

**UPASHAYATMAKA EFFECT OF KUTAJADI KWATH GHANVATI IN
MADHUMEHA WSR TO TYPE 2 DIABETES MELLITUS- A
CLINICAL STUDY**

Dr. Seema Patley*¹, Dr. Aradhana Kande² and Dr. Rashmi Diwan³

¹P.G.Scholar, P.G. Department of Roga Nidana Evum Vikriti Vigyan, Shri N.P.A. Govt
Ayurvedic College Raipur, C.G.

²Lecturer, P.G. Department of Roga Nidana Evum Vikriti Vigyan, Shri N.P.A. Govt
Ayurvedic College Raipur, C.G.

³Lecturer, P.G. Department of Kayachikitsa, Shri N.P.A. Govt Ayurvedic College Raipur,
C.G.

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***Corresponding Author**

Dr. Seema Patley

P.G.Scholar, P.G.

Department of Roga Nidana

Evum Vikriti Vigyan, Shri

N.P.A. Govt Ayurvedic

College Raipur, C.G.

ABSTRACT

This research work was planned to evaluate the upashaytmaka effects of Kutajadi Kwatha Ghanvati in the management of Madhumeha and to project them socially. A total of 40 patients were selected and divided into two groups. Group A was treated with of Kutajadi Kwatha Ghanvati with luke warm water and group B was treated with of Kutajadi Kwatha Ghanvati with Triphala Kwath for 45 days. The study showed highly significant results in most of the parameters in both the groups. However, further trials with increased number of patients are needed to support the current observations.

KEYWORDS: Madhumeha, Kutajadi kwath Ghanvati.

INTRODUCTION

Prameha are a list of urinary disorders, especially characterized by profuse urination with several abnormal qualities due to imbalance of dosha. In Madhumeha the urine becomes like honey.^[1] Madhumeha is the terminal stage of Prameha. Prameha comprises 20 subtypes of disease with various physical and chemical changes in urine and is further classified into three groups i.e. Kaphaja Prameha^[10], Pittaja Prameha^[6] Vataja Prameha^[4] which are resembled very much with different stages of diabetes mellitus. Diabetes is disease in which the body

utilizes glucose abnormally due to an absolute or relative deficiency of insulin or resistance by body tissue to the action of insulin.^[2]

The clinical study is based on the classical explanation with scientific well designed research protocols, which enumerates the patients before to administer the trial drug to after effects in comparison. Madhumeha is widely regarded as a pandemic, with potentially disastrous consequences for human health and is most burning problem among various lifestyle disorders. Hence the study entitled “Study of Upashayatamka effect of Kutajadi Kwath Ghanvati in Madhumeha” was undertaken.

MATERIAL AND METHODS

Patients

For the present study, 30 diagnosed patients of Madhumeha (DM type 2) from the OPD and IPD of Shri Khudadad Doonga ji Govt. Ayurvedic Hospital Raipur (CG) were registered on the basis of signs and symptoms of Madhumeha as per Ayurvedic classics and modern medicine.

Inclusion criteria

1. Patients of either sex in the age group of 30-70 years.
2. Both obese and non-obese patients.
3. Duration of illness- not more than 3 years.
4. Habitat- both rural and urban areas will be selected.
5. Patients showing classical signs and symptoms of Madhumeha as below were included in the study.

Prabhuta Mutrata, Avila Mutrata^[3], Pipasadhikya^[4], Kshudhadhikya^[5] Karapadatala Daha^[6], Karapadatala Suptata, Alasya, Kantha Talu Shosha^[7], Daurbalya^[8], Swedadhikya^[9], Nidradhikya and Vibandha.^[10]

Criteria for diagnosis of DM by American Diabetic Association

1. Fasting blood sugar (FBS) >126 mg/dl up to 200 mg/dl or
2. Postprandial blood sugar (PPBS) >200 mg/dl up to 350mg/dl.

Exclusion criteria

1. Age below 30 years and above 70 years.
2. Sahaja Madhumeha (Type 1 DM) patients.

3. Drug induced Diabetes mellitus.
4. Patients with other severe systemic disorders.
5. Diabetes due to other hormonal disturbance like thyrotoxicosis, acromegaly, cushing syndrome etc.
6. Malignant and accelerated hypertensive.
7. Pregnant women and lactating mothers.
8. Fasting blood sugar below 126 mg/dl and above 200mg/dl and
9. Post prandial blood sugar below 200mg/dl and above 350 mg/dl.

