

**EFFECT OF BILWA PATRA (AEGLE MARMELOS CORR.)  
GHANAVATI IN PRAMEHA - A CASESTUDY****Balaji Sawant<sup>\*1</sup>, Janhavi Alwe<sup>2</sup>, Anushka Vishwakarma<sup>3</sup> and Shraddha Chaudhari<sup>4</sup>**<sup>1</sup>Professor and H.O.D, Department of Dravyaguna, K.G. Mittal Ayurvedic College.<sup>2</sup>Assistant Professor, Department of Dravyaguna, K.G. Mittal Ayurvedic College.<sup>3</sup>PG Scholar, Department of Dravyaguna, K.G. Mittal Ayurvedic College.<sup>4</sup>Assistant Professor, Department of Dravyaguna, K G Mittal Ayurvedic College.Article Received on  
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College.**ABSTRACT**

Diabetes mellitus has become the fastest considerable disease in the world. India has been the nation with fastest growing population of Diabetics with current prevalence standing at 9.3%. Hence, the need of the hour is to find new remedies that are cost effective, easily available, natural with less adverse effects on body and having concrete anti-diabetic effect. Hence here, *Bilwa* was used in the single case study of *Prameha rog*, where patient was selected in O.P.D of K.G. Mittal Ayurvedic College and Hospital, Mumbai. The patient was given *Bilwapatra Ghanvati* and observations were done once in 15 days for 90 days. After the completion of scheduled dosage form and regimen to the patients the Ayurvedic symptoms which was scored according to their intensity and the blood serum biochemical changes are noted before and after the treatment in the result. The results are hence recorded and conclusion is drawn.

**KEYWORDS:** *Bilwa, Ghanavati, Aegle marmelos, Prameha, Diabetes mellitus, Shaman Chikitsa.***INTRODUCTION**

In today's world, diseases and suffering have reached a saturation point. People are working together to discover new and innovative ways to alleviate human suffering. However, in order to survive, the globe has begun to rely more and more on nature. Diabetes mellitus is a multi-factorial disease resulting from a gene environment interaction. The prevalence of DM

and impaired fasting blood glucose (IFG) in India was 9.3% and 24.5% respectively.<sup>[1]</sup>

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Ayurvedic texts refer to DM as *Prameha*, which is characterised by a patient's increased urine output and turbidity in their urine. Many studies on herbs and herbal remedies have been conducted; for this work, *Bilwa* has been chosen as it has *Pramehaghna* property. *Bilwa* is easily available, used in daily-to-day life and cost-effective as compared to other anti-diabetic drugs. Hence, this work was done to prove its anti-diabetic effect and evaluate its efficacy in *Prameha rog*.

## AIM AND OBJECTIVES

To study the effect of *Bilwapatra Ghanvati* in *Prameha rog*.

## OBJECTIVE

To evaluate the hypoglycaemic and anti-diabetic effect of *Bilwapatra Ghanavati*.

## REVIEW OF LITERATURE

*Bilwa* is a sacred tree which is included in *Brihat panchmool* and has been considered a very important ayurvedic drug. *Bilwa* leaf is used for its anti-diabetic property.<sup>[3]</sup>

Unripe fruit pulp is mainly indicated in *Grahani*, *Pravahika* and *Atisara* and recent studies confirm its amoebicidal property.<sup>[4]</sup> Also, *Bilwa patra* is enlisted in *Panchpallav dravya*.<sup>[5]</sup> The *Bilwapatra Ghanvati*, that has been used as the treatment is referred to as *Pramehaghna dravya* in Ayurvedic classics, hence it was administered to the patient to confirm its mode of action in this case.

**Botanical name-** *Aegle marmelos*

**Family name-** Rutaceae

## MATERIALS AND METHODS

### Case description

A 67 year old, male patient, complaining of burning sensation in sole of both feet and both palms, pricking pain in sole of feet, increased frequency of urination at night, increased thirst and generalised weakness along with fatigue, since past 3 to 4 months approached OPD of

Department of Dravyaguna, K G Mittal Ayurvedic Hospital with his Blood Investigations for further treatment.

