



**RANDOMIZED CONTROLLED A PILOT CLINICAL STUDY TO EVALUATE THE
EFFICACY OF MEHA-MUDGARA RASA IN THE MANAGEMENT OF
MADHUMEHJANYA NADIPRATHAN SHOTHA W.R.T. DIABETIC NEUROPATHY**

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ABSTRACT

Aim and Objectives: To evaluate clinical Efficacy of *Meha-Mudgara Rasa* in the management of *Madhumehajanya Nadipratan Shotha* w.r.t Diabetes Neuropathy. **Methodology:** The 40 subjects were enrolled randomly in two groups, Group A (*Meha Mudagara Rasa*) & Group B (Pregabalin 75 mg) for the duration of 1 month. *Meha-Mudgara Rasa* contains *Rasanjana, Bida Lavana, Devdar, Bilvaphala, Gokshurbeeja, Dadim, Bhunimba, Pippalimula, Trikatu, Triphala, Trivrita, Lohabhasma, Shudha Guggulu & Go-Ghrita*. Pregabalin is described chemically as (S) -3-(aminomethyl)-5-methylhexanoic acid, indicated in the Management of neuropathic pain associated with diabetic peripheral neuropathy. **Conclusion:** Results obtained with respect to the parameter burning sensation, Tingling sensation, numbness, weakness & Neuropathy Disability Score had shown statistically significant improvement. *Meha-Mudgara Rasa* presents window of opportunity in the clinical management of Diabetic Neuropathy.

KEYWORDS: Diabetic Neuropathy, *Meha-Mudgara Rasa*, Pregabalin.

INTRODUCTION

- Diabetic peripheral neuropathy is a nerve damaging disorder associated with diabetes mellitus. Diabetic microvascular injuries involving small blood vessels that supplies to nerves i.e. vasa nervorum are responsible for diabetic peripheral neuropathy.
- In Ayurveda, Madhumeha Vyadhi has similarity with Diabetes Mellitus. Madhumeha is one of the four varieties of Vataja Prameha. It is Asadhya (incurable) stage, Madhumeha gives rise to many Upadrava (complication) viz. Daha (burning sensation), Suptata (numbness), Harsha (tingling sensation), Shosha (wasting), Dourbalya (weakness), Angasada. These Upadrava (complication) of Madhumeha, which are nearly similar to the symptoms of diabetic peripheral neuropathy.
- It is a common condition, often unreported and inadequately treated resulting in a great deal of morbidity.
- The functions of peripheral nerves are damaged in diabetic peripheral neuropathy. In Ayurveda; Vata Dosha especially Vyana vayu performs the functions of peripheral nerves. The functions of normal Vata Dosha are Utsahashakti (enthusiasm), Shwasa – prashwasa kriya (respiration), Chesta (motor and reflex activities) etc; hence it act as receptor, as well as a stimulator.

- The function of a peripheral nerve is to transmit signals from the spinal cord to the rest of the body or to transmit sensory information from the rest of the body to the spinal cord. Nerve impulse can be correlate with functions of normal Vata Dosha as it is self-originated, propagated, it reaches anywhere. Hence, the disease Diabetic peripheral neuropathy is considered as an abnormal functions of Vata Dosha.
- **Prevalence** of diabetic peripheral neuropathy in **India** is about **26.1%**. In region of **Maharashtra** it was found to be **30.3%** in 2015 study. As estimated it is 2.8% affecting 171 million people worldwide, in year 2000. With current trends, the prevalence worldwide is estimated to reach 4.4%, affecting 366 million people by the year 2030.

Hypothesis

HO- Meha Mudagara Rasa has no significant effect on Madhumehajanya Nadipratan Shotha w.r.t Diabetic Neuropathy.

H1 – Meha Mudgara Rasa has significant effect on Madhumehajanya Nadipratan Shotha w.r.t Diabetic Neuropathy.

Need of Study

- Painful diabetic peripheral neuropathy is treated with tricyclic antidepressants, SNRIs, anticonvulsants, opioids and topical capsaicin, of

which duloxetine and pregabalin have been approved by the US FDA. These regimens are effective but most of them are expensive and having adverse effect.

