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Clinical Study of Mehantaka Yoga (Kalpit) on Madhumeha (DM)

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Abstract

Diabetes mellitus is a endocrine disorder involving islet cell hormone. [1] It is a complex syndrome characterized by lack of insulin secretion (IDDM) or increased cellular resistance to insulin resulting in to persistant hyperglycemia [2] which results from derangement in the mechanism of blood sugar homeostasis. Today is sedentary life style with improper nutritional diet, full of stress, poor fiber intake, low protein diet, and high intake of oil & refined product are expected reasons for developing life style related disorder causes diabetes mellitus.

The study was conducted for clinical trial effect of Mehantaka yoga on Madhumeha (Diabetes Mellitus). Present study of 3 months comprises of 45 patients. After 60 days general symptoms and signs improved significantly and fasting blood sugar and urine sugar were reduced. No side effect of the therapy were observed. In the present study 45 known madhumehi persons (NIDDM) patients were selected . These patients were taken in three groups of 15 each group A patients were given Glipizied (Allopathic group) while Group B patients received Mehantaka yoga (Ayurvedic group) and group C patients received Glipizied with Mehantaka Yoga (combined group). The results after two month drug trial were noted. Here these are being presented in the form of tables and graphs along with explanatory observation.

Key Words Mehantaka yoga, Madhumeha, Diabetes Mellitus, Vatika prameha

Introduction

Madhumeha is incurable and advanced stage of prameha characterized by excretion of urine which resembles honey in taste. Twenty type of prameha are described in classical texts and madhumeha is considered under vataj type of prameha. All the prameha are broadly classified in to two groups Sahaja prameha (hereditary) and apathyanimittaja prameha (due to improper diet & life style) or krish pramehi and sthula pramehi. It can also be correlated classification given by Acharya Vagbhatta Dhatukshayajanya madhumeha and Avaranajanya madhumeha respectively. [3] In madhumeha all the doshas and dushyas get vitiated but the vata doshas and apar oja (essence of all the dhatus) dushya are mainly involved. The vata may be provoked either directly by its etiological factors Avarana by kapha and pitta to its path or by continuous depletion of dhatus [4,5]

IMPORTANCE OF THIS WORK

The main aim of present research work is to manage the Madhumehi persons with a herbomineral formulation i.e. Mehantaka yoga (Hypothetical). Present Research work has been undertaken with the following aims and objectives.

- To assess the presence of various etiological factors explained by ayurveda in the diagnosed cases of diabetes mellitus.
- To established a relationship of Nidanas mentioned in Ayurvedic and Modern literature.
- To assess the efficacy of "Mehantaka yoga" (kalpit) in management of Madhumeha (DM).

- To analyze the pathogenesis of Madhumeha (DM).

CLINICAL STUDY MATERIALS AND METHODS

1. SELECTION OF PATIENTS

Patients for therapeutic drug trial were selected from the OPD and IPD of the Hospital, National Institute of Ayurveda, Jaipur after screening them as per Ayurvedic and Modern criteria for Madhumeha. Selection was carried out according to relevant history, sign, symptoms and Laboratory investigations including Body Mass Index for Madhumehi person. The minimum number of patents were forty five.

(A). INCLUSION CRITERIA

- Apparently normal individuals between 30 to 70 years of age exposed to various type of stress.
- Diagnosed cases of Madhumeha (DM).
- Patients with mild hypertension and controlled diabetes mellitus will be included.
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(B). EXCLUSION CRITERIA

- Patients of age less than 30 years and above 70 years.
- Patients taking drugs like corticosteroids, tricyclic antidepressant, cycloheptadine which leads to weight gain.
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(C). DIAGNOSTIC CRITERIA

- All the patients were diagnosed on the basis of following criteria
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CLINICAL SIGNS AND SYMPTOMATOLOGY