Grouping- The registered 40 patients were divided into two groups-
 Group-A (20 patients)-Kutajadi Kwath Ghanvati with luke warm water
 Group-B (20 patients)-Kutajadi Kwath Ghanvati with triphala kwath.

POSODOGY

Group A

Patients in group A were treated with Kutajadi Kwath Ghanvati with luke warm water and instructed to follow diet and pathya plan as provided in Kutajadi Kwath Ghanvati was administered in a dose of 500mg,2 BD in the morning and evening on empty stomach (before 30 minutes of food) for 45 days.

Group B

Patients in group B were treated with Kutajadi kwath ghanvati with Triphala Kwath and instructed to follow diet and pathya plan as provided in Kutajadi Kwath Ghanvati was administered in a dose of 500mg,2 BD in the morning and evening on empty stomach (before 30 minutes of food) for 45 days.

Follow up-15 days of each group. After completion of therapy the patients were asked to come in every 15 days for 1 month.

CRITERIA OF ASSESSMENT

Subjective criteria

1.S.N.	Prabhuta Mutrata ³ (frequency)	Grade
A	3-5 times/Day, rarely at night	0
B	6-8 times/Day, 0-2 times/night	1
C	9-11 times/day, 3-4 times/night	2
d	>11 times/day, >4 times/night	3

2.S.N.	Avila Mutrata ^[4] (Turbidity)	Grade
A	Crystal clear fluid	0
B	Faintly cloudy or smoky (turbidity rarely visible)	1
C	Turbidity clearly present but news print easily read through test tube	2
D	News print can not be seen through test tube	3

3.S.N.	Kshudha Adhikya ⁵	Grade
A	No of main meals – 2	0
B	No.of main meals – 2-3	1
C	No.of main meals – 3-4	2
D	No.of main meals – >4	3

4.S.N.	Pipasadhikya ^[6]	Grade
A	Normal	0
B	Increased but frequency of drinking can be controlled	1
C	Increased with increased frequency	2
D	Very much increased with very frequent intake	3

5.S.N.	Kara pada daha ^[7]	Grade
A	No kara pada daha	0
B	Occasionally daha either hand or feet and disappear shortly	1
C	Continuous kara pada daha in both limbs	2
D	Continuous kara pada daha in both limbs and not tolerated	3

6.S.N.	Kara pada suptata ^[8]	Grade
A	No kara pada suptata	0
B	Occasionally suptata either hand or feet and disappear shortly	1
C	Continuous kara pada suptata in both limbs	2
D	Continuous kara pada suptata in both limbs and not tolerated	3

7.S.N.	Kantha talu shosha ^[9]	Grade
A	No ksntha talu shosha	0
B	Occasionally dryness of oral cavity and disappear just after taking simple water	1
C	Persistence of dryness of mouth and subsides after taking more quantity of water than usual.	2
D	Persistence of dryness of mouth and does not subsides even after taking more quantity of water.	3

8.S.N.	Dourbalya ^[10]	Grade
A	No daurbalya (can do routine exercise)	0
B	Occasionally noticed (can do moderate exercise without difficulty)	1
C	Periodically noticed (can do mild exercise with difficulty)	2
D	Continuously noticed (can not do even mild exercise)	3

9.S.N.	Alasya ^[11]	Grade
A	No Alasya (doing satisfactory work with proper vigor and in time)	0
B	Doing satisfactory work/ late initiation	1
C	Doing unsatisfactory work/late initiation	2
D	Don't want to work/ no initiation	3