- Meha Mudgara Rasa is a herbomineral formulation comprises of herbs & minerals viz, Rasanjana, Bida-Lavana, Devdara, Bilva, Gokshura, Dadima, Bhunimba, Pippalimula, Trikatu, Triphala, Trivritta, Loha Bhasma, & Shudhha Guggulu. It is believed to have a noteworthy role in the management of such impaired metabolic condition by importing equilibrium state of Doshas & nourishes the Dhatu.
- India has the distinction of having largest number of diabetics in the world followed by China. The factors like sedentary lifestyle, earlier age of onset, delayed diagnosis and improper care lead to an increase in morbidity of diabetes and related complications like ulcer, nephropathy, retinopathy etc and even mortality.
- This research study was conducted to find out cost effective treatment of Diabetes Neuropathy & improve the quality of life.

AIM AND OBJECTIVES

Aims

To evaluate clinical Efficacy of Meha Mudgara Rasa in the management of Madhumehajanya Nadipratan Shotha w.r.t Diabetic Neuropathy.

Dose - 1 Masha

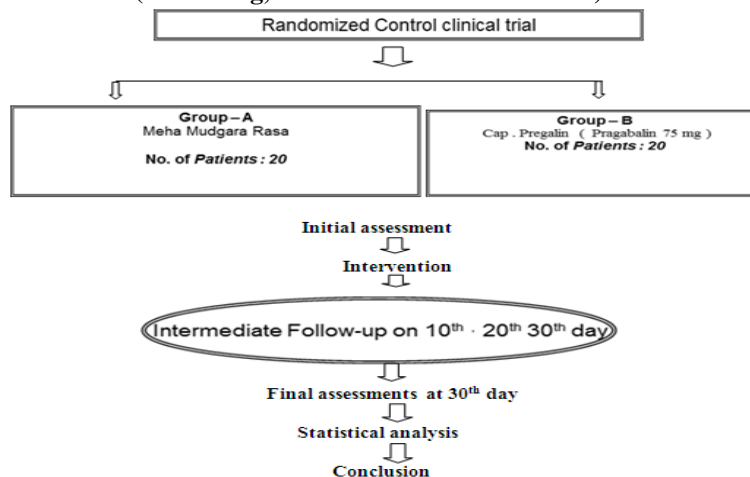
Anupana- Chaga Dugdha / Jala

Methods Table No:-1

Research Place	Dept of Kayachikitsa, OPD/IPD, DY Patil School of Ayurveda, Nerul, Navi Mumbai	
Type of Study	Randomized Control Clinical Trial	
Medicine	Group A- Meha Mudagara Rasa	Group B-Tab. PREGALIN (Pragabalin 75 mg)
Sample size	20 patients	20 patients
Dose	500 mg BD	1 Tab.OD
Duration	1 month	1month
Anupana	Koshna Jala	Koshna Jala

Study Design

Screening of subject for inclusion (counseling, informed consent was taken)



Objectives

- To study the pathogenesis of Madhumehajanya Nadipratan Shotha w.r.t Diabetic Neuropathy.
- To develop a cost effective treatment in the management of Madhumehajanya Nadipratan Shotha w.r.t Diabetic Neuropathy.
- To improve quality of life & prevent further complications.

MATERIALS AND METHODS

Materials

Meha-Mudgara Rasa (Bhaishajyaratnavali Prameha Rogadhikara Shloka No.64 -68).

Ingredients

Rasanjana Churna – 1 Tola
 Bida Lavana - 1 Tola
 Devdar Churna – 1 Tola
 Bilvaphala Chuna – 1 Tola
 Gokshurbeeja Churna – 1 Tola
 Dadim Churna- 1 Tola
 Bhunimba Churna – 1 Tola
 Pippalimula Churna- 1 Tola
 Trikatu Churna – 1 Tola
 Triphala Churna – 1 Tola
 Trivrita Churna - 1 Tola
 Lohabhasma – 11 Tola
 Shudha Guggulu – 1 pala = 4 Tola
 Go-Ghrita - Q.S for Mardana

Inclusion Criteria

- The patients for this study were selected randomly irrespective of their age, sex, religion, etc.
- Patients with clinical positive history of type 2 diabetes mellitus having the symptoms of diabetic neuropathy (peripheral) were selected for the present study
- The patients were diagnosed Clinically with the help of following signs and symptoms.
 - 1) Prabhutavil mutrata (Polyurea)
 - 2) Kshudhavruddhi (Polyphasia)
 - 3) Pippasavruddhi (Polydipsia)
 - 4) Dourbalya (General Weakness)
 - 5) Paridaha (burning sensation)
 - 6) Kandu (Itching)
 - 7) Bhrama (Vertigo)
 - 8) Anidra (Insomnia)
 - 9) Nakta mutra pravrutti (urination during night)
 - 10) Hast pada chimchimayan (Tingling)
 - 11) Suptata (Numbness)

Exclusion Criteria

- The cases with complications like diabetic gangrene, carbuncles, diabetic coma, retinopathy, IDDM were excluded from present clinical trials.
- Any major diseases like Koch's, IHD, AIDS etc. associated with diabetes mellitus.