**Table I: Symptomatology.**

Sn.	Symptoms	Duration
1	Burning sensation in palms and sole of feet	1 month
2	Pricking Pain in sole of feet	1.5 months
3	Frequent micturition	3 months
4	Increased thirst	3 months
5	Generalized weakness and fatigue	4 months

**Personal History -**

*Prakriti* – Vata-Kaphaja

*Vyasana* – Tea and coffee 2 times a day,  
occasional alcohol consumption

**Diet**- Mixed diet, Non-veg more  
frequent

**Occupation** – Retired (Carpenter)

**Dashavidha parikshan-**

1. *Prakruti*- Vat-kaphaj
2. *Vikruti*- Tridoshaj
3. *Saar*- Asaar
4. *Samhanana*- Avara
5. *Pramana*-Madhyam
6. *Satmya*-
  - i. *Aharotha*-Mansaahar
  - ii. *Viharotha*-Diwaswap
  - iii. *Rasotha*- Madhur ras
7. *Sattava*- Pravar

**Ashtavidh Parikshan-**

- 1) *Nadi*- 84 bpm
- 2) *Mala*- Baddha koshta
- 3) *Mutra*- 6 to 9 times/day , 4 times/night
- 4) *Jivha*- Saam
- 5) *Shabda*- Prakrut
- 6) *Sparsha*- Anushna-sheet
- 7) *Druk* – Drishtimandya
- 8) *Aakruti* – Madhyam

8. Aharshakti- Avara

9. Vyayamshakti- Avara

10. Vaya- Vriddha

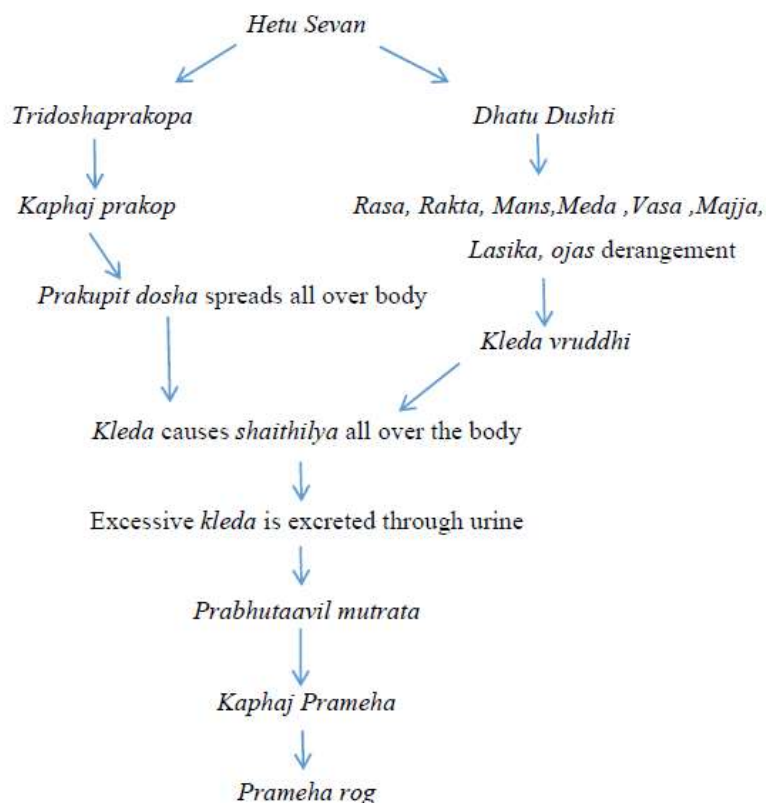
**NIDAN PANCHAKHETU**

1. Ahaaraj- Anoop Mans atisevan(Chicken, Pork and Fish), Navannpan, Pishtannasevan(Maida, Bakery products), Madyapaan
2. Viharaj-Virrudhashan, Avyayam, Adhyashan

PURVARUPA- Daurbalya, Shaithilya, Hastapaadtal daha.

**LAKSHAN-** Varamvarmutra pravrutti, pipasadhikya, Hastapaadatal daha, Vibandha.

### SAMPRAPTI



### SAMPRAPTI GHATAK

**Dosha** - Kapha-Vaat

**Dushya** - Mutra, Rasa, Kleda

**Strotas** - Mutravaha, Annavaha, Udakvaha

**Udbhavasthan** - Pakvashay Samuttha

**Adhishthan** - Mutravaha Strotas

**Vyadhimarga** - Abhyantar

### Preparation of medicine

*Bilwapatra* was selected as per reference of Priya Nighantu. The *Ghanvati* was prepared by following the SOPs (Standard operating procedures)-

1. Fresh leaves were collected following the GACP (Good Agricultural and Collection Practices) guidelines.
2. Leaves were sun-dried and crushed to form *Bharad*,
3. *Bharad* was further processed into *Ghanavati*, as per *Siddha yoga Sangraha*.

