### **Clinical Research**

# A comparative clinical study of *Nyagrodhadi Ghanavati* and *Virechana Karma* in the management of *Madhumeha*

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#### Abstract

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Diabetes mellitus is a common chronic metabolic disorder prevalent all over the world.Virechana is the Shodhana procedure that is specific for the elimination of vitiated *Pitta* and *Kapha doshas*.Thus, in the present study, the Virechana process has been selected prior to the administration of *Shamana* drug. *Nyagrodhadi churna* is mentioned in *Chakradatta*, which is modified into Ghana form for easy administration and dose maintenance. The present study was conducted in two groups: Group A, *Nyogrodhadi Ghana vati* (*Shamana* therapy) and Group B, *Virechana* and *Nyogrodhadi Ghana vati* (combined therapy). A total of 42 patients were registered for the present study, in which 34 patients completed the and eight patients were dropouts. After evaluating the total effect of the therapies, it was observed that the *Virechana* and *Nyagrodhadi Ghanavati* (combined therapy) provided better relief in the patients of *Madhumeha* in comparison with *Nyagrodhadi Ghanavati* (*Shamana* therapy) alone.

Key words: Madhumeha, Prameha, Diabetes mellitus, Shodhana, Virechana, Shamana

#### Introduction

Diabetes mellitus (DM) is defined as a disturbance of intermediary metabolism, manifesting as a chronic sustained hyperglycemia primarily due to either an absolute or relative lack of insulin.<sup>[1]</sup> Type II DM appears to be prevalent at "epidemic" levels in many places. In areas of Australia, 7% of the people over 25 years old have DM (mostly type II).<sup>[2]</sup> India has already become the " Diabetes Capital" of the world, with over 3 crore affected patients, which is a tip of iceberg.<sup>[3]</sup> It has turned out to be the biggest "silent killer" today in the world. Type I DM is nearer to Dhatuapakarshanajanya Madhumeha while the type II DM resembles Avaranajanya Madhumeha. Acharya Sushruta has mentioned that in Madhumeha, the vitiated *doshas* remain in the lower part of the body owing to the inefficiency of various Dhamanis, i.e. vessels.<sup>[4]</sup> Therefore, in the present study, Virechana process has been selected prior to the administration of Shamana drug. Nyagrodhadi churna is mentioned in Chakradatta and is modified into ghanvati for easy administration.<sup>[5]</sup> In this formulation, many drugs like Vata, Udumber, Aswatha, Bijaka, Amra, Jambu, Arjuna, Dhava, Paribhadra, Meshashringi, Chitrak, Karanja, Triphala, Kutaja, Bhallataka, etc. are Madhumehahara, indicated by Acharyas. Amalaki is an immunomodulator along with anti-hyperglycemic effect, and thus may be used in autoimmune DM. Similar effects are found in Bhallataka, Haritaki, Mulethi, Madhuka, Dhava, etc.

Address for correspondence: Dr. Alankruta R. Dave, Associate Professor, Department of Kayachikitsa, IPGT & RA, Gujarat Ayurved University, Jamnagar, India. E-mail: alankruta@yahoo.com The drugs like *Bijaka*, *Arjuna*, *Chitraka*, *Patola*, *Meshashringi*, *Amalaki*, *Haritaki*, etc. have a hypolipidemic action.

#### **Aims and Objectives**

- 1. To study the etiopathogenesis of Madhumeha (DM).
- 2. To evaluate the role of *Shamana* drug in the management of *Madhumeha*.
- 3. To compare the effect of *Shodhana* and *Shamana Chikitsa* in the management of *Madhumeha*.

#### **Materials and Methods**

The present study included patients, various investigations, selected drug and diet.

#### Criteria for selection

Patients having classical signs and symptoms of *Madhumeha* (DM) were selected randomly from the OPD or admitted in the IPD of *Kayachikitsa* and *Panchakarma* department, I.P.G.T. and R.A., Jamnagar hospital, irrespective of age, sex, caste, religion, occupation, etc. The known cases of DM patients were also selected for the study after confirming by various investigations.

#### **Exclusion criteria**

- 1. Patients of Insulin dependant diabetes mellitus (IDDM).
- 2. Patients complicated with any cardiac problem.
- 3. Diabetes due to endocrinopathies, e.g. phaeochromocytoma, acromegaly, Cushing's syndrome, hyperthyroidism, etc.

- 4. Drug- or chemical-induced DM, e.g. glucocorticoids, thyroid hormone, thiazides, phenytoin, etc.
- Certain genetic syndromes sometimes associated with DM, e.g. Down's syndrome, Klinefelter's syndrome, Turner's syndrome, etc.
- 6. Patients suffering from any severe systemic disease.