- Following symptoms were observed in patients for diagnosis

(01) Chala, Sphiga, Udara and Stana (02) Ayathopachaya (03) Prabhoot Mootata
(04) Aavil Mootrata (05)Pipasadhikya (06) Kshudhadhikya (07) Swedatipravritti.
(08) Daurbalya (09) Aalasya (10) Atinidra (11) Vibandh
(12) Malavritta Jihwa (13) Kar-Paada Daha (14) Mukhmadhurya (15) Tandra
(16) Krichvyavyata (15) Sandhi Shula

- **Raised Body Mass Index**
- **Raised Hip and Waist Circumference**
- **Various Investigations –**

➢ *Hematological* – T.L.C., D.L.C, E.S.R., Hb%
➢ *Biochemistry* – F.B.S., P.P.B.S., Lipid Profile GHb%.

***Urine Examination* – F.U.S., P.M.U.S., Albumin, pH, Sp.gravity etc.**

FOLLOW UP STUDY

➢ Patients were followed up after one month and two month.
➢ Laboratory investigation was repeated after complete treatment.
➢ Improvement and other effects were noted down.

CRITERIA FOR ASSESSMENT

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

➢ Improvement in signs and symptoms of disease on the basis of symptoms score.
➢ Improvement in laboratory Investigation (i.e. reduce levels) on the basis of lab reports.
➢ Reduction in Objective assessment parameters.

Selection of Drug

The hebomineral formulation **"Mehantaka yoga"** (hypothetical) is selected to assess the efficacy in Madhumehi persons. All drugs, used in Mehantaka yoga are stated to possess the Madhumehara properties as mentioned in various Ayurvedic classics and also in various Nighantus.

Administration of Drug

Fourty Five clinically diagnosed Madhumehi patients were randomly divided in to three groups.

☑ **Group A :** Fifteen Madhumehi patients were recommended allopathic medicine **(Glipizide)** in the dose of one tablet (5mg) twice a day with water before 15 minutes of meal for two month as a control group.

☑ **Group B :** Fifteen Madhumehi patients were recommended Ayurvedic medicine **(Mehantaka yoga)** 2-2 capsule (500mg each) twice a day with luke warm water before 15 minutes of meal for two month as an only Ayurvedic medicine group.

☑ **Group C :** Fifteen Madhumehi patients were recommended Allopathic medicine (**Glipizide)** in the dose of one tablet (5 mg) twice a day along with (**Mehantaka capsule)** 2-2 twice (500 mg each) a day with Luke warm water before 15 minutes of meal for 2 month as a combined group.

Follow up study

- Patients were followed up after one month and two month.
- Laboratory investigation was repeated after complete treatment.
- Improvement and other effects were noted down.

Note: No side or toxic effects of "Mehantaka yoga" was reported by any individual during trial.

Criteria for Assessment

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

- Improvement in signs and symptoms of disease on the basis of symptoms score.
- Improvement in laboratory Investigation (i.e. reduce levels) on the basis of lab reports.
- Reduction in Objective assessment parameters.
- **Showing the pattern of Symptomatic improvement in Group A**

SYMPTOMS	N	Mean		Dif.	% of Change	SD	SE	t	p
		BT	AT						
CSUS	10	2.80	2.30	0.50	17.86	0.53	0.17	3.00	<0.02
Ayathopachaya	8	2.00	1.50	0.50	25.00	0.53	0.19	2.65	<0.05
Prabhoot Mootrata	15	2.40	1.33	1.07	44.44	0.26	0.07	16.00	<0.001
Aavil Mootrata	13	1.54	0.62	0.92	60.00	0.28	0.08	12.00	<0.001
Pipasadhikya	15	1.40	0.40	1.00	71.43	0.38	0.10	10.25	<0.001
Kshudha dhikya	11	1.18	0.55	0.64	53.85	0.50	0.15	4.18	<0.01
Sweda Pravritti	15	1.53	0.60	0.93	60.87	0.26	0.07	14.00	<0.001
Daurbalya	10	1.50	0.60	0.90	60.00	0.32	0.10	9.00	<0.001
Aalasya	12	1.50	0.67	0.83	55.56	0.39	0.11	7.42	<0.001
Atinidra	11	1.55	0.91	0.64	41.18	0.50	0.15	4.18	<0.01
Viband	5	1.60	1.00	0.60	37.50	0.55	0.24	2.45	<0.10
Malavritta jihwa	8	1.88	0.75	1.13	60.00	0.35	0.13	9.00	<0.001
Karpada Daha	12	1.67	0.58	1.08	65.00	0.29	0.08	13.00	<0.001
Mukh Madhurya	9	1.22	0.44	0.78	63.64	0.44	0.15	5.29	<0.001
Tandra	12	1.08	0.42	0.67	61.54	0.49	0.14	4.69	<0.001

