology and Metabolism Clinics of North America* 2005;34(4):1015-30.

5. SushrutaSamhita of MaharshiSusruta, Edited with Susruta vimarsini by Dr. Anant Ram Sharma, volume-I, Chaukhambha Surbharati Prakashan, Varanasi, reprinted edition 2017, Sutrasthana, Chapter 1st Verse 33, page no-16.
6. Charaka Samhita of Agnivesha, By Vaidya H.C.Kushwaha Edited with 'Ayurveda Deepika' Hindi Commentary, 1st volume, Chaukhamba Orientalia, Varanasi. reprinted edition 2016, Sharirasthana, Chapter 1st Verse 115, page no-738.
7. Bhavaprakasha of Bhavamisra Translated by Prof.K.R.Srikantha Murthy, 1st Volume Purvakhanda, Chaukhambha Krishnadas Academy, Varanasi, reprinted edition 2008, Chapter 2nd Verse 196, page no-45.
8. Astanga Hridaya of Vagbhata, by Kaviraja Atrideva Gupta, edited by Vaidya Yadunandana Upadhyaya, Chaukhambha Prakashan, Varanasi, reprinted edition 2017, Sutrasthana, Chapter 12th Verse 1, page no-120.
9. Astanga Hridaya of Vagbhata, by Kaviraja Atrideva Gupta, edited by Vaidya Yadunandana Upadhyaya, Chaukhambha Prakashan, Varanasi, reprinted edition 2017, Sutrasthana, Chapter 11th Verse19, page no-116.
10. Charaka Samhita of Agnivesha, By Vaidya H.C.Kushwaha Edited with 'Ayurveda Deepika' Hindi Commentary, 2nd volume, Chaukhamba Orientalia, Varanasi. 2012, Chikitsasthana 2nd chapter 1st pada Verse 50, page no-52
11. Charaka Samhita of Agnivesha, By Vaidya H.C.Kushwaha Edited with 'Ayurveda Deepika' Hindi Commentary, 2nd volume, Chaukhamba Orientalia, Varanasi, reprinted edition 2016, Siddhisthana, Chapter 1st Verse 38-39, page no-953
12. Astanga Hridaya of Vagbhata, by Kaviraja Atrideva Gupta, edited by Vaidya Yadunandana Upadhyaya, Chaukhambha Prakashan Varnasi, reprinted edition 2017, Sutrasthana, Chapter 5th Verse 20-22, Page no-53-54
13. Charaka Samhita of Agnivesha, By Vaidya H.C.Kushwaha Edited with 'Ayurveda Deepika' Hindi Commentary, 2nd volume, Chaukhamba Orientalia,Varanasi. reprinted edition 2012, Siddhisthana, Chapter 1st Verse 7, page no-938
14. Charaka samhita of Agnivesha, By Vaidya H.C.Kushwaha Edited with 'Ayurveda Deepika' Hindi Commentary, 1st volume, Chaukhamba Orientalia, Varanasi Reprinted edition 2012, Sutrasthana Chapter 28th Verse 27, page no-477.
15. Charaka samhita of Agnivesha, By Vaidya H.C.Kushwaha Edited with 'Ayurveda Deepika' Hindi Commentary, 2nd volume, Chaukhamba Orientalia,Varanasi. Reprinted edition 2012, Chikitsasthana 2nd chapter 1st pada Verse 50, page no-52
16. Sushruta Samhita, Translated by Prof. K.R. Srikantha Murthy, Chaukhambha Orientalia, Varanasi, reprint edition 2010, Sutrasthana Chapter 45th Verse 114, page no-348

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