- Thyroid dysfunction, Patients on Corticosteroid Therapy

Method of Data Collection

- CRF was prepared with details of history, physical examination, pathological investigations.
- The general condition of the patient, severity of symptoms before starting of the treatment were recorded properly.
- The parameter of signs & symptoms & investigations were analyzed statistically by applying Students 't' test and 'Wilcoxon' test.

Investigations

- CBC ESR, BSL –FASTING & PP, LIPID PROFILE, Sr.Creatinine,
- URINE R/M, ECG
- **Neuropathy analyzer (Biothesiometer)** which is specifically designed electronic machine to record the perceptions of vibration, heat and cold sensations exactly with the help of computer.
- We had use this instrument to record these sensations before and after the treatment at **Diabecare Diabetes & Thyroid Clinic, Nerul, Navi Mumbai.**
- **Vibration perception study** – It is used as a measure of large nerve fibre function in Studies of patient with diabetes and in other disorder.

Assessment Criteria**Scoring of symptoms****Table No:-2**

Symptoms	Gradation	Scoring Of Symptoms
Numbness	No numbness	00
	Numbness only in feet	01
	Numbness on whole lower limbs	02
	Numbness on other parts of the body also	03
Tingling sensation	No tingling sensation	00
	Tingling sensation only on feet	01
	Tingling sensation on whole lower limbs	02
	Tingling sensation on other parts of the body together with lower limbs	03
Burning sensation	No burning sensation	00
	Burning sensation only in foot soles	01
	Burning sensation in whole lower limbs	02
	Burning sensation in all over the body	03
Pain	No pain	00
	Pain Only in feet	01
	Pain in legs	02
	Pain in legs with difficulty in walking	03

Other Parameters**Neuropathy Disability Score****Table No:-3**

Parameter	Grade 0	Grade 1	Grade 2	Total sum for both Right and Left lower limb
Ankle Reflex	Normal reflex	Present on reinforcement	Absent	4
Vibration	Present	Reduced/Absent	-	2
Pin Prick	Present	Absent	-	2
Temperature	Present	Absent	-	2

- Maximum abnormal score is 10,
- Score of 3-5: symptoms of mild Neuropathy,
- Score of 6-8: symptoms of moderate Neuropathy,
- Score of 9 or 10: symptoms of severe Neuropathy

RESULTS AND CONCLUSIONS

Table No:-4

Group A

SR.NO	CARDINAL SYMPTOMS	MEAN SCORE		t	P	% IMPROVMENT	WILCOXON SIGN RANK
		BT	AT				
1	NUMBNESS	1.7	0.85	9	<0.0001	50	<0.0001
2	TINGLING SENSATION	1.65	0.95	7.55	<0.0001	42.4	<0.0001
3	BURNING SENSATION	1.7	0.9	10.376	<0.0001	47.05	<0.0001
4	PAIN	1.2	0.7	4.819	0.0001	41.66	0.001
5	NDS	5	3.75	12.58	<0.0001	25	<0.0001
6	BSL FATING	114.9	109.9	3.865	0.001	4.35	0.0014
7	BSL PP	168.8	159.5	5.008	<0.0001	5.5	<0.0001
8	HB	11.75	11.98	3.92	0.0009	1.95	0.0009
9	SR.CREATININE	1.225	1.12	1.79	0.088	8.57	0.064