Krichvyavayata	10	1.30	1.10	0.20	15.38	0.42	0.13	1.50	>0.10
Shula	7	1.14	0.57	0.57	50.00	0.53	0.20	2.83	<0.05

Showing the pattern of Symptomatic improvement in Group B

SYMPTOMS	N	Mean		Dif.	% of Change	SD	SE	t	p
		BT	AT						
CSUS	11	3.36	2.64	0.73	21.62	0.47	0.14	5.16	<0.001
Ayathopachaya	8	2.25	1.63	0.63	27.78	0.52	0.18	3.42	<0.02
Prabhoot Mootrata	15	1.80	0.80	1.00	55.56	0.38	0.10	10.25	<0.001
Aavil Mootrata	13	1.23	0.54	0.69	56.25	0.48	0.13	5.20	<0.001
Pipasadhikya	15	1.20	0.40	0.80	66.67	0.41	0.11	7.48	<0.001
Kshudha dhikya	12	1.17	0.50	0.67	57.14	0.49	0.14	4.69	<0.001
Sweda Pravritti	15	1.20	0.47	0.73	61.11	0.46	0.12	6.20	<0.001
Daurbalya	10	1.20	0.50	0.70	58.33	0.48	0.15	4.58	<0.01

Showing the pattern of Symptomatic improvement in Group C

SYMPTOMS	N	Mean		Dif.	% of Change	SD	SE	t	P
		BT	AT						
CSUS	9	3.11	2.11	1.00	32.14	0.71	0.24	4.24	<0.01
Ayathopachaya	9	1.89	1.33	0.56	29.41	0.53	0.18	3.16	<0.02
Prabhoot Mootrata	15	2.20	0.73	1.47	66.67	0.52	0.13	11.00	<0.001
Aavil Mootrata	11	1.82	0.64	1.18	65.00	0.40	0.12	9.69	<0.001
Pipasadhikya	15	1.27	0.33	0.93	73.68	0.26	0.07	14.00	<0.001
Kshudha dhikya	12	1.75	0.42	1.33	76.19	0.49	0.14	9.38	<0.001
Sweda Pravritti	15	1.47	0.33	1.13	77.27	0.35	0.09	12.47	<0.001
Daurbalya	10	1.40	0.30	1.10	78.57	0.32	0.10	11.00	<0.001
Aalasya	12	1.75	0.42	1.33	76.19	0.65	0.19	7.09	<0.001
Atinidra	13	1.62	0.46	1.15	71.43	0.38	0.10	11.08	<0.001
Viband	7	1.43	0.43	1.00	70.00	0.38	0.14	7.00	<0.001
Malavritta jihwa	12	1.83	0.58	1.25	68.18	0.45	0.13	9.57	<0.001
Karpada Daha	10	2.00	0.60	1.40	70.00	0.52	0.16	8.57	<0.001
Mukh Madhurya	8	1.75	0.88	0.88	50.00	0.35	0.13	7.00	<0.001
Tandra	10	1.30	0.40	0.90	69.23	0.32	0.10	9.00	<0.001

Krichvyavayata	8	1.50	0.75	0.75	50.00	0.46	0.16	4.58	<0.01
Shula	6	1.17	0.50	0.67	57.14	0.52	0.21	3.16	<0.05