10.S.N.	Vibandha ^[12]	Grade
A	Stool passes as per normal schedule	0
B	Slightly hard stool but passes normaly	1
C	Hard stool and not easy to pass,sometimes take purgative	2
D	Hard stool and take spurgative daily	3

11.S.N.	Nidra Adhikya ^[13]	Grade
A	Normal sleep 6-8 hrs./day	0
B	Sleep upto 8 hrs/day with anga gaurav	1
C	Sleep upto 8 hrs/day with anga gaurav and jrimbha	2
D	Sleep upto >10 hrs/day with tandra and klam	3

OBJECTIVE

Parameters-The following parameters were assessed objectively-FBS,PPBS, and Urine Sugar.

Assessment of Overall Effect of Therapy

The assessment of overall effect of therapy was done by two steps

- By observing clinical improvement in signs and symptoms before and after treatment.
- By comparing F.B.S., P.P.B.S., Urine sugar before and after treatment.

Criteria	Grading
Well Responded	>75% improvement
Moderately Responded	>50% to 75% improvement
Poorly Responded	>25 to 50% improvement
Not Responded	Negligible ($\leq 25\%$) improvement

OBSERVATION

The observation made on 40 patients of Madhumeha (Type2 DM) showed that maximum number of patients i.e. 47.5% belonged to 51-60 years age group, 62.5% were females, 97.5% were belonged to Hindu Community, 30% were Graduate, 100% were married, 72.5% were found to be Middle class, 52.5% patients were taking to Mixed diet and 47.5% patients were vegetarian, 47.5% patients were suffering from less than 3 years, 60% patients have present negative family history, 35.5% patients reported with Mandagni, 80% were addicted to Tea coffee, 45% patients had Krura Koshta, 47.5% patients having Kapha-Pitta Prakriti, 52.5% were having Madhyam Sara, 65% having Madhyam Samhanan, 50% patients having

Madhyam Pramana, 67.5% patients were having Madhyam Satmya, 82.5% patients were having Madhyam Satva, 42.50% patients were having Madhyam Abhyavaharana Shakti, 52.5% patients were having Madhyam jarana shakti, 72.50% patients were having Hina Vyayama Shakti and 7.5 % were Pravara Vyayama Shakti.

70% patients in the study were taking to Madhura Rasa as dominant Rasa and 50 % Amla rasa. In the Aharaja Nidana 87.5 % patients were taking Gud or Gud vikriti. In Viharaja Nidana Avyayama is the main cause with the percentage of 72.5%.

In Manasa Nidana, Chinta is the main cause with the percentage of 55%. Chief complaints Prabhuta Mutrata 72.5%, Avila Mutrata 70%, Kshudhadhikya 62.5%, Pipasadhikya 72.5%, Karapada daha 62.5%, Karapada Suptata 55%, Alasya 75%, Daurbalya 87.5%, Kantha Talu Shosha 62.5%, Nidradhikya 52.5% were seen in patients. In Srotodushti 77.5% were found Mutravaha Srotodushti and 72.5% were found Medavaha srotodushti.

Effect of therapy on subjective parameters- As regards to subjective parameters maximum patients were found improved which has been critically assessed in the language of percentage. The improvement in cardinal signs and symptoms in Group A & Group B is 66% & 69% in Prabhuta Mutrata, 45.45% & 54.09% in Avila Mutrata, 54.54% & 60.86% in Pipasadhikya, 50% & 56.52% in Kshudhadhikya, 45% & 57.14% in Kanthatalushosha, 47.36% & 57.14% in Karapada Daha, 40% & 66.66% in Karapada Suptata, 52.63% & 61.90% in Dourbalya, 29.41% & 60.86% in Alasya, 52.17% & 59.09% in Vibandha, 28.57% & 31.25% in Nidradhikya among trial group A & trial Group B respectively.

The statistical analysis with suitable parameters shows that in group A results were highly significant ($p < 0.01$) for the subjective parameters except Alasya, Nidradhikya & Karapada Suptata for which the result was significant ($p < 0.05$). In group B all the subjective parameters showed highly significant except Nidradhikya for which the result was significant.

