Published online in http://ijam.co.in ISSN No: 0976-5921

International Journal of Ayurvedic Medicine, Vol 15 (2), 2024; 341-347

Effect of Meshashrungi Patra vati and Ajashrungi Patra vati in management of Type 2 Diabetes mellitus-A Randomised, Single blind, Clinical Study

Research Article

Vallamchetty Mounika[1*], Sangu Pavan Kumar[2]

1. PG Scholar, 2. Assistant Professor, Department of Dravyaguna,
Sri Venkateswara Ayurvedic College, Tirupati. Andhra Pradesh. India.

Abstract

India is known as the Diabetic capital of the world due to the increasing Diabetic population. Diabetes is increasing day by day because of lifestyle changes. As per the WHO statistics around 2 million deaths occur each year because of diabetes. Hence there is a serious concern to find an effective and safe medicine for the treatment of diabetes. Many herbal drugs have been researched and found to be effective in controlling the diabetes. One of such herbs is *Gymnema sylvestre* (Retz.) R.Br. ex Sm. (GS). It is equated with *Meshashrungi*, mentioned in the Ayurvedic texts. *Ajashrungi* (*Pergularia daemia* (Forssk.) Chiov.) (PD) is also taken as a substitute for *Meshashrungi*. So, to find out the efficacy of both the drugs in the management of diabetes, the present work is taken up. It was a Prospective, Randomised, Single blind, Comparative Clinical Study. A total of 40 subjects were randomised into two groups with 20 subjects each. Group A were administered *Meshashrungi patra vati* and Group B were administered *Ajashrungi patra vati* for a period of 60 days with a follow up for every 15 days. Assessment was done based on changes seen in subjective and objective Parameters. Significant changes were observed in both the groups before and after the treatment, but when compared between the groups there was no significant difference. This indicates that both the drugs are equally efficacious in the management of diabetes mellitus. Hence, both the drugs can be used as substitutes for the management of diabetes mellitus.

Keywords: *Meshashrungi, Ajashrungi, Madhumeha,* Type 2 Diabetes mellitus, Single blind study.

Introduction

Diabetes Mellitus is a chronic metabolic disorder, with increase in the number of cases every year. According to 2019 statistics around 2 million deaths may be caused by diabetes (1). As per Indian Council of Medical Research – India Diabetes (ICMR INDIAB) study published in 2023, the prevalence of diabetes is 10.1 crores (2). The number has still gone higher after the COVID-19, as many people are getting affected with the changes in blood glucose levels (3). Diabetes mellitus is characterised by persistent hyperglycaemia due to less production of Insulin and increased resistance of insulin receptors, due to which glucose does not enter the cell effectively and remain in blood in high concentration. Diabetic patients present initially with Polyuria (Glycosuria), Polydipsia, Polyphagia, blurring of vision, tiredness, loss of weight and infections. In more complicated cases insulin supplementation helps in controlling the diabetes. The present treatment plans include the oral medications like metformin and other sulphonyureas (4).

In ayurvedic system of medicine, the above-mentioned clinical features of diabetes mellitus are equated with *madhumeha* in which patient passes large quantity (*prabhuta mutrata*) of sweet urine as Madhu (Glycosuria), turbid urine (*avila mutrata*) and craves for excess food due to highly illuminated fluctuations in the digestive process (*dhatvagni mandhya*) (5). The *madhumeha* patients are divided into two clinical categories called as s*thula pramehi* (obese diabetic patient) and *krisha pramehi* (lean / weak diabetic patient). *Sthula pramehi* is considered as strength or having no much fluctuation in the sugar levels and having adequate strength to carry on his duties (6). This is almost equivalent to NIDDM cases. Whereas the *krisha pramehi* needs immediate treatment as there will be more blood sugar fluctuations and may go in to hypo or hyper glycemia. Hence this condition is compared with the IDDM cases. For the cases of NIDDM, many Ayurvedic and herbal medicines are proved to be effective, but for IDDM, as no much medication will be helpful except the supplementation of the insulin externally. Out of the many herbal resources available *Meshashrungi* is one of the herbal drugs which gained much importance in the recent past for the management of diabetes. Consuming it causes temporary suppression of the sweet and bitter receptors of the tongue, causing aversion towards the

*** Corresponding Author:**
Vallamchetty Mounika
PG Scholar,
Department of Dravyaguna,
Sri Venkateswara Ayurvedic College,
Tirupati. 517501. Andhra Pradesh. India.
Email Id: dr.mounikavallamchetty@gmail.com

sweet foods or the foods rich in carbohydrates. It also stimulates the pancreatic cells to produce insulin and thus maintains the blood glucose levels (7). There are references of *Pergularia daemia* in Animal studies for the treatment of Diabetes mellitus (8). Both the drugs are used ethnobotanically in the treatment of Diabetes mellitus.

