**ABSTRACT**

Diabetes is a metabolic syndrome presented by hyperglycaemia resulting from impairment in insulin secretion, insulin action, or both Madhumeha is one of the 20 pramehas which comes under Vataja subtype and is characterized by the sweet urine like honey. In Ayurveda there are number of herbal and metal formulations for the management of Madhumeha. Main aim was to study the efficacy of Kadar-Kramuka kashaya in Madhumeha (NIDDM) patient. Two patients having Madhumeha were included in the study. One patient was treated with Kadar-Kramuka Kashaya and the other was treated with Tab. Metformin (250mg) for 60 days. A specially designed clinical research proforma of Madhumeha was used for assessing the efficacy of drugs. More improvement was observed in Parabhuta-Avil mutratata symptoms of Madhumeha by Kadar-Kramuka Kashaya, while BSL level was decreased more by Tab. Metformin (250mg). Present study was carried in two patients only and hence having its own limitations. Clinical trials are expected further.

**Keywords**-Diabetes Mellitus, NIDDM, Prameha, Madhumeha, Kadar, Kramuka, Metformin.

**1. INTRODUCTION**

INDIA is one of the 6 countries of the IDF Sea region (International Diabetes Federation South-East Region). 415 million people have Diabetes in the world and 78 million people in the SEA region; by 2040 this will rise to 140 million. There were 69.1 million cases of diabetes in INDIA in 2015, which is more than 7.1 % of adult population. Ayurveda has its own principles, but it is incorporating new theories & Drugs in it & is presenting them according to its principle. Many drugs are known to Ayurveda since Vedic era & are increasing with time. Ayurveda can provide better management for Madhumeha without hazardous side effects. Ayurveda includes Madhumeha amongst “Ashto Mahagada”. Type-II Diabetes mellitus is mainly associated with Avarana-janya/ Margrovadhjanya Samprapti. In Madhumeha, the main Avaraka are Kapha, Pitta, Rasa, Mansa and Meda, and out of these Meda is predominant. This Medodusti vittates Mansa, Rakta, Kleda and Ojas. All Dhatus and Malas and all three Doshas are involved in the disease procedure. Acharya charaka says- “A Physician can add new drugs to Mahakshayas by his own intelligence that will help him to treat patients.”

In Ayurvedic Samhita (Classical texts), many drugs are found in the treatment of Madhumeha. Line of treatment for Krush and Durbal pramehi (Weak and Lean patient) is Bruhana and for Sthula and Balwana pramehi (Fatty and strong Patient) is Sanshodhana. Also, Acharya Charaka added that patient contraindicated for Sanshodhana treatment should be treated by Sanshamana Treatment like Mantha, Kashaya, yavaanna, churna, avleha, Laghu Anna etc. Ayurveda propose number of Herbal and Metal formulations for the management of Madhumeha. Here an attempt has been made to provide a better management for this condition, Madhumeha. Kadar-kramuka [Jarula] Kashaya is one of such herbal combination mentioned in Sushruta Samhita which contains- Kadar- Shweta Khadira (Acacia suma buch, Family- Le-
Kadam AA, Shinde BT, Chavan SA - A Case Study of Kadar-Kramuka [Jarula] Kashaya in Madhumeha With Special Reference to NIDDM.

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**guminosae) Kramuka** (Jarula- Lagerstroemia speciosapera, Family- Lythraceae).

**2. METHODS**

**2.1. Objectives**

- To evaluate the *Dosha-Dushya Sammurchhana* of *Vataja Madhumeha* with relation to *Samprapti*.
- To evaluate the effect of *Kadar-kramuka Kashaya* on Sign and Symptoms in *Madhumeha* and on Blood sugar level.

**2.2. Study design**

Present study type is case study which was carried out in two newly diagnosed patients of *Madhumeha* (Type II DM). Patient No 1 was treated with *Kadar-Kramuka Kashaya* for 60 days & Patient No 2 was treated with Tab. Metformin (250mg) for 60 days. Specially designed Case Record Forms were used to note down the findings.

**2.3. Criteria for selection of patients**

**Inclusion Criteria:** Details are mentioned in Table No. 1.

**Exclusion Criteria:** Details are mentioned in Table No. 1.

**2.4. Drug Review**

*Kadaya* and *Kramuka* were used to make *Kashaya*. Details are illustrated in Table No. 2

**2.5. Method of preparation Kashaya**

*Kashaya (Kwatha)* was prepared as per *Kwatha kalpana* (decoction) mentioned in *Sharangdhar Samhita*. One part of *Bharada churna* of *Kadara-Kramuka* was added in 16 parts of water and boiled it to remain 1/8th part. Patient were demonstrated how to prepare *Kwatha* at home.