This shows the cases achieved more benefit by trial Group B than trial Group

Effect of therapy on objective parameters- The study was evaluated in percentage against different objectives. The percentage being 18.96% & 23.10% in FBS, 16.87% & 20.08% in PPBS, 41.17 % & 47.36 % in urine sugar trial Group A and trial Group B respectively. This shows the cases achieved more benefit in trial Group B than Trial Group A.

All the objective parameters of both groups showed highly significant.

Overall effect of therapy- The clinical assessment of results shows that in Group A maximum patients 12(60%) were mild improvement, 6(30%) patients showed mild improvement, 2(10%) patients were markedly improved and 0% was unchanged. Whereas in group B, 9(45%) patients were moderately improved, 7(35%) patients were showed mild improvement and 4(20%) patients were showed Marked improvement. Defining to the benefits assessed the Group B has elicited more than Group A. Hence it can be said that Kutajadi Kwath Ghanvati with Triphala Kwatha play more important role in the management of Madhumeha.

DISCUSSION

On The Basis of Rasa

Kutajadi Kwath Ghanvati contains 100% of Kashaya Rasa, 85.71% of Tikta Rasa, 42.85% of Katu Rasa, 28.57% of Amla and Madhura Rasa each and 0% of Lavana Rasa. Thus Kashaya, Tikta and Katu Rasa are the main acting Rasa in the Kutajadi Kwath Ghanvati.

If we analyze the percentage of Rasa inspite of the presence of Lavanavarjita Pacharasa Yukta Aushadhi Dravya like Amalaki and Haritaki. The formulation is dominated by Kashaya, Tikta and Katu Rasa because of the presence of Daruharidra, Musta, Kutaja and Asana. It is evident that Kaphapitta Nashaka Kriya is possible from this Polyherbal formulation.

Kashaya Rasa is Prithavi and Vayu Mahabhuta Pradhana and possess Ruksha, Laghu Guna. (Cha.Su.26/40). It is said to be Kleda, Medo Vishoshna by Astang Hridaya. It also have Lekhana property. Tikta Rasa is Vayu and Akash Mahabhuta Pradhan and posses Laghu, Ruksha Guna. It is said to be Meda, Kleda and Kaphashamaka. Katu Rasa is Vayu and Agni Mahabhuta Pradhana and posses Laghu, Ruksha Guna. It is said to be Sneha, Meda & Kleda Upshoshaka and Kaphashamaka.

On The Basis of Guna

The formulation Kutajadi Kwath Ghanvati have 85.71% of Laghu Guna, 100% Ruksha Guna, 0% of Guru Guna and 14.28% of Sheeta Guna. Laghu Guna develops Laghuta in the body. It is Agin, Vayu Mahabhuta Pradhana and has Lekhana property (su.su 41/9). Ruksha Guna is

Vayu Mahabhuta Pradhana (A.S.Su.17).It have Kaphashamaka & Snigdhta Nashaka property.

On The Basis of Vipaka

57.14 % drugs have Katu Vipaka and 42.85% of MadhuraVipaka. Katu Vipaka inhances Agni and facilitates Aam Pachana leading to proper nourishment of Dhatus.

On The Basis of Veerya

42.85% drugs have Sheeta Veerya and 57.14% drugs have Ushna Veerya. This formulation has Ushna Veerya dominance which is Agni Mahabhuta Pradhana. Ushna Veerya is Kapha Vata Shamaka. (A.H.Su.9/19) The drugs in this formulation Kutajadi Kwath Ghanvati possess Ushna and Sheeta Veerya in the ratio 4:3 which is quite supportive for not only for the reduction of Kleda and Lasika but also for maintaining the normal homeostatic nature of Vata Dosha by amplifying Tridoshahara and Medohara effect and thus break up the vicious cycle of pathology of the disease Madhumeha. At the same time, it promotes the formation of Prashasta Dosha, Dhatu and thus restores Dhatu Samyatva.