In many references from the Ayurveda samhithas and Nighantu, *Gymnema sylvestre* is equated to *Meshashrungi*. *Ajashrungi* is the term mentioned as synonymous to *Meshashrungi*, but two different plants are being used with these names. They are *Gymnema sylvestre* with the name of *Meshashrungi* and *Pergularia daemia* with the name of *Ajashrungi* (9). This has created a confusion, whether they can be used as substitute to each other or not. So, there is a need to explore the clinical uses of both the herbs and assess their efficacy. Hence, the present study was designed to evaluate the efficacy of both *Meshashrungi* and *Ajashrungi* in the management of Type 2 Diabetes mellitus and also to compare their efficacy.

Aims and Objectives

To compare the clinical efficacy of *Meshashrungi* and *Ajashrungi patra vati* in the management of *Madhumeha* (NIDDM).

Materials and Methods

The studies were conducted on 40 patients in OPD of P. G. Department of Dravyaguna at S.V. Ayurvedic Hospital, Tirupati. The patients will be divided into 2 groups with 20 each.

- Group A: administered with *Gymnema sylvestre* (Retz.) R.Br. ex Sm. *(GS)* leaf powder 2 (500mg) tablets twice daily (total 2 gm per day).
- Group B: administered with *Pergularia daemia* (Forssk.) Chiov.) *(PD)* leaf powder 2 (500mg) tablets twice daily (total 2 gm per day).

Study design

Randomised Controlled Single Blind Comparative study of *Meshashrungi* and *Ajashrungi* patra vati were done in P.G. Dravyaguna OPD of S.V.Ayurvedic College & Hospital, Tirupati.

Inclusion Criteria

- Age group of 30 -70years.
- Uncomplicated NIDDM/Type II DM cases.
- Blood sugar levels below 300mg/dl and HBA1C levels below 11%.

Exclusion Criteria

- Age below 30 years and above 70 years.
- Complications of diabetes like diabetic foot ulcers, recurrent infections etc.
- Patients suffering from IDDM (Insulin Dependent Diabetes Mellitus).
- Blood sugar levels beyond 300mg/dl or HBA1C levels beyond 11%.

Screening Methods

All subjects were screened through the case history, clinical Examination and laboratory investigations, which included screening for *Madhumeha* (Type 2 DM) as per format. All the subjects were scrutinised at the time of registration for their age, gender, marital status, socioeconomic status (Rural/Urban, religion, education, occupation and monthly income), appetite, digestive powder, addiction, bowel habit, dietary habits and life style. The subjects were advised to come for follow up at every 15 days interval upto two months.

Approval of IEC

Institutional Ethical Committee's approval was taken for the Prospective, Randomised, Single blind, Comparative Clinical Study.

Procurement of the Drug

GS and PD were identified based on the morphological characteristics and the leaves of them were collected from the local areas of Tirupati following the GMP standards. Both the plant leaves were shade dried separately and after proper drying they were finely powdered. The powders of the drugs were separately punched to 500mg tablets at Sri Srinivasa Ayurveda Pharmacy, Srinivasa Mangapuram, and are stored in air tight containers. Because of the convenience of dispensing and palatability, tablet form is preferred. The tablets we packed as 60 tablets packing to dispense to the patient and asked to follow up after 15 days and procure more medicines for the next 15 days.

Parameter of Assessment

Patients were called through the phone and verified whether they were using the medicine regularly. Patients who were not using the medicine regularly were discarded form the study.

Criteria to assess the effect of the test drug

All the selected subjects were advised to come for follow up at every 15 days interval upto two months.