Showing the pattern of Objective Improvement in Group A

Objective Parameters	N	Mean		Dif.	% of Change	SD	SE	t	P
		BT	AT						
Body weight	15	71.60	70.07	1.53	2.14	0.92	0.24	6.49	<0.001
BMI	15	27.27	26.69	0.58	2.11	0.34	0.09	6.51	<0.001
Waist circum.	15	37.87	37.20	0.67	1.76	0.62	0.16	4.18	<0.001
Hip Circum.	15	38.33	37.60	0.73	1.91	0.59	0.15	4.78	<0.001
Skin fold thickness	15	22.10	21.53	0.57	2.56	0.37	0.09	5.97	<0.001

Showing the pattern of Objective Improvement in Group B

Objective Parameters	N	Mean		Dif.	% of Change	SD	SE	t	P
		BT	AT						
Body weight	15	78.67	75.53	3.13	3.98	1.25	0.32	9.74	<0.001
BMI	15	29.67	28.48	1.18	3.99	0.42	0.11	10.97	<0.001
Waist circum.	15	37.87	35.60	2.27	5.99	1.10	0.28	7.98	<0.001
Hip Circum.	15	39.00	36.73	2.27	5.81	0.88	0.23	9.93	<0.001
Skin fold thickness	15	26.03	25.25	0.77	2.97	0.47	0.12	6.44	<0.001

Showing the pattern of Objective Improvement in Group C

Objective Parameters	N	Mean		Dif.	% of Change	SD	SE	t	p
		BT	AT						
Body weight	15	75.93	72.67	3.27	4.30	1.28	0.33	9.89	<0.001
BMI	15	28.69	27.47	1.22	4.25	0.46	0.12	10.19	<0.001
Waist circum.	15	36.40	34.07	2.33	6.41	1.19	0.31	7.59	<0.001
Hip Circum.	15	37.17	34.83	2.33	6.28	1.33	0.34	6.79	<0.001
Skin fold thickness	15	24.97	23.77	1.20	4.81	0.50	0.13	9.24	<0.001

Showing the pattern of Hematological Biochemical and Urine sugar changes in Group A

Investigations		N	Mean		Dif.	% of Change	SD	SE	t	P
			BT	AT						
Hb		15	12.54	12.70	0.16	1.28	0.53	0.14	1.17	>0.10
TLC		15	6816.67	6986.67	170.00	2.49	679.76	175.51	0.97	>0.10
DLC	Poly.	15	62.47	62.93	0.47	0.75	4.09	1.05	0.44	>0.10
	Lym.	15	28.47	27.67	0.80	2.81	3.51	0.91	0.88	>0.10
E.S.R.		15	18.67	16.33	2.33	12.50	3.06	0.79	2.95	<0.02
FBS		15	161.02	117.07	43.95	27.30	10.64	2.75	16.00	<0.001
PPBS		15	202.20	149.00	53.20	26.31	15.20	3.93	13.55	<0.001
GHb		15	11.68	10.68	1.00	8.56	0.54	0.14	7.14	<0.001
Serum Cho.		15	184.33	168.35	15.99	8.67	10.83	2.80	5.72	<0.001
Serum Try.		15	155.71	130.43	25.28	16.24	15.47	3.99	6.33	<0.001
HDL		15	43.54	48.39	4.85	11.14	3.15	0.81	5.97	<0.001
LDL		15	109.59	94.13	15.47	14.11	12.96	3.35	4.62	<0.001
VLDL		15	31.14	25.82	5.32	17.09	3.17	0.82	6.51	<0.001
FUS		7	1.14	0.29	0.86	75.00	0.38	0.14	6.00	<0.001
PMUS		12	1.92	0.75	1.17	60.87	0.39	0.11	10.38	<0.001

Showing the pattern of Hematological Biochemical and Urine sugar changes in Group B