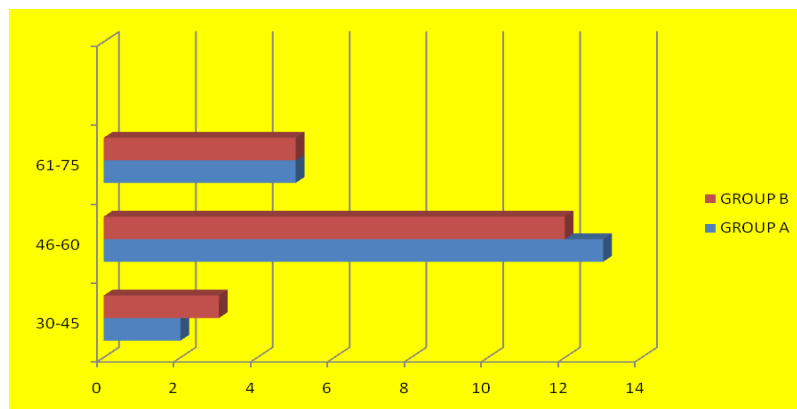
Group B

Table No:-5

SR.NO	CARDINAL SYMPTOMS	MEAN SCORE		t	P	% IMPROVMENT	WILCOXON SIGN RANK
		BT	AT				
1	NUMBNESS	2	0.75	1.453	0.1625	62.5	0.5
2	TINGLING SENSATION	1.75	1	1	0.329	42.85	>0.999
3	BURNING SENSATION	1.7	0.85	1.45	0.1625	50	0.25
4	PAIN	1.45	0.8	1	0.1649	44.82	0.5
5	NDS	4.95	3.55	1	0.1649	28.2	0.5
6	BSL FATING	115.9	113.8	34.21	<0.0001	1.81	<0.0001
7	BSL PP	167.3	163.4	22.21	<0.0001	2.33	<0.0001
8	HB	12.27	12.72	42.96	<0.0001	3.667	<0.0001
9	SR.CREATININE	1.29	1.2	41.5	<0.0001	6.97	<0.0001