Demographic details were collected from all the 40 patients, to assess the various factors involved in the disease and were presented in the results section.

Criteria for assessment of results

Assessment was done on the basis of decreased clinical symptoms of polyuria, polydipsia, burning sensation over the limbs, in addition to the laboratory findings observed.

Assessment was done under the headings Subjective and Objective.

Subjective parameters

Subjective parameter of the study and their grading is as follows.

Table. 1: Assessment and grading criteria of Subjective Parameters

Parameters	0	1	2	3
Polyuria	3-4 times/day and one time or occasionally at	5-6 times/day and two times at night	7-10 times/day and 3-4 times at night	11-12 times/day and 5 times at night
Polyphagia	Normal appetite, 1-3 meals/day	Slightly increased, 4-6 meals/day	Moderately increased, 7-8	Markedly increased, >9 meals/day
Polydipsia	Normal, 1.5-2litres	Increased, 2-2.5litres but frequency is more volume of drinking	Increased, 2.5-3litres with increased excessive amount frequency	Increased, 2.5-3litres with increased excessive amount frequency
Burning and tingling of palms and soles	No Tingling/Burning	Tingling/Burning occasionally	Tingling/Burning is moderate and daily activity is not	Tingling/Burning continues, severe and unbearable.
Weakness	Can do routine work and exercise	Can do moderate work and exercise	Can do mild routine work and	Can do mild routine work and

Objective Parameters

Objective parameter of the study and their grading is as follows.

Table. 2: Showing FBS assessment criteria

	Fasting Blood Sugar	Post Prandial Blood	Urine sugars	Glycated Hemoglobin
Grade 0:	75-110 mg/dL	Up to 140 mg/dL	Negative (0-0.8mmol/L)	< 5.7% (Normal)
Grade 1:	111 - 140 mg/dL	141 -180 mg/dL	1+(11.1mmol/L)	5.8 to 6.4 (Prediabetic)
Grade 2:	141 - 180 mg/dL	181 - 260 mg/dL	2+(27.75 mmol/L)	6.5-8.5%
Grade 3:	181 - 220mg/dL	261 - 300mg/dL	3+55.5 (mmol/L)	8.6-11%
Grade 4:	221 - 300mg/dL	301 - 360 mg/dL	4+(111 mmol/L)	> 11%

Criteria of overall assessment:

- Good improvement: Objective parameters at grade 0 and absence of subjective parameters.
- Moderate improvement: Objective parameters up to grade 2 with no subjective symptoms.
- Mild improvement: Objective parameters above grade 2 with subjective parameters up to grade 2.
- No improvement: No change in the parameters or objective parameters above grade 2 and subjective parameters above 2.

Statistical assessment

All the values obtained from the subjective and objective parameters were recorded using the Microsoft Excel and master tables were prepared. The obtained values were assessed using GraphPad Prism Quick calcs online software for the statistical parameters like mean, SD, SE, t value and p value through and are expressed in the results.

Observations and Results

Total 47 subjects were registered in the study, out of them 7 were dropouts due to irregular follow-up. In Group A, total of 23 were registered and 3 were dropped out. In Group B, total of 24 were registered and 4 were dropped out.

Demographic Profile

On the basis of age, the highest prevalence was observed in subjects aged between 41-50 years 13 (35.5%), followed by 12 (30%) subjects aged between 51-60 years, 10 (25%) subjects in 30-40 age group and 5 (12.5%) subjects in 61-70 age group. Male are more affected 24 (60%) subjects, whereas females were 16 (40%).

In the present study, maximum number of subjects were of Hindu religion i.e., 36 (90%) while remaining subjects i.e., 3 (7.5%) were Muslims and only 1 (2.5%) were Christians.

Maximum number of subjects are Married i.e., 32 subjects (80 %), 4 subjects (10 %) were unmarried, 3 subjects (7.5%) were widows and 1(2.5%) is widower.

Amongst 40 subject's maximum number of subjects i.e., 22 (55%) were Graduates, 10 (25%) were illiterates, 12.5% (5) are Primary, 5% (2) is Secondary, 2.5% (1) are Post graduates. In the present study, Maximum number of subjects from the occupation of Desk work i.e., 16 (40%), 8(20%) are housewives and 7 (17.5%) from field work, 12.5% (5) are retired, 7.5% (3) are unemployed, 2.5% (1) is doing Business.