Investigations		N	Mean		Dif.	% of Change	SD	SE	t	P
			BT	AT						
Hb		15	12.08	12.72	0.64	5.29	0.68	0.17	3.65	<0.01
TLC		15	6773.33	6906.67	133.33	1.97	260.95	67.38	1.98	<0.10
DLC	Poly.	15	59.33	60.93	1.60	2.70	3.68	0.95	1.68	>0.10
	Lym.	15	27.20	28.40	1.20	4.41	2.24	0.58	1.38	>0.10
E.S.R.		15	18.87	17.07	1.80	9.54	4.04	1.04	1.73	>0.10
FBS		15	148.77	123.20	25.57	17.19	9.97	2.57	9.93	<0.001
PPBS		15	196.56	165.39	31.17	15.86	14.06	3.63	8.59	<0.001
GHb		15	10.87	9.81	1.06	9.75	0.56	0.14	7.36	<0.001
Serum Cho.		15	195.50	164.23	31.27	15.99	19.25	4.97	6.29	<0.001
Serum Try.		15	149.12	119.60	29.51	19.79	17.66	4.56	6.47	<0.001
HDL		15	41.07	46.66	5.58	13.59	2.88	0.74	7.52	<0.001

LDL	15	124.57	93.61	30.97	24.86	17.39	4.49	6.90	<0.001
VLDL	15	29.82	23.92	5.90	19.79	3.53	0.91	6.47	<0.001
FUS	6	1.17	0.33	0.83	71.43	0.41	0.17	5.00	<0.01
PMUS	10	2.70	1.60	1.10	40.74	0.32	0.10	11.00	<0.001

Showing the pattern of Hematological Biochemical and Urine sugar changes in Group C

Investigations		**N**	**Mean**		**Dif.**	**% of Change**	**SD**	**SE**	**t**	**P**
			BT	**AT**						
Hb		15	11.46	12.27	0.81	7.09	0.51	0.13	6.22	<0.001
TLC		15	6919.00	6972.00	53.00	0.77	426.42	110.10	0.48	>0.10
DLC	Poly.	15	60.93	59.13	1.80	2.95	4.06	1.05	1.72	>0.10
	Lym.	15	33.40	32.07	1.33	3.99	2.74	0.71	1.88	<0.10
E.S.R.		15	26.20	22.13	4.07	15.52	5.26	1.36	3.00	<0.01
FBS		15	176.01	119.69	56.32	32.00	28.07	7.25	7.77	<0.001
PPBS		15	255.31	173.85	81.45	31.90	33.83	8.74	9.32	<0.001
GHb		15	11.46	9.91	1.56	13.58	0.75	0.19	8.08	<0.001
Serum Cho.		15	191.29	148.02	43.27	22.62	12.99	3.35	12.90	<0.001
Serum Try.		15	151.25	108.21	43.03	28.45	19.84	5.12	8.40	<0.001
HDL		15	41.16	52.60	11.44	27.79	3.98	1.03	11.13	<0.001
LDL		15	119.89	73.78	46.11	38.46	14.69	3.79	12.16	<0.001
VLDL		15	30.91	21.64	9.27	29.98	4.57	1.18	7.86	<0.001
FUS		8	1.88	0.38	1.50	80.00	0.53	0.19	7.94	<0.001
PMUS		14	2.43	1.29	1.14	47.06	0.36	0.10	11.78	<0.001

Showing the comparative improvement in percentage of Madhumehi persons in all Groups separately.

S.No.	**Observations**	**Group A**	**Group B**	**Group C**
1.	Subjective Improvement	49.60%	52.81%	63.59%
2.	Objective Improvement	2.09%	4.54%	5.21%
3.	Investigation Improvement	19.00%	18.19%	25.47%

DISCUSSION ON SUBSIDENCE OF SYMPTOMS

⊙ **Group A** - Shows maximum percentage improvement in pipasadhikya (71.43%), karpada daha (65%), mukh madhurya (63.64%), Tandra (61.54%), Swedati pravritti (60.87%), Aavil mootrata, Daurbalya, Malavritta Jihwa (60% each), Aalasya (55.56%), Kshudha dhikya (53.85%) shula (50%) Prabhoot mootrata (44.44%), Atinidra (41.18%) Vibandha (37.50%) while minimum percentage of improvement in Ayathopachaya (25%), CSUS (17.86%) krichvyavayata (15.38%) but overall study shows symptomatic improvement in Group A was 49.60%**.**