#### Investigations

Routine hematological examinations like Hb% (Haemoglobin), TLC(Total Leucocyte count), DLC (Differential Leucocyte count), ESR (Erythrocyte sedimentation Rate), and PCV (Packed Cell Volume) were performed to rule out any other pathological condition.

#### **Biochemical examinations**

- Blood sugar: Fasting and post-prandial.
- Lipid profile: Serum cholesterol, serum triglyceride, serum S. HDL (High density lipoprotein), LDL (Low density lipoprotein), VLDL (Very low density lipoprotein)
- Serum insulin: Fasting.
- Blood urea and serum creatinine: To assess the functional status of the kidney.

Urine: Routine and microscopic examination.

Stool: Routine and microscopic examination.

These investigations were carried out in all the patients before treatment and after completion of treatment.

#### Plan of study

The selected patients were categorized randomly into the following two groups:

- Nyagrodhadi Ghanavati (Shamana Yoga) group: Twenty-one patients of Madhumeha were included in this group and were given Nyagrodhadi Ghanavati at a dose of two vati thrice daily with lukewarm water before taking meals for a duration of 30 days.
- 2) Virechana and Nyagrodhadi Ghanavati (combined therapy) group: Twenty-one patients of Madhumeha were registered in this group. Before selecting the patients for Virechana, they were examined for their general condition as well as to determine whether there was any disorder in which Virechana therapy was contraindicated. In this group, firstly, Virechana was given and, after that, Nyagrodhadi Ghanavati was given with the same schedule as in the Shamana therapy group.

#### Criteria for assessment

After completion of the treatment, the results were assessed by adopting the following criteria:

- Improvement in signs and symptoms of disease on the basis of the symptoms score.
- Fasting blood Sugar (F.B.S.) and Post prandial blood sugar (P.P.B.S.) levels.
- Serum cholesterol.
- Urine sugar.

#### Assessment of the overall effect of therapy

Control of the disease	100% relief
Marked improvement	≥75% relief
Moderate improvement	$\geq$ 50% up to 74% relief
Mild improvement	$\geq$ 25% up to 49% relief
No improvement	≤25% relief

#### Table 1: Status of patients

Groups	No. of	patients	Total	Percentage		
	Shamana Combined					
	group	group				
Total registered	21	21	42	100		
Completed	18	16	34	80.95		
Dropouts	3	5	8	19.04		

#### **Observations and Discussion**

The Table 1 shows total of 42 patients of Madhumeha were selected in this study.

#### **General observations**

A majority of the patients in this study, i.e. 35.71%, belonged to the age group of 51–60 years. These findings were concordant with the recent statistical data, which shows that the onset of Type II DM after the 40s is most common.

A majority of the patients, i.e. 85.71%, were living in urban areas and 14.28% of the patients were from rural areas. This data is concordant with the recent W.H.O. Annual Report (2000) that the prevalence of DM is greater in the urban than in the rural areas. After the housewives, i.e. 35.71%, the businessmen (30.95%) were maximum in number. The figure shows that disease occurs in those classes who usually lead a sedentary lifestyle and eat more than what is required. 59.52% of the patients confirmed a family history of *Madhumeha*, which shows that genetic predisposition is more important in type II DM.

A majority of the patients, i.e. 40.47%, were suffering from the disease for >10 years and were followed by 23.80% patients with chronicity of 1–5 years. The maximum number of patients, i.e. 38.09%, were of Vataj-Kaphaja Prakriti. The majority of the patients, i.e. 76.19%, had Madhyama Sara, followed by Madhyama Samhanana (90.47%) and Madhyama Satva (85.71%). The maximum number of patients, i.e. 57.14%, were found to have Vishamagni, followed by 28.57% having Samagni [Figure 1]. These findings indicate the dominancy of Vata Dosha in the Samprapti of Madhumeha. It was found that maximum patients i.e 58.45% were taking katu-tikta and kashaya rasa while 54.76% were taking Dadhi which were the predominant nidanas [Figure 2]. Among the Chief complaints found, maximum patients reported Karapadataladaha, kshudhadhikya and trishnaadhikya ( 69.04%) each [Figure 3].