The highest percentage 67.5% (27) belonged to upper middle class, 22.5% (9) to lower middle class and only 10% (4) are poor. Most of the subjects are of *Kapha-Vata Prakruti*-37.5% (15), 17.5% (7) had *Vata-Pitta Prakrti*, 15% (6) had *Pitta- kapha Prakrti*, 12.5% (5) had *Vata Prakrti*, 10% (4) had *Pitta Prakrti* and 7.5% (3) had *Kapha Prakrti* among 40 subjects.

Majority i.e. 35% of the subjects were having *Mandagni* and *Visamagni*, followed by *Samagni* 26.66% (8) and *Tiksnagni* 3.33 (4).

Majority of cases belonged to Urban 27 (67.5 %) followed by Rural area 13 (32.5 %).

14 patients (35%) had *Tvak sara*, followed by *Meda sara, Asthi sara* and *Mamsa sara* patients. Only one patient was having *Rakta sara*. No *Majja sara, sukra sara or satva sara* patient are identified. Majority of the patients were of *Madhyama Samhanana* i.e.

21(52.5%), followed by 14 (35%), 5 (12.5%) were *Avara and Pravara Samhanana* respectively. Among the 40 Subjects, 60% (24) had *Madhyama satva*, 25% are of *Pravara satva* and 15% are of *Avara satva*. Majority i.e. 52.5% (21) had *Madhyama bala* followed by *Avara bala*-25% (10), *Pravara bala*-22.5% (9).

32 (80%) patients were having mixed diet followed by 8 (20%) were vegetarians. 75% of them had no addictions, while 12.5% (5) were addicted to alcohol and smoking, 10% (4) only to alcohol, 2.5% (1) only to smoking. 55% of the subjects were good at sleep, while 45% of the subjects had disturbed sleep.

70% of patients confirmed the family history of *Madhumeha*. 30% had no family history of diabetes.

Results

Table 6: Effect of treatment on Subjective parameters of Group A (GS)

Parameter	N	B.T mean	A.T mean	Mean Difference	Relief %	S.D		S.E	t'	p'	Inference
						BT	AT				
Polyuria	20	1.85	0.90	0.95	50%	0.93	0.64	0.153	6.1902	<0.0001	Statistically Extremely Significant
Polyphagia	20	0.80	0.45	0.35	43.75%	0.70	0.51	0.109	3.1986	0.0047	Statistically Very Significant
Polydipsia	20	1.30	0.25	1.05	80.7%	0.86	0.44	0.170	6.1855	0.0005	Statistically Extremely Significant
Burning of Palms and Soles	20	1.40	0.35	1.05	75%	0.99	0.59	0.153	6.8418	<0.0001	Statistically Extremely Significant
Weakness	20	1.80	0.65	1.15	63.8%	1.11	0.75	0.196	5.8770	<0.0001	Statistically Extremely Significant

From the above table it can be inferred that GS showed extremely statistical significance in reducing the symptoms like polyuria, polydipsia, burning of palms and soles and weakness, whereas in polyphagia it showed significant results.

Table 7: Effect of treatment on Subjective parameters of Group B (PD)

Parameter	N	B.T mean	A.T mean	Mean Difference	Relief %	S.D		S.E	t'	p'	Inference
						BT	AT				
Polyuria	20	1.50	0.45	1.05	70%	0.76	0.60	0.170	6.1855	<0.0001	Statistically Extremely Significant
Polyphagia	20	1.10	0.30	0.80	72.72%	1.12	0.57	0.172	4.6599	0.0002	Statistically Very Significant
Polydipsia	20	1.55	0.40	1.15	74.19%	1.00	0.60	0.167	6.9018	<0.0001	Statistically Extremely Significant
Burning of Palms and Soles	20	1.35	0.35	1	74.07%	1.04	0.59	0.162	6.1644	<0.0001	Statistically Extremely Significant
Weakness	20	1.85	0.15	1.70	89.18	1.23	0.37	0.263	6.4743	<0.0001	Statistically Extremely Significant

From the above table it can be inferred that PD showed extremely statistical significance in reducing the symptoms like polyuria, polydipsia, burning of palms and soles and weakness, whereas in polyphagia it showed significant results, similar to the Group A (GS) group.