**2.6. Case History**

**2.6.1. Case No. 1 (Patient No. 1)**

**Basic Information:**

**Chief Complaints:**
*Prabhoota Mootrata* (+++), *Avila Mootrata* (+++), *Atisweda*(+++), *Dourbalya*(+++), *Atipipasa* (+++)

**Past History:** No major illness

**General Examination:**
Pulse – 74/min, BP – 130/84 mm of Hg, Weight – 76 kg, *Prakriti* – *Vata-Kapha, Agni* – *Vishama, Koshtha* – *Krura*.

**Investigations:**
*BSL (F)* – 178 mg/dl, *BSL (PP)* – 312 mg/dl, *HbA1C* – 8.2%.

**Samprapti Ghatak:**

**Diagnosis:**
*Vataja Prameha (Madhumeha), Nava Avastha*. (Type II DM)

**Treatment:**
*Kadar-Kramuka kashaya* 80 ml x BD

**Follow ups:**
Patient was called for routine follow up every 15 days.

**Effect of Therapy:**
All symptoms were relieved to a good extent and *BSL* as well as HbA1C levels were lowered almost up to normal.

**2.6.2. Case No. 2 (Patient No. 2)**

**Basic Information:**
Name – XYZ, Age – 53 years, Sex – Male, *Occupation* – Shopkeeper.

**Chief Complaints:**
*Prabhoota Mootrata* (+++), *Avila Mootrata* (+++), *Atisweda*(+++), *Dourbalya*(+++), *Atipipasa* (+++)

**Past History:** No major illness

**General Examination:**

**Investigations:**
BSL (F) – 182 mg/dl, BSL (PP) – 320 mg/dl, HbA1C – 8.6%.

**Samprapti Ghatak:**


**Diagnosis:**

Vataja Prameha (Madhumeha), Nava Avastha. (Type II DM)

**Treatment:**

Tab Metformin 250mg x BD

**Follow ups:**

Patient was called for routine follow up at every 15 days.

**Effect of Therapy:**

All symptoms were relieved to a few extent and BSL as well as HbA1C levels were lowered and became normal.

**RESULTS**

In both cases patients have shown good relief in symptoms and investigations. Results are shown in Table No. 3 and 4. Prabhuta mutrata, Avil mutrata, Daurbalya and Pipasa symptoms were absent while Atisweda symptom was decreased by the treatment with Kadar-Kramuka Kashaya. By the treatment with Tab Metformin 250 mg. Prabhuta mutrata symptom was absent while Avil mutrata, Daurbalya, Atisweda and Pipasa symptoms were decreased. Kadar-Kramuka Kashaya was found more effective than Tab Metformin 250 mg to reduce symptoms of Madhumeha (Type II DM). BSL (F), BSL (PP) and HbA1C levels were also reduced in both the cases. Tab Metformin 250 mg was found more effective than Kadar-Kramuka Kashaya to reduce BSL (F), BSL (PP) and HbA1C levels of Madhumeha (Type II DM). So, intensity of symptoms can be reduced & Madhumeha can be handled well with Ayurvedic drugs than modern drugs as we observed in this case study.

Finally, it was concluded that,

- Kadar-Kramuka kashaya is effective than Tab Metforminn 250 mg to reduce symptoms of Madhumeha (NIDDM).

**DISCUSSION**

**Rationally of the study**

Nearly all classical texts have mentioned that Madhumeha is final & incurable stage of Prameha. We have tried here to give at least symptomatically relief to these patients by avoiding their Hetusevana & by keeping them on oral drug which is easily available & cost effective than modern drugs. Madhumeha is Antarpanajanya vyadh. There is obstruction due to vitiated Kapha and dushta Meda. So, during treatment we must think that this obstruction of Kapha & Meda should be cleared first (i.e. breaking Dosh-Dushya Samuchchay). For breaking obstructions of Kapha & Meda we had used Acharya Sushrutotkta Kadar Kramuka Kashay. It was decided to try that does Kadar-Kramuk Kashay had any better effect on Madhumeha than modern drug or not?

**Hetu**

Enjoying sedentary habits and the pleasure of sleep excessively, too much use of yogurt and its preparation, meat juice of domestic, aquatic and swampy animals, milk and its preparation, newly harvested cereals, new/ fresh wines, preparations of jaggery (canesugar preparations) and all other Kapha-aggravating factors are the causes of the diabetes syndrome.