⊙ **Group B** - Shows maximum percentage improvement in Karpadadaha (69.23%), Pipasadhikya Aalasya (66.67% each), sweda pravritti (61.11%) Daurbalya, Vibandha, Mukh Madhurya (58.33% each), Kshudhadhikya (57.14%), Aavil Mootrata (56.25%)

Prabhoot mootrata Tandra (55.56% each), Atinidra (46.15%), Shula (42.86%), Krichvyavayata (36.66%). While minimum percentage of improvement in Ayathopachaya (27.78%), CSUS (21.62%) but over all study shows symptomatic improvement in Group B was 52.81% .

⊙ **Group C** - Shows maximum percentage improvement in Daurbalya 78.57%, Swedatipravritti (77.27%), Kshudhadhikya & Aalasya (76.19% each) Pipasadhikya (73.68%), Atinidra (71.43%) Vibandha, karpadadaha (70% each, Tandra (69.23%), malavritta jihwa (68.18%), Prabhoot mootrata (66.67%), Aavil mootrata (65%) shula (57.14%), mukhmadhurya, Krichvyavayata. (50% each), while minimum percentage of improvement in CSUS (32.14%), Ayathopachaya (29.41%) but over all study shows symptomatic improvement in Group C was 63.59% .

Over all results on the basis of improvement percentage showed that group C had better therapeutic effect than group B & A, This suggest that Mehantaka yoga, shows better results with allopathic medicine on the symptomatic parameters.

DISCUSSION ON PHYSICAL EXAMINATION

In physical examination I took the following parameters i.e. Body weight, Body mass index, waist circumference & Hip circumference and skin fold thickness.

⊙ In **Group A** the improvement percentage in Body weight (2.14%) body mass index (2.11%), Waist circumference (1.76%) & Hip circumference (1.91%), & in case of skin fold thickness it was 2.56%, Overall percentage of improvement was 2.09% .

⊙ In **Group B** the improvement percentage in Body weight (3.98%), Body mass index (3.99%), Waist circumference (5.99%) & hip circumference (5.81%), in case of skin fold thickness, it was 2.97%. Over all percentage of improvement was 4.54%. .

⊙ In **Group C** The improvement percentage in Body weight (4.30%) Body mass index (4.25%) Waist circumference (6.41%) & Hip circumference (6.28%) in case of skin fold thickness it was 4.81%. Over all percentage of improvement was 5.21%.

Overall results on the basis of improvement percentage showed that group C & B have better therapeutic effect than of Group A. This suggests that Mehantaka yoga shows better results with or without allopathic medicine on the parameters of physical examination.

DISCUSSION ON INVESTIGATION

The hematological investigations i.e. Haemoglobin (Hb%), showed statistically insignificant results in group A but in group B it was ($p<0.01$) significant with 5.29% and in group C it was 7.09% ($P<0.001$) i.e. highly significant; Erythrocyte sedimentation Rate (ESR) showed statistically insignificant results in group A & B but in group C it was 15.52% ($P<0.01$) i.e. significant; Total leukocyte Count (TLC), Differential Leukocyte Count (DLC) showed statistically insignificant results in all the three groups.

In **Group A**, Mean fasting blood sugar (FBS) reduction was 27.30% ($P<0.001$) Mean Post Prandial Blood sugar (PPBS) reduction was 26.31% ($P<0.001$) and Mean Glycosylated Haemoglobin (GHb%) reduction was 8.56% ($P<0.001$). All these showed statistically highly significant improvement.

Mean cholesterol reduction was 8.67% ($P<0.001$) Mean TG reduction was 16.24% ($P<0.001$), Mean HDL reduction was 11.14% ($P<0.001$), Mean LDL reduction was 14.11% ($P<0.001$) Mean VLDL reduction was 17.09% ($P<0.001$), it was highly significant. Mean lipid profile reduction was 13.45%. Mean Fasting Urine Sugar (FUS) reduction was 75% ($P<0.001$) while Mean Post Meal Urine Sugar (PMUS) reduction was 60.87% ($P<0.001$). All these showed statistically highly significant results .