Table 8: Effect of treatment on Objective Parameters of Group A

Parameter	N	B.T mean	A.T mean	Mean Difference	Relief %	S.D		S.E	t'	p'	Inference
						BT	AT				
FBS	20	175.08	154.20	21.60	12.28%	47.50	44.04	2.572	8.3998	<0.0001	Statistically Extremely Significant
PPBS	20	223.40	188.10	35.30	15.08%	53.54	53.43	6.159	5.7315	<0.0001	Statistically Extremely Significant
HbA1c	20	7.6775	7.3650	0.3125	4.54%	1.2710	1.0230	0.075	4.1648	0.0005	Statistically Extremely Significant
Urine sugar	20	1.90	1.10	0.80	42.10%	1.02	0.91	0.138	5.8119	<0.0001	Statistically Extremely Significant

From the above table it can be inferred that GS showed extremely statistical significance in reducing the symptoms like FBS, PPBS, HbA1C and Urine sugar levels.

Table 9: Effect of treatment on Objective Parameters of Group B

Objective Parameter	N	Mean		Mean Diff	% of Relief	S.D		S.E	t-value	P value	Significance
		B.T	A.T			B.T	A.T				
FBS	20	175.55	145.20	30.35	17.28%	37.26	27.74	4.925	6.1620	<0.0001	Statistically Extremely Significant
PPBS	20	223.75	185.95	37.8	16.89%	49.67	41.90	5.984	6.3164	<0.0001	Statistically Extremely Significant
HbA1c	20	7.875	7.320	0.555	7.04%	1.595	1.410	0.143	3.8864	0.001	Statistically Extremely Significant
Urine sugar	20	1.15	0.65	0.50	43.47%	1.18	0.75	0.136	3.6839	0.0016	Statistically Very Significant

From the above table it can be inferred that PD showed extremely statistical significance in reducing the symptoms like FBS, PPBS, HbA1C and Urine sugar levels, similar to Group A (GS) group.

Table 10: Comparison of overall effect of therapies between Group A & Group B

Group	Good Improvement	Moderate Improvement	Mild improvement	Unchanged
A	0	55%	45%	0
B	5%	70%	25%	0

From the above table it can be inferred that GS showed moderate to mild improvement in 55% and 45% patients in the subjective and objective parameters. Whereas PD showed good, moderate and mild improvement in 5%, 70% and 25% patients. This assessment shows that PD is little more effective in the management of the parameters of diabetes than GS. But the statistical significance of both the drugs are almost similar.

Discussion

Diabetes is a fast growing metabolic disorder among all the ages and causing disturbances to the healthy living. It is characterised by the increase in the blood sugar levels and attracts many infections. Hence it is important to find a better remedy for the prevention of the diabetes.

Diabetes is equated with the disease *prameha* mentioned in *Ayurveda.* Ayurvedic system of medicine advises many medical plants for the management of *prameha* (Diabetes). Among the many single medicinal herbs used for the disease, *Gymnema sylvestre* (GS) has gained much popularity for its anti-diabetic properties, suppressing the taste sensation for sweet and bitter taste. GS is considered as *Meshashrungi* in Ayurveda. One of the other drugs used with the name of *Meshashrungi* is *Pergularia daemia* (PD), which is considered *Ajashringi.* Hence in the present study, a comparative clinical study was conducted to study the efficacy of GD and PD in the management of diabetes.

From the study it was observed that more number of patients were of the age group 41-50 years and males were more affected than the females. As the setting of the hospital was in a Hindu predominant area, most of the enrolled patients were from Hindu community. Most of the enrolled patients belonged to upper middle class and were having sedentary lifestyle.

In the study it is observed that most of the patients were having *Kapha data Prakriti, mangani or vishama agni, madhyama samhanana and madhyama bala.* In many cases it is observed that the sleep was disturbed. Thisis because of the fluctuation in the blood sugar levels during the night causing disturbance in the sleep pattern.

Most of the enrolled patients were having the family history of diabetes and most of them are having chronicity of 1-3 yrs.