4. It was formed into 500mg tablets.
5. *Ghanavati* was stored in air-tight containers in cool and dry place in the department.

### Plan of study

Patient approached OPD with symptoms as described above. *Bilwapatra Ghanvati* was administered to the patient.

**Table II: Plan of study.**

1	TYPE OF STUDY	Single case study
2	DURATION	3 months
3	FOLLOW UP	15 days
4	DRUG	<i>Bilwa patra</i>
5	FORMULATION	<i>Ghanavati</i>
6	ROUTE OF ADMINISTRATION	ORAL
7	DOSAGE	500mg, 2x BD
8	ANUPAN & SEVANKAAL	<i>Koshnajaal</i> , <i>Pragbhakta</i>
9	WRITTEN CONSENT	Taken before initiating the treatment.

### CLINICAL ASSESSMENT

#### Assessment Criteria

A person with classical sign and symptoms of *Prameha roga* as mentioned in Samhitas and showing evidence of Diabetes Mellitus and it will be accessed on basis of Subjective and Objective Criteria.

#### SUBJECTIVE CRITERIA

1. *Pipasa-Vridhhi* (polydipsia) (excluding environmental variation)
2. *Prabhut-Murata* (polyuria) (excluding environmental variation)
3. *Avila-Mutrata* (turbidity)
4. *Kshudha-adhikya* (increased appetite)
5. *Nidradhikya* (sleep)
6. *Swedadhikya* (perspiration)

#### Gradation of symptoms

- 1) *Pippasadhikya*: (Polydipsia) (Excluding environmental variation):

Grade	SYMPTOMS
0	Feeling of thirst (7-9 times/24 hours) & relieved by drinking water
1	Feeling of moderate thirst (9-11 times/24 hours) & relieved by drinking water
2	Feeling of excess thirst (>11-13 times/24 hours) not relieved by drinking water
3	Feeling of severe thirst (>13 times) not relieved by drinking water

2) **Prabhut- mutrata** (polyuria) (Excluding environmental variation, colour & consistency):

0	3 to 6 times per day, rarely at night.
1	6 to 9 times per day, 0 to 2 times at night.
2	9 to 12 times per day, 2 to 4 times at night
3	More than 12 times per day, more than 4 times per night.

3) **Kshudha-Adhikya** (Increased Appetite):(1 meal = about 350gm diet)

0	As usual/routine
1	Slightly increased (1 meal extra with routine diet)
2	Moderately increased (2 meals extra with routine diet)
3	Markedly increased (3 meals extra with routine diet)

4) **Avila-mutrata** (turbidity)

0	Crystal clear fluid.
1	faintly cloudy, smoky or hazy with turbidity barely visible
2	Turbidity clearly visible but newsprint easily read through the test tube.
3	newsprint cannot be read through the test tube.

5) **Nidradhikya** (sleep)

0	Normal sleep, up-to 6hours/24hours.
1	Sleep up-to 7hours/24hours with <i>Angagaurava</i> .
2	Sleep up-to 8hours/24hours with <i>Angagaurava</i> and <i>Jhimbha</i> .
3	Sleep up-to 8-10 hours/24hours with <i>Tandra</i> .
4	Sleep up-to >10hours/24hours with <i>tandra</i> and <i>klama</i> .

6) **Swedadhikya** (perspiration)

0	Sweating after heavy work and fast movement or in hot weather
1	Profuse sweating after moderate work and movement
2	Sweating after little work and movement (stepping ladder etc.)
3	Profuse sweating after little work and movement
4	Sweating even at rest or in cold weather

**OBJECTIVE CRITERIA**

1. Blood Sugar Level-Fasting
2. Blood Sugar Levels-Postprandial
3. Glycosylated Haemoglobin (HbA1C)

## OBSERVATIONS

## Subjective parameters

Table III: Subjective parameters before and after treatment.

Sr no.	Symptoms	Before treatment	After treatment
1	<i>Pipasa vriddhi</i>	3	1
2	<i>Prabhut mutrata</i>	3	0
3	<i>Kshudha adhikya</i>	1	0
4	<i>Avil mutrata</i>	3	2
5	<i>Nidradhikya</i>	2	0
6	<i>Swedadhikya</i>	3	1

## Objective parameters

Table IV: Objective parameters before and after treatment.