On The Basis of Doshagnata

Kutajadi Kwath Ghanvati has Kashaya, Tikta Rasa, Laghu, Ruksha Guna, Ushna Veerya and Kaphavata shamaka properties. Prameha is a Kapha Pradhna Vyadhi. Hence Madhumeha is a Vata Pradhana Tridoshaja Vyadhi.Vata is most dominant Dosha in Madhumeha. Most of the drugs of this formulation having Tikta Rasa, Kashaya Rasa, Katu Vipaka and Ushna Veerya. According to Dosha shamana properties 85.71% Kaphashamaka, 100%drugs are Pittashamaka and 42.85% drugs Are Vatashamaka. So this medicine is effective on Tridosha. By virtue of all this factors it has opposite action on Kapha Dosha which is the main.

Effect On Dushya

Meda, Mamsa and Kleda are the basic pathological factor in Madhumeha due to Sharir shaithilya and Agnimandya. These Dhatus have Guru, Snigdha properties. Kutajadi Kwath Ghanvati contains Kashaya, Tikta and Katu Rasa and Sneha Meda, Kleda Upshoshana properties. Kashya Rasa has Kleda, Meda Vishoshana and Lekhana Karma. Maximum drugs are Agni, Vayu, Akash Mahabhuta dominant which are opposite to Jala and Prithvi dominant Kapha, Meda, Mamsa and Kleda. Hence the drugs are effective in decreasing excess Meda, Mamsa and Kleda.

Effect of Formulation on Agni

Further Madhumeha is a metabolic disease, Dhatvagnimanday janita Vyadhi. This metabolic disease demands Meda dhatvagni vriddhi. When any Agni is not properly works then Dhatus are not produced properly. Drugs having Deepana & Pachana Properties and Katu Rasa, Ushna Veerya in the formulation encounters Dhatvagnimandya & help in Ama Pachana, thereby alleviates Aparipakwa and Ama. That in turn helps to form the Dhatus in proper proportion with Samyaka qualities. Their by it ensues Sarvadhātu Poshana thereby pacifies Daurbalya. Pramehahara property of the ingredients of trial drug helps in alleviating the hyperglycemia

Probable Mode of Action on Srotasa

In Madhumeha there is Sanga and Atipravritti type of Srotodushti. By Srotoshodhaka Karma it clears the Srotovibandha and corrects Medovaha Srotodushti.

Ingredients of Kutajadi Kwath Ghanvati^[14]

Sanskrit name	Botanical name	Part used	Proportion
Kutaja	Holarrhena antidysenterica	Stem bark	1 part
Asana	Pterocarpus marsupium	Heart wood	1 part
Daruharidra	Berberis aristata	Stem	1 part
Mustaka	Cyperus rotundus	Rhizome	1 part
Haritaki	Terminalia chebula	Pericarp	1 part
Amalaki	Emblica officinalis	Pericarp	1 part
Vibhitaki	Terminalia belerica	Pericarp	1 part

Stastical Analysis Showing The Effects Of Therapy On Subjective And Objective Criteria In Madhumeha Of Group A-

S.N.	Symptoms	Mean BT	Mean AT	M.D.	S.D.	S.E.	% of relief	t-value	p-value	Remark
1	PrabhutaMutrata	1.350	.550	.800	.6155	.137	66.66	5.812	.000	HS
2	Avila mutrata	1.100	.600	.500	.606	.135	45.45	3.684	.002	HS
3	Kshudhadhikya	1.200	.450	.750	.716	.160	50	4.682	.000	HS
4	Pipasadhikya	1.100	.500	.600	.598	.133	54.54	4.485	.000	HS
5	KarapadaDaha	1.100	.550	.550	.604	.135	45	4.067	.001	HS
6	Karapadasuptata	1.000	.650	.350	.670	.150	40	2.333	.031	S
7	Daurbalya	1.050	.600	.450	.510	.114	42.85	3.943	.001	HS
8	Kanthatalushosha	.950	.450	.500	.688	.153	52.63	3.249	.004	HS
9	Alasya	.900	.650	.250	.444	.099	29.41	2.517	.021	S
10	Vibandha	1.150	.550	.600	.502	.112	52.17	5.339	.000	HS