#### **Effect of Therapies**

Group I-Nyagrodhadi Ghanvati (Shamana group)

# Effect of Nyagrodhadi Ghanavati on chief complaints

The Table 2 reveals that the Nyagrodhadi Ghanavati group provided a statistically highly significant (P < 0.001) relief in Prabhuta Mutrata by 78.94%, Avila Mutrata by 71.42%, Kshudhadhikya by 73.17% and Trishnadhikya by 77.14%, whereas the relief obtained in Kara-pada-tala-daha was 83.33%, which was statistically significant (P < 0.001). On associated signs and symptoms, it provided statistically highly significant relief (P<0.001) in Alasya (67.21%), Daurbalya (84.61%), Atisweda (79.31%), and Kara-pada-supti (82.97%) [Table 3].

The therapy showed 1.67% relief in fasting blood sugar, which

was statistically insignificant (P < 0.10), whereas it showed no relief in the values of post-prandial blood sugar [Table 4]. In shamana group, 44.44% patients were found markedly improved and 55.55% patients were moderately improved [Table 5].

The combined therapy provided statistically highly significant relief (P < 0.001) in *Prabhuta Mutrata* (90.24%), *Trishnadhikya* 



Figure 1: General observations

(87.17%) and Kshudhadhikya (83.33%), Avila Mutrata (88.88%) and Kara-pada-tala Daha (88.09%) [Table 6]. The therapy provided statistically highly significant (P<0.001) relief in Alasya (79.62%), Daurbalya (86.66%), Ati-sweda (73.58%), Kara-pada-supti (91.30%) [Table 7].

The therapy provided statistically non-significant relief





Table 2: Effect of Nyagrodhadi Ghanavati on chief complaints							
Signs and Symptoms	Mean Score		% Relief	S.D. (±)	S.E. (±)	'ť'	P value
	B.T.	A.T.					
Prabhuta Mutrata (n=16)	2.37	0.50	78.94	0.90	0.22	8.30	<0.001
Avila Mutrata (n=4)	1.75	0.50	71.42	0.95	0.47	2.61	<0.05
<i>Kshudhadhikya</i> (n=15)	2.73	0.73	73.17	0.88	0.22	8.75	<0.001
<i>Trishnadhikya</i> (n=15)	2.33	0.53	77.14	1.01	0.26	6.87	<0.001
<i>Kara-Pada-Tala Daha</i> (n=15)	2.40	0.40	83.33	0.80	0.20	9.60	<0.001

#### Table 3: Effect of Nyagrodhadi Ghanavati on associated symptoms

Associated Signs and Symptoms	Mean score		% Relief	S.D. (±)	S.E. (±)	'ť'	P value
	B.T.	A.T.					
Alasya (n=18)	3.38	1.11	67.21	0.76	0.18	12.63	<0.001
Daurbalya (n=16)	2.43	0.37	84.61	0.89	0.22	9.17	<0.001
<i>Ati-sweda</i> (n=18)	3.22	0.66	79.31	0.76	0.18	14.10	<0.001
<i>Kara-pada-supti</i> (n=17)	2.76	0.47	82.97	0.70	0.17	13.37	<0.001
Purisha Baddhata (n=11)	2.18	1.27	41.66	1.04	0.31	2.88	<0.01
Aruchi (n=14)	2.50	1.78	28.57	0.82	0.22	3.23	<0.01
Shula (n=14)	2.28	1.42	37.50	1.01	0.27	3.16	<0.001
Shrama-Shwasa (n=13)	2.06	0.46	77.77	0.65	0.18	8.95	<0.001
<i>Pindiko-udveshatan</i> (n=18)	2.77	0.27	90.00	0.76	0.17	13.93	<0.001
Ati-nidra (n=16)	2.31	0.56	72.97	0.47	0.11	14.10	<0.001
Libido (n=11)	2.27	1.63	28.00	0.92	0.27	2.28	<0.01

#### Table 4: Effect of Nyogrodhadi Ghanavati on biochemical values

Biochemical Values	Mean score		% Relief	S.D. (±)	S.E. (±)	'ť'	P value
	B.T.	A.T.					
Blood Sugar							
Fasting (n=18)	176.05	173.11	1.67	41.10	9.68	0.30	<0.10
Postprandial (n=18)	232.22	245.72	3.94	80.54	18.98	-0.48	-
S. Cholesterol (n=18)	196.27	188.27	2.23	23.80	5.61	0.78	<0.02

Table 5: Total effect of Nyagrodhadi Ghanavati on	
18 patients of Madhumeha	

Results	No. of patients	Percentage
Controlled	00	00
Markedly Improved	08	44.44
Improved	10	55.55
Unchanged	00	00