In **Group B**, Mean Fasting Blood sugar (FBS) reduction was 17.19% ($P<0.001$) while mean post Prandial Blood

Sugar (PPBS) reduction was 15.86% (P<0.001) and mean Glycosylated haemoglobin (GHb%) reduction was 9.75% (P<0.001). All these showed statistically highly significant improvement.

Mean cholesterol reduction was 15.99% (P<0.001), Mean TG reduction was 19.79% (P<0.001), Mean HDL was 13.59% (P<0.001), Mean LDL reduction was 24.86% (P<0.001) Mean VLDL reduction was 19.79% LDL reduction was 24.86% (P<0.001) Mean VLDL reduction was 19.79% (P<0.001), It was highly significant. Mean lipid profile reduction was 18.80%.

Mean Fasting Urine Sugar (FUS) reduction was 71.43% (P<0.01) while mean Post Meal Urine Sugar (PMUS) reduction was 40.74% (P<0.001). FUS showed statistically significant results while PMUS showed statistically highly significant results**.**

In **Group C**, Mean Fasting Blood Sugar (FBS) reduction was 32% (P<0.001) while Mean Post Prandial Blood Sugar (PPBS) reduction was 31.90% (P<0.001) and Mean Glycosylated Haemoglobin (GHb%) was 13.58% (P<0.001). All these showed statistically highly significant improvement.

Mean cholesterol reduction was 22.62% (P<0.001), Mean TG reduction was 28.45% (P<0.001), Mean HDL was 27.79% (P<0.001), Mean LDL reduction was 38.46% (P<0.001) Mean VLDL reduction was 29.98% (P<0.001), It was highly significant. Mean lipid profile reduction was 29.46%.

Mean Fasting Urine Sugar (FUS) reduction was 80% (P<0.001) while Mean Post Meal Urine Sugar (PMUS) reduction was 47.06% (P<0.001) FUS & PMUS showed statistically highly significant improvement. The clinical evaluation indicated a highly significant result of lipid profile in Group C & B this showed that Mehantaka yoga was more effective in reduction lipid profile. The overall results shows improvement in percentage was 19.00%, 18.19% & 25.47% in group A, B & C respectively.

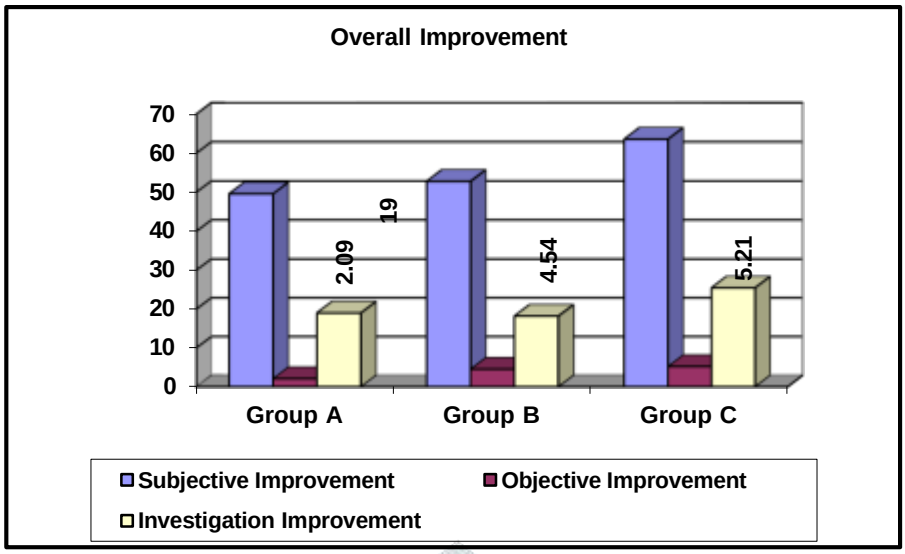
INGREDIENTS OF THIS DRUG (MEHANTAKA YOGA) ARE AS FOLLOWS [9]