The enrolled patients were divided into two groups Group A (treated with GS *ghana vati*) and Group B (treated with PD *ghana vati*).

In Group A, GS showed extremely statistical significance in reducing the symptoms like polyuria, polydipsia, burning of palms and soles and weakness, whereas in polyphagia it showed significant results.

In Group B, PD showed extremely statistical significance in reducing the symptoms like polyuria, polydipsia, burning of palms and soles and weakness, whereas in polyphagia it showed significant results, similar to the Group A (GS) group.

But, GS was effective in controlling burning of palms and soles, whereas PD was effective in controlling the other subjected parameters, polyuria, polyphagia, polydipsia and weakness.

In Group A, GS showed extremely statistical significance in reducing the symptoms like FBS, PPBS, HbA1C and Urine sugar levels.

In Group B, PD showed extremely statistical significance in reducing the symptoms like FBS, PPBS, HbA1C and Urine sugar levels, similar to Group A (GS) group.

But GS was effective in controlling all objective parameters like FBS, PPBS, HBA1C and Urine Sugar, effectively. This may be because of the insulin like factors present in the GS, which are effective in controlling the symptoms of DM.

In Group A no patient have shown Good improvement, 55% showed Moderate improvement, 45% showed Mild improvement and unchanged were Nil. In Group B, 5% were with good improvement, 70% with Moderate improvement, 25% with Mild improvement and Nil with unchanged. The difference observed was very minimal and is comparable each other.

The comparison of the baseline data (before treatment) showed no significant variation in the cases

taken. The results after the treatment were also compared to note the changes in both the groups and did not find any significant differences. This indicates that both the drugs have equal efficacy in the management of *Madhumeha*.

From the above study it can be understood that, there is a significant change before and after the treatment in both the groups, indicating that both the drugs are efficacious in the management of *Madhumeha*.

Probable Mode of action of drugs

Meshashrungi has *Kapha-pitta hara karma* that helps in controlling vitiated *Kapha and Medas*. *Pittahara karma* helps in controlling *kara pada daha* which is one of the *purvarupa*. Tikta rasa has *Kleda, Meda, Vasa, Majja, Lasika, Sveda, Mutra, Purisa, Pitta, Slesma Upasosana Guna and Kasaya rasa* has *Sosana, Stambhana, Sarira kleda upayokta* (10) that helps in treatment of *Madhumeha*. By its *Tikta, Kasaya rasa* causes *mutra sangrahana* and helps in reducing *Prabhuta mutrata*. By virtue of its *Tikta, Kasaya Rasa*, *Laghu, Ruksa Guna* which does *Kaphaharana* and *Kledo Sosana*, this may further help in *Vatanulomana*, and reduces the improper appetite (*Visamagni*) thereby reducing polyphagia. It has t*ikta, kashaya rasa* and pacifies *pitta, kapha*, checks *mutratipravṛitti* thereby alleviating *pipasadhikya*. *Meshashrungi* by its *kasaya, tikta rasa, ruksa guna, kapha pittahara karma* removes the *Kapha-Vata* vitiation thereby improving the circulation to *tiryakgata dhamanis*, by which it nourishes the *dhatus* and reduces *Karapada daha* and *suptata*. *Meshashrungi* by its *Tikta - Kasaya Rasa*, *Ruksa guna, Kleda Sosana Karma*, removes *Kapha* effectively brings about normalcy of the *dhatus* thereby exhibits the action of *dhatu prasadana*. The drugs alleviate Daurbalya effectively with their Balya and *Rasayana* property. Due to its *tikta - kasaya Rasa, Ruksa guna, kapha-pitta hara karma* removes the *abaddha medas* and does *Kleda Sosana* that is helpful in reducing FBS, PPBS and Urine sugars.