GroupII-Combined group

Table 6: Effect of Combined therapy on chief complaints							
Signs and Symptoms	Mean score		% Relief	S.D. (±)	S.E. (±)	't'	P value
	B.T.	<b>A.T.</b>					
Prabhuta Mutrata (n=16)	2.56	0.25	90.24	0.70	0.17	13.13	<0.001
Avila Mutrata (n=07)	1.28	0.14	88.88	0.37	0.14	8.00	<0.001
<i>Kshudhadhikya</i> (n=16)	2.62	0.43	83.33	0.63	0.16	13.35	<0.001
<i>Trishnadhikya</i> (n=16)	2.43	0.31	87.17	0.50	0.12	17.00	<0.001
<i>Kara-Pada-Tala Daha</i> (n=16)	2.62	0.31	88.09	0.70	0.17	11.35	<0.001

Table 7: Effect of combined therapy on associated symptoms							
Associated Signs and Symptoms	Mean	score	% Relief	S.D. (±)	S.E. (±)	'ť'	P value
	B.T.	A.T.					
Alasya (n=16)	3.37	0.68	79.62	0.94	0.23	11.35	<0.001
Daurbalya (n=16)	2.56	0.37	85.36	0.65	0.16	13.35	<0.001
Ati-sweda (n=16)	3.31	0.81	73.58	0.72	0.18	13.40	<0.001
<i>Kara-pada-supti</i> (n=16)	2.80	0.31	91.30	0.71	0.17	14.60	<0.001
Purisha Baddhata (n=12)	2.33	0.66	71.42	0.88	0.25	6.50	<0.001
Aruchi (n=16)	2.62	1.31	50.00	0.60	0.15	8.71	<0.001
Shula (n=12)	2.25	0.75	66.66	0.79	0.23	6.51	<0.001
<i>Shrama-Shwasa</i> (n=15)	2.33	1.06	54.28	0.45	0.11	10.71	<0.001
<i>Pindiko-udveshatan</i> (n=16)	2.93	0.31	89.36	0.61	0.15	16.95	<0.001
Atinidra (n=16)	2.62	0.56	78.57	0.99	0.24	8.26	<0.001
Libido (n=11)	1.45	0.81	37.5	0.52	0.15	3.46	<0.001

Table 8: Effect of combined therapy on biochemical values							
Biochemical Values	Mean	Mean score		S.D. (±)	S.E. (±)	't'	P value
	B.T. A.T.						
Blood Sugar							
Fasting (n=16)	250.87	225.18	10.23	62.53	15.63	1.63	<0.10
Postprandial (n=15)	323.00	297.53	6.43	82.03	21.18	0.98	<0.10
S. Cholesterol (n=16)	203.18	204.25	-1.96	15.59	3.89	-1.02	-

Table 9: Total effect of combined therapy on 16patients of Madhumeha							
Results	No. of patients	Percentage					
Controlled	00	00					
Markedly improved	11	68.75					
Improved	05	31.25					
Unchanged	00	00					

(P < 0.10) in the fasting blood sugar level (10.53%) and postprandial blood sugar (6.43%) level [Table 8].

In this group, 68.75% of the patients were found to be markedly improved and 31.25% of the patients were found to be moderately improved. No patient was assessed as controlled and mild improved and unchanged in this group [Table 9].

Acharya Charaka has classified Prameha into two types, i.e.

Sthula Pramehi and Krisha Pramehi.<sup>[6]</sup> He has advocated Samshodhana in Sthulapramehi, whose doshas have aggravated, and in patients having sufficient bala (strength). Hence, here, Virechana Karma is selected for such types of patients. Also, as said by Acharya Vagbhatta, there are no chances of vititation of doshas after doing Samshodhana.<sup>[7]</sup>

#### Probable mode of action

#### Nyogrodhadi Ghana Vati

The ingredients of Nyagrodhadi Ghana Vati are having Tikta Rasa (32.14%), Kashaya Rasa (75%), Katu Rasa (35.14%), Madhura Rasa (42.85%), Amla Rasa (14.28%), Laghu Guna (60.07%), Ruksha Guna (64.42%), Tikshna Guna (17.85%), Snigdha Guna (21.42%), Guru Guna (39.28%), Sara Guna (7.14%), Mrudu Guna (3.57%), Ushna Virya (42.85%), Sheeta Virya (57.14%), Madhura Vipaka (35.71%), Katu Vipaka (64.28%), Kapha-Vatashamakata (25%), Kapha-Pittashamkata (39.28%) and Vata-Pittashamakata (21.42%).