Blood Investigation	Before treatment	After treatment
HbA1c	6.9%	6.3%
Fasting BSL	126 mg/dL	121 mg/dL
Post Prandial BSL	211 mg/dL	185 mg/dL

## DISCUSSION

The *Prameha rog* mainly involves *Bastivikruti*, which is caused by *Tridoshprakop* in persons with *Beejdosha* (Genetic factors).<sup>[6]</sup> As mentioned in Charak Samhita, one of its main causative factors is *Sneha atiyoga*. There are numerous researches done on herbs and herbal formulations in *Prameha*, here *Bilwapatra* is selected for the management of *Prameha* as a case study project. In this case, the *Prameha rog* maybe caused by *hetu sevan* such as excessive consumption of chicken and pork meat (*Anup Gramya prani mans*), Alcohol consumption, *Diwaswap*, *Avyayam* etc. This caused development of frequent micturation with turbid urine, alongwith other symptoms, which is considered as one of the cardinal features of *Prameha*. After a thorough history taking, the patient was diagnosed as a *Prameh rogi* and treatment was given. After the treatment was over, the changes in subjective and objective parameters were observed. There was complete relief in 3 out of 6 symptoms. The Blood sugar levels showed remarkable reduction, with HbA1c reduced from 6.9% to 6.3% on completion of 3 months. It is also noted that the *Ghanawati* is easy to consume and practically safe, with a rather longer shelf-life as compared to other formulations.

## Probable Mode of Action of BilwaAyurvedic view

Bilwa Patra is a *Pramehaghna dravya*, as explained by Acharya Priyavrat Sharma in Priya Nighantu. The *Deepan Paachan* action of Bilwa helps in *shoshan* of *drava malalike kleda*, *lasika*, *vasa* etc which are spread all over the body. The *Kashay ras* in Bilwa causes



*strotomukh sankuchan* and reduces excessive *kleda*, *kapha*, *pitta* and *rakta* in the *koshtha*.<sup>[7]</sup> Also contributing to the *Mutrasangrahi* karma of Bilwa, it lowers the tendency of *Prabutmutrata* (Polyuria). The *Kashay rasa* and *Ruksha guna* in leaf, and *Katu vipaka* alleviates vitiated *Kapha dosha* whereas *Vaathar* property helps remove vitiated *Vata dosha*. Hence Bilwa patra may work in this fashion in the *Kaphaj Prameha*.

### Modern view

A lot of classes of synthetic drug are available in the market but quite a few herbal drugs are being employed in the treatment of Diabetes mellitus.<sup>[8]</sup> Administration of aqueous extract of leaves improves digestion and reduces blood sugar and urea, serum cholesterol in alloxanized rats. Along with exhibiting hypoglycemic activity, this extract also prevented peak rise in blood sugar at 1h in oral glucose tolerance test<sup>[9]</sup> Leaf extract in *A. marmelos* significantly enhances glycaemic control, protects the pancreas from degeneration, and shows antioxidant and hepatoprotective effects. It contains umbelliferon- $\alpha$ D-glucopyranosyl-(2(I)  $\rightarrow$  1 (II))- $\alpha$ D-glucopyranoside that cut down extra glucose level in STZ induced diabetic rats. The leaf extract also prevents secondary complications in STZ-induced diabetic rats due to the presence of limonene as a potent anti-glycating agent. Leaf extract in *A. marmelos* shows the anti-diabetic and anti-hyperlipidaemic effect of allopolyherbal formulation in oral glucose tolerance test and STZ-induced diabetic rat model.<sup>[10]</sup> The chloroform extract of *A. marmelos* established anti-diabetic anti-glycating and antioxidant activity, effectively preventing kidney damage and the establishment of cataracts. Hence, the plant is used for management of Type 2 diabetes.<sup>[11]</sup>

### CONCLUSION

After comparing the before and after treatment results it can be conferred that patient had significant results. The effect of *Bilwaparta Ghanawati* in Diabetes Mellitus Type 2 has shown encouraging results and will be further demonstrated in a larger sample size appropriate for drawing concrete results. The symptoms like *Prabhut mutrata* and *Kshudhadrhikya*, *Nidradhikya* showed complete relief while other symptoms show significant decrease in intensity. Whereas the blood investigations also show remarkable decrease in values. It is concluded that the usage of *Shamana chikitsa* in the form of *Bilwapatra Ghanvati*, is essential to alleviate the symptoms of *Kaphaj prameha* as it shows hypoglycaemic activity as well as anti-diabetic effect. Hence, the single drug can be taken for multi-centric trials in larger population to precisely infer its therapeutic efficacy and



safety.

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