11	Nidradhikya	0.800	.550	.250	.444	.099	28.57	2.517	.021	S
12	FBS	157.900	132.950	24.950	8.531	1.907	18.96	13.079	.000	HS
13	PPBS	237.750	206.300	31.450	11.184	2.501	16.87	12.575	.000	HS
14	Urine sugar	1.000	.473	.526	.310	.071	41.17	7.385	.000	HS

Stastical Analysis Showing The Effects Of Therapy On Subjective And Objective Criteria In Madhumeha Of Group B-

S.N.	Symptoms	Mean BT	Mean AT	M.D.	S.D.	S.E.	%of relief	t-value	p-value	Remark
1	Prabhuta Mutrata	1.200	0.350	0.850	0.670	0.150	69	5.667	.000	HS
2	Avila mutrata	1.250	0.600	0.650	0.587	0.131	54.16	4.951	.000	HS
3	Kshudha Adhikya	1.200	0.550	0.650	0.587	0.131	56.52	4.950	.000	HS
4	Pipasadhikya	1.150	0.450	0.700	0.470	0.105	60.86	6.658	.000	HS
5	Karapada Daha	1.100	0.450	0.650	0.587	0.131	57.14	4.951	.000	HS
6	Karapadasuptata	0.850	0.350	0.500	0.688	0.153	66.66	3.249	.004	HS
7	Daurbalya	1.050	0.400	0.650	0.489	0.109	61.90	5.940	.000	HS
8	Kanthatalushosha	1.000	0.450	0.550	0.510	0.114	57.14	4.819	.000	HS
9	Alasya	1.150	0.450	0.700	0.571	0.127	60.86	5.480	.000	HS
10	Vibandha	1.100	0.450	0.650	0.489	0.109	59.09	5.940	.000	HS
11	Nidradhikya	0.800	.500	.300	.470	.105	31.25	2.854	.010	S
12	FBS	161.300	124.000	37.300	7.767	1.736	23.10	21.477	.000	HS
13	PPBS	237.750	190.050	47.700	9.564	2.138	20.08	22.303	.000	HS
14	Urine sugar	0.973	0.473	0.500	0.440	0.101	47.36	4.943	.000	HS

Notations Used-BT-Before Treatment , AT-After Treatment, SD-Standard Deviation , SE-Standard Error, t-value- Students t-test value , p-value-Probability of significance, HS-Highly Significant S-Significant, NS- Not Significant

COMPARISION OF OVERALL EFFECT OF RESULTS OF GROUP A & GROUP B

S.N	RESULT	GROUP A		GROUP B	
		No. of Patients	Percentage	No. of Patients	Percentage
1	Marked Improved (>75% Improvement)	2	10%	4	20%
2	Moderately Improved (>50% to 75% Improvement)	6	30%	9	45%
3	Mildly Improved (>25% to 50% Improvement)	12	60%	7	35%
4	Not Responded (<25% Improvement)	0	0%	0	0%

CONCLUSION

Use of Kutajadi Kwath Ghanavati in Prameha is a example of Vyadhi Viprita Aushadha Upashaya.

- The Upashayatmaka effect is based upon Kasaya, Tikta Rasa, Usna Virya Kaphavatahara and Pramehaghna properties of the drugs along with Rasayana effect of drugs like Amalaki & Haritaki
- The mode of the treatment in Prameha should be Kaphahara, Medohara, Apatarpanakaraka and Kleda Nashaka. Drugs in Kutajadi Kwath Ghanvati has Kashaya, Tikta Rasa, Laghu, Ruksha Guna, Ushna Veerya and Kaphahara properties. Due to all these properties it is helpful in reducing blood glucose level and reliving symptoms of diabetes.
- Patients with middle socio-economic status were affected more.
- Tea/coffee intake was seen as a daily habit in maximum patients of Madhumeha.
- In present study housewives were seen to be more affected due to intake of energy dense diet and less physical activity.
- On comparing overall effect of therapies of both the groups , significant difference was found which showed that Kutajadi Kwath Ghanvati with Triphala Kwath Anupana has better results.
- The clinical trial and assessment reveals the formulation successfully reduced FBS, PPBS, and Urine sugar levels within a short period of the treatment which signifies role of glycemic control by the Polyherbal formulation – Kutajadi Kwath Ghanvati.
- Overall effect reveals that, the formulation is highly significant during treatment period of 45 days. So it justifies the fact of being anti diabetic effect of drug during the treatment period.
- During the study no adverse effects were observed.