In Nyagrodhadi Ghana Vati, Tikta-Katu-Kashaya Rasa, Laghu-Ruksha-Tikshna Guna, Ushna Virya and Katu Vipaka might have corrected the Kapha Dushti. Along with this, it contains the Tikta Rasa, Sheeta Virya and Madhura Vipaka, which might have corrected the vitiation of Pitta. In this way, this preparation acted on Kapha-Pitta and also Kaphavargiya Dushyas. Thus, it provided significant relief in the disease Madhumeha. The alleviation of Kapha and Pitta also helped to remove the obstruction (Avarana) to the path of Vata, thereby alleviating its Dushti.

#### Probable mode of action of Virechana

As said by Acharya Sushruta, in the patients of Madhumeha, Kapha and Pitta are vitiated excessively and they remain lying in the lower part of the body. Virechana has the quality to eliminate both Pitta and Kapha. Also, it is the best Shodhana therapy for the elimination of Dosha lying in the lower parts of the body. By the elimination of Kapha and Pitta, obstructions are removed (Avarana), which are caused by the path of Vata. At the same time, the elimination of Kapha also alleviates the vitiated Kapha Vargiya Dushyas. In this way, the Virechana therapy reduced the vitiation of Dosha and the Dushyas. In this group, the Shamana therapy was given after the Virechana. When the Shamana drug was given to the patients whose vitiated Doshas were already eliminated by the Virechana therapy, it ultimately provided better relief in comparison with the Shamana therapy alone. The above-mentioned facts are evident from the results of this study, as the *Virechana* and Nyagrodhadi Ghanavati group (combined therapy) provided better relief in signs and symptoms of the patients of *Madhumeha*.

#### Conclusion

Avaranjanya Madhumeha can be correlated with DM type 2 because Avarana-aggravated Vata causes depletion of Vital Dhatu, like Oja, Majja and Vasa, and affects the normal physiology. Sedentary life, lack of exercise, faulty food habits and improper medication precipitate the disease. Urbanization also plays a role in the enhancement of the disease. Madhumeha (type 2 DM) affects mostly individuals after the age of 40 years. Strong genetic predisposition is seen in Type 2 DM patients. Treatment modalities based on the consideration of vitiated Kapha, Meda and Vata, having properties like Shleshamamedohara, Pramehaghna and Kapha-Vatahara, should be used. In the present study, better relief was observed in signs and symptoms of the patients in comparison with the biochemical parameters. After evaluating the total effect of therapies, it was observed that the Virechana and Nyagrodhadi Ghanavati (combined therapy) provided better relief in the patients of Madhumeha in comparison with the Nyagrodhadi Ghanavati (Shamana therapy) alone.

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## हिन्दी सारांश

# मधुमेह पर न्यग्रोधादि घन वटी एवं विरेचन कर्म का तुलनात्मक अध्ययन

### ज्योति कुमारी चार्मी मेहता वी.डी.शुक्ला अलंकृता दवे तुषार सिंघल

प्रमेह का मुख्य लक्षण प्रभूत आविलमूत्रता है। आचार्य चरक ने इसके दो प्रकार बताए हैं- स्थूल प्रमेही एवं कृश प्रमेही। स्थूल प्रमेही की चिकित्सा में संशोधन का विधान किया गया है। स्थूल प्रमेही की टाइप २ डायाबिटिज के साथ तुलना कर सकते हैं। आचार्य सुश्रुत ने कहा है कि मधुमेह में दोष शरीर के नीचे के भाग में स्थित होते हैं। अतः विरेचन द्वारा प्रकुपित कफ एवं पित दोष समावस्था में आते हैं। वर्तमान में कुल ४२ आतुरों को पंजीकृत किया गया। उन्हें सामान्य वितरण प्रणाली से दो वर्गों में विभाजित किया गया। वर्ग अ में मधुमेह के २१ आतुर को न्यग्रोधादि घन वटी-२ वटी ३ बार उष्णोदक के साथ दी गई। वर्ग ब में विरेचन कर्म पश्चात न्यग्रोधादि घन वटी शमन के लिये दी गई। दोनों वर्गों में आतुरों पर औषध के चिकित्सात्मक प्रभाव का अध्ययन विशेष रूप से निर्मित अन्वेषण प्रपन्न के आधार पर किया गया। पाये गये परिणामों से यह साबित हुआ कि वर्ग ब से प्राप्त परिणाम वर्ग अ की तुलना में अच्छे आये। वर्ग अ में ४४. ४४% आतुर को उत्तम लाभ हुआ तथा वर्ग ब में ६८. ७५% आतुर को उत्तम लाभ हुआ। इसकेआधार पर यह कहा जा सकता है कि विरेचन के बाद दी गई शमन औषधि मधुमेह में अधिक लाभदायी है।