The herb known for its sweet inactivation property by the presence of triterpene saponins like Gymnemic Acids, Gymnema saponins and Gurmarin. (11)

The mode of action of Gymnemic acids is through stimulation in insulin secretion from pancreas. It also exerts a similar effect by delaying the glucose absorption in the blood. The atomic arrangements of gymnemic acids to the taste buds are similar to sugar molecules which fill the receptors in the taste buds preventing its activation by the sugar molecule in the food. Similarly, in the intestine it attaches to the receptor present in external layer of intestine, thereby preventing the absorption of sugar molecules by intestine, leading to reduction in blood sugar levels. It also increases regeneration of pancreatic islet cells to enhanced enzyme mediated uptake of glucose. This process decreased glucose and fatty acid assimilation in the small intestine and interferes in the ability of receptors in mouth and intestine to sensation of sweetness. (12)

Ajashrungi has *Kaphahara* property which helps in controlling *Madhumeha* by reducing the *Kapha* and *Medas* as both are main causative factors of *Madhumeha*. It does *mutra sangrahana* by virtue of *katu, kasaya rasa* and *kaphahara karma* which reduces p*rabhutavila mutrata*. Due to *Kaphahara karma* and *katu, kasaya rasa*, this may further help in *vatanulomana*. *Dipana karma* of the drug helps in reducing *dhatvagni mandhya*, there by helps in *uttarothara dhatu posana* and reduces polyphagia. *Kasaya rasa* pacifies Pitta and checks *Mutratipravritti* thereby alleviating *Pipasadhikya*. Katu rasa has properties of clearing *sonitasanghatam*, *bandhamschinatti* (removes bondages), *margan vivrnoti* (clears pathway) (13) that helps in increasing the circulation of blood, to the minute blood vessels of extremities and reduces *karapada daha*. *Balya* and *Rasayana* properties of *Ajashrungi* helps in decreasing *Daurbalya* by doing *uttarothara dhatu posana*. *Kaphahara karma, katu, kasaya rasa*, *laghu, ruksa guna* reduces *kapha, abaddha medas* and does *kleda sosana* helps in reducing *dhatvagni mandhya* and does *dhatu posana* and *prasadana*, by increasing the utilisation of the glucose by the cells and thereby reducing FBS, PPBS and urine sugars.

Conclusion

Thus from the above study it can be concluded that both the drugs sources of *Meshashrungi* and *Ajashrungi* are effective in the management of *madhumeha* (Diabetes mellitus). It can also be said that both the drugs are highly efficacious and there is no much significance between both the drugs in the management of diabetes. Hence both the drugs can be used clinically with equivalent efficacy.

Limitations

As the study is conducted on a limited number of the cases, it is better to take the work in a large number of cases to prove the exact efficacy. This study may prove to be a reference work.

Acknowledgements

We thank the management of SV Ayurvedic College for providing the opportunity to work and present the work.

Sources of Funding: None (Self-funding)

Conflict of Interest: There is no conflict of interest among the authors.

References

1. Available from: https://www.who.int/news-room/fact-sheets/detail/diabetes.
2. Available from: Metabolic non-communicable disease health report of India: the ICMR-INDIAB national cross-sectional study (ICMR-INDIAB-17) - The Lancet Diabetes & Endocrinology.
3. Rathmann W, , Kuss O, Kostev K. Incidence of newly diagnosed diabetes after Covid-19. Diabetologia. 2022; 65(6): 949-954.

4. Stuart H. Ralston IDPMWJSRPH. Davidson‟s Principles and Practice of Medicine. 23rd ed.: Elsevier Ltd; 2018 Vaidya Bhagawan dash.
5. Ram Karan Sharma, Vaidya Bhagwan dash. Caraka Samhita. 2013th ed. Varanasi: Chowkhamba Sanskrit Series Office; 2013.
6. Ram karan sharma, Vaidya Bhagwan dash. Caraka samhita. Reprint ed. Varanasi: Chowkhamba Sanskrit Series Office; 2014.
7. Available from: Phytochemical and Pharmacological Properties of Gymnema sylvestre: An Important Medicinal Plant - PMC (nih.gov).
8. Ramesh N, Vinoth Kumar P. Anti-hyperglycaemic activity of Pergularia daemia. The Journal of Phytopharmacology. 2014;: 29-34.
9. Chunekar K.C, Yadav C.L. Medicinal plants of Susruta Samhita. 2005th ed. Varanasi: Jyotish prakash press bhairo.
10. Available from: https://niimh.nic.in/ebooks/ecaraka/index.php.
11. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3912882/.
12. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3912882/.
13. Available from: https://niimh.nic.in/ebooks/ecaraka/index.php.

*****