REFERENCING

1. Sushruta Samhita, Vol-I, Chikitsa Sthana 12/6 Ed. By Kaviraj Ambikadutta Shahtri, Chaukhambha Sanskrit Samsthana, Reprint, 2012.
2. Astang Hridaya, Dr.Bramhanand Tripathi, Nidana Sthana 10/1, Chaukhambha Sanskrit Pratisthan, Delhi, Reprint edition, 2007.
3. Prabhuta Mutrata, Madhava Nidana, 33/6, Commentary by Sri Vijayarakshita and Srikanthadatta, 31st edition. Varanasi: Chaukhambha Sanskrit Sansthana, 2002.
4. Avila Mutrata Mutrata, Madhava Nidana, 33/6, Commentary by Sri Vijayarakshita and Srikanthadatta, 31st edition. Varanasi: Chaukhambha Sanskrit Sansthana, 2002.
5. Kshudhadhikya, Agnivesha, Charaka Samhita, Nidana Sthana, 4/51, edited by Vaidya Jadavaji Trikamji Acharya. 5th ed. Varanasi: Chaukhamba Sanskrit Sansthan, 2001.

6. Pipasadhikya, Sushruta Samhita, Nidana Sthana, 6/5, Commentary of Kaviraja Ambikadatta Sastri (Part I and II), 14th ed. Varanasi: Chaukhamba Sanskrit Sansthana, 2001.
7. Karapada daha, Sushruta Samhita, Nidana Sthana, 6/6, Commentary of Kaviraja Ambikadatta Sastri. 14th ed. Varanasi: Chaukhamba Sanskrit Sansthana, 2001.
8. Karapad Suptata, Agnivesha, Charaka, Dridhabala, Charaka Samhita, Nidana Sthana, 4/47, edited by Vaidya Jadavaji Trikamji Acharya. 5th ed. Varanasi: Chaukhamba Sanskrit Sansthan, 2001.
9. Kantha talu shosha, Agnivesha, Charaka, Dridhabala, Charaka Samhita, Nidana Sthana, 4/47, edited by Vaidya Jadavaji Trikamji Acharya. 5th ed. Varanasi: Chaukhamba Sanskrit Sansthan, 2001.
10. Daurbalya, Agnivesha, Charaka, Dridhabala, Charaka Samhita, Nidana Sthana, 4/48, edited by Vaidya Jadavaji Trikamji Acharya. 5th ed. Varanasi: Chaukhamba Sanskrit Sansthan, 2001.
11. Alasya, Agnivesha, Charaka, Dridhabala, Charaka Samhita, Nidana Sthana, 4/47, edited by Vaidya Jadavaji Trikamji Acharya. 5th ed. Varanasi: Chaukhamba Sanskrit Sansthan, 2001.
12. Vibandha, Madhava, Madhava Nidana, 34/3, Commentary by Sri Vijayarakshita and Srikanthadatta, 31st ed. Varanasi: Chaukhambha Sanskrit Sansthana, 2002.
13. Nidradhikya- Sushruta, Sushruta Samhita, Nidana Sthana, 6/5, Commentary of Kaviraja Ambikadatta Sastri (Part I and II), 14th ed. Varanasi: Chaukhamba Sanskrit Sansthana, 2001.
14. Vrinda Madhava Parnama Siddhayoga, Pramehadhikar 35/18, Vinayak Ganesh Apte, Ananda Ashram Mudranalaya, Print year, 1943.