Amalaki	**Guduchi**	**Kaarvallak**	**Jambu**	**Meshsringi**	**Haridra**
Nimba	**Aamra**	**Vang**			

MODE OF ACTION

The majority of drugs have Tikta kashaya rasa, katu vipaka and kapha pitta shamaka properties. These properties of drug are exactly opposite to vitiated meda & kapha dosha of diabetic patients. Due to vata kapha shaman properties of the drug,[9] it normalized the vitiated dosha & it expressed in the form of significant improvement in signs & symptoms parameters. In the state of DM vata prokapa is the main pathological symptoms. vata prakopa mainly their Ruksha, Laghu, Sheeta, Kharah guna. These drugs act by their Tikshna-Guna, Usna-Veerya property they pacify vitiated vata dosha and bring it in the normalized state. By their ushna and Teeksna guna these drugs breakdown the Avarana of vata present in DM. These drugs clean the microchannels (srotas) as a result the level of Agni is improved. It activates the Dhatu poshana karma of Body. The proved antioxidant properties of Amalaki and Guduchi, verify the rasayan properties described in ayurvedic texts. Both the drugs are Tridoshahar, by their rasayan karma & Tridoshahar properties these drugs help in the treatment of Madhumeha, as in Madhumeha almost all Dhatus are vitiated. Haridra, by their ushna veerya decrease quantity of urine out put (Prabhoot mootrata), clarify urine by decreasing kapha content (Aavil Mootrata), increase Agni to get rid of Ama & Srotodushti & overall decreases kapha, thus help to overcome the chief signs & symptoms of Madhumeha. Haridra, by its blood purifying property increase Oja & replenish the lost dhatus in Madhumeha. These properties synergistically overcome vata & increase "Bala" i.e. immunity to with stand the possible susceptibility to various infection & Complication. Vanga Bhasma is sarva prameha nashaka, Vrisya and Dhatuvardhaka (RASAJALNIDHI). This combination of drug gives statistically highly significant results mainly on symptomatic parameters, lipid profile, sugar levels, and physical examination. This is because of the lekhana karma of the majority of contents of Mehantaka yoga. ***As the medicine was in capsule form, it was easy for the patients to take it. Though the ingredients of the medicine were unpleasant by test, because of the capsule it became convinient to be consumed easily by the patients. It may be one of the causes, that all patients continued to take the medicine till the end of the trial.***

OVERALL DISCUSSION Overall study shows symptomatic improvement in Group A was 49.60%, in Group B was 52.81%, while symptomatic improvement in Group C was 63.59%. Overall percentage of improvement on physical parameters in Group A was 2.09% in Group B was 4.54% while in Group C was 5.21%. It showed that group C with symptomatic improvement (63.59%) & Laboratory inprovment (25.47%) had better results in comparison to Group B with symptomatic improvement (52.81%) and laboratory improvement 18.19% and Group A with symptomatic improvement 49.60% & Laboratory 18.19% and Group A with symptomatic improvement 49.60% & Laboratory improvement (19.00%).



Conclusion

Mehantaka yoga (hypothetical) was very effective in reducing symptomatic parameter, parameters of physical examination & blood sugar levels. All the patients tolerated medicines very well and no side effects or toxicity effects of any of these drugs were reported by any of the patients, suggesting there by that the drugs selected for the current clinical trial are absolutely safe for internal use by the patients who were dependent on ayurvedic drugs had better improvement than those on allopathic medicine. Group C (Glipizied + Mehantaka yoga) showed better results of improvement than group A (Glipizied only) and group B (Mehantaka yoga only) on clinical parameters. No complication was noted in any group

Thus, Mehantaka yoga (Hypothetical) when used separately or with OHA (oral hypoglycemic agents) is a good remedy for the management of Madhumeha (Diabetes mellitus).

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