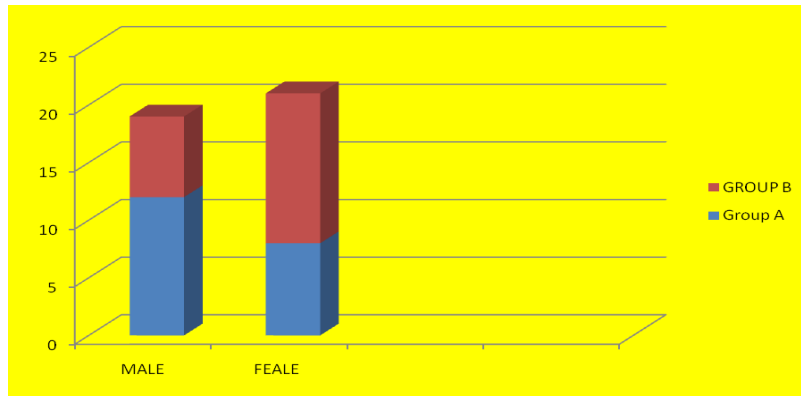
AGE WISE DISTRIBUTION

Graph No:-1



AGE IN YRS	GROUP A	GROUP B
30-45	2	3
46-60	13	12
61-75	5	5

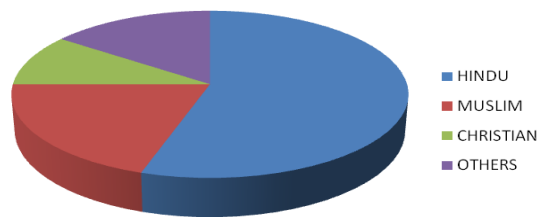
Sex Wise Distribution
Graph No:-2



SEX	Group A	GROUP B
MALE	12	7
FEMALE	8	13

Religion Wise Distribution
Graph No:-3

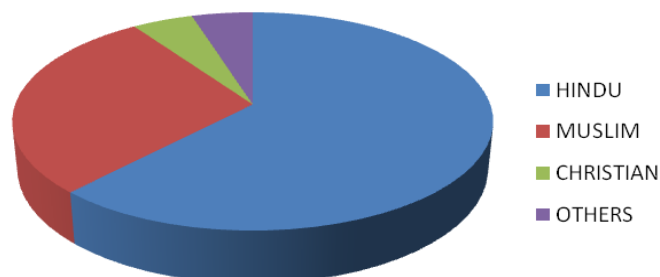
Group A



RELIGION	Group A
HINDU	11
MUSLIM	4
CHRISTIAN	2
OTHERS	3

Graph No:-5

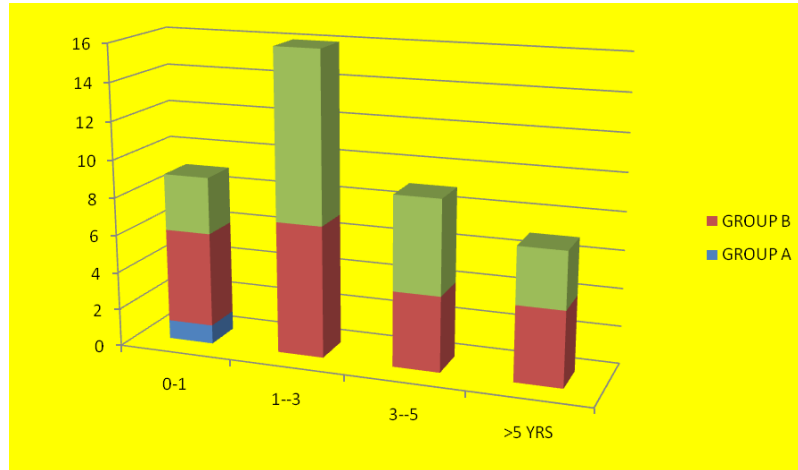
Group B



RELIGION	Group B
HINDU	13
MUSLIM	6
CHRISTIAN	1
OTHERS	1

Duration Wise Distribution

Graph No:-6



DURATION	GROUP A	GROUP B
0-1	5	3
1-3	7	9
3-5	4	5
>5 YRS	4	3

DISCUSSION

MMV is dominant in *Tikta* (bitter) MMV *kashaya* (astringent) *rasa* and *Ruksha* (dry) *guna* among which *Tikta* (bitter) *rasa* is said to be “*kleda upashoshana*” while *Kashaya* (astringent) *rasat* o be “*sharira kledasya upayokta*.” The word *Ruksha* itself indicates dryness, which in turn means lack or decrease of *Kleda*. Thus, all the three dominant properties show a *Kleda*-reducing effect. *Bahu drava Shleshma* is the *dosha vishesha* and *Kleda* is one of the *dushya vishesha* in *Samprapti* of *Prameha*; thus, the dominating three properties directly affect both the *dosha* and the *dushya vishesha* and hence effectively counteract the *Samprapti*.

Karapadatala Daha and *Karapadatala, Suptata* (burning sensation and numbness in the palm and foot) are both common neurological complications of diabetes described in the *Ayurvedic* literature as *Purvarupa* of *Prameha*. *Karapadatala Daha* (burning sensation in palm and foot) is due to *Pitta* by provocation of *Ushna* quality or may be due to loss of *Udaka*, which might have been pacified by *Sheeta* quality of MMV. *Karapadatala suptata* (numbness in palm and foot) is due to *Vata* – decrease in *Chala guna* of *Vyana vayu* that might have been compensated by *Sara guna* of MMV.

Stress blocks the body from releasing insulin in people with type 2 diabetes; therefore, cutting stress is very essential for effective control of the blood sugar level. The ingredients present in the formulation MMV have different properties that may be helpful in minimizing the stress response or cutting stress. As *Haritaki* and *Bibhitaki* are antistress agents and *Shunthi* is an antidepressant, they might have been cutting the stress directly. *Rasayana* effect of *Lauha bhasma Haritaki, Amalaki* and *Pippali*, antioxidant properties of *Amalaki, Shunthi, Maricha* and *Dadima* and immunomodulatory properties of *Amalaki* and *Devadaru* might have helped in minimizing the stress response, and in the manner controlling the disease.

High blood sugar is the main characteristic and diagnostic feature of diabetes. The MMV decreased this elevated blood glucose level, which may be by its ingredients.

CONCLUSION

Group A and Group B have shown almost the similar effect. Of course, Group A shows the synergistic action when MMV is combined with modern antidiabetic drugs. Most of the ingredients of MMV have known hypolipidemic, hypocholesterolemic, hepatoprotective, anti-hyperglycemic, anti-stress, antioxidant and immunomodulatory activities.

Group B shows symptomatic relief in symptoms of DN in 3-4 week of treatment. There were no adverse effects were noted in present study.

This type of clinical study should be conducted on larger sample size to get further findings. Healthy dietetics and healthy lifestyle with the use of Ayurvedic antidiabetic drugs singularly or in combination with modern drugs, depending upon the need, will contribute significantly to achieve.

ACKNOWLEDGEMENT

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Ethical Clearance

This clinical study is ethically cleared by Institutional ethical committee. The drugs used in the study were authenticated by Allarsin Ltd, Mumbai.

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