**Samprapti**

Samprapti of Madhumeha is best described by Acharya Vagbhatta. He narrated that; Madhumeha can be originated in 2 ways -

- By the aggravation of Vata caused by Dhatukshaya. (Type 1 DM?)
- By the obstruction of Vata caused by Doshas covering it. (Type 2 DM?)

Madhumeha which is caused by Dhatukshaya manifests as Thin and Aesthetic individual due to loss of Oja. All this is Ojakshaya meaning an imbalance in Ojus. In Margavarjanjanya Madhumeha the vitiated Kapha and Meda obstruct the passage of Vata. The obstructed Vata is vitiated again and carries Ojus to Basti thus manifests Madhumeha.
Diabetes mellitus, which is a syndrome of impaired carbohydrate, fat, and protein metabolism caused by either lack of insulin secretion or decreased senstivity of the tissues to insulin\(^{16}\). Due to Congenital absence of Beta cells in Pancreas or Due to Atrophy of Beta cells, Insulin does not secret & Glucose remains in blood flow which causes HYPERGLYCEMIA. Entry of Glucose molecules in Liver cells are blocked due to collection of Fats & lipids, also due to insulin Resistance in Type2 DM in turn Glucose level increases in blood i.e. HYPERGLYCEMIA &kidneys try to throw it out through urine.

**Chikitsa vivarana-**

The treatment of the disease is based on -

- Avoiding the causative factors or ‘**Nidana Parivarjana**’ - The factor responsible for causing Prameha i.e. Madhura, Sita, Snigdha, Guru Ahara etc., activities like lack of exercise, laziness, and sedentary habits must be avoided\(^{17}\)
- Purification of the body by ‘**Sansodhana**’ - Depending on the body constitution, Pramehi is of two types\(^{18}\)
- **Sthula** and powerful
- **Krisha** and weak

The treatment of choice in **Krisa Pramehi** is ‘**Brihana**’ or ‘**Santarpana**’\(^{18}\), food and activities that increase the body strength. In this type of patients **Sanshodhana Chikitsa** is not done. The **Sthula Pramehi** are first given **Sanshodhana** therapy or biological purification of the body **Dosha** followed by maintaining their equilibrium. Initially **Snehana** is done and when the body becomes ‘**Snigdha**’ then **Shodhana** is done by **Vamana Virechana** etc. By achieving the equilibrium of the remaining vitiated **Doshas** by ‘**Sanshaman**’.

**Kadar-Kramuka Kashaya** is **Sanshaman** Treatment for **Kshaudramehi (Madhumeha patient)**\(^{19}\)

**Mode of Action of Kadar-Kramuka Kashaya**

Kadar corrects Dhatu Shaithilya, & repairs Medo Shaithilya in Madhumeha and removes vitiated Kapha out of body through urine.\(^{20}\)Kramuka has laxative as well as Anti Diabetic Property in its fruits, leaves and stem. Also has Inulin like content in leaves & bark parts which works like Anti-Diabetic Drug.\(^{21}\)

**Limitations**

- This was case study and carried out in only two patients. Randomized Controlled Clinical trials will give more accurate results.
- Patients were newly diagnosed; in chronic cases results may be different.

**CONCLUSION**

- We have got to know **Dosha-Dushya Sammadchnha** of Vataja Madhumeha with relation to **Samprapti & Ayurvedic** drug has little more Good effects than modern drug.
- We have seen the best effect of **Kadar-kramuka Kashaya** on symptoms in **Madhumeha**.
- **Kadar-Kramuka kashaya** decreased BSL and HbA1C levels.
- No adverse reactions were observed by both of the drugs.
- Newly diagnosed **Madhumeha** can be controlled by Ayurvedic drugs.

**AKNOWLEDGEMENT**

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**TABLES**

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Inclusion Criteria</th>
<th>Exclusion Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Newly diagnosed Madhumeha patients. (NIDDM)</td>
<td>IDDM patients, Pregnancy, Stress, Unconscious, Deaf, and Dumb patients.</td>
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<tr>
<td>2</td>
<td>Patients having Fasting Blood Sugar Level greater than 130mg/dl and Post Prandial blood sugar level greater than 200mg/dl.</td>
<td>Juvenile Diabetes, Acromegaly, Cushing’s syndrome, pancreatic disorders.</td>
</tr>
<tr>
<td>3</td>
<td>HbA1c levels Greater Than 7.0%</td>
<td>Patients having Family History of DM</td>
</tr>
<tr>
<td>4</td>
<td>Irrespective of sex, religion, occupation, socio-economic and educational status.</td>
<td>Severe GI diseases, Liver diseases, Tumours, CVS, MI, HIV, HbsAg etc.</td>
</tr>
</tbody>
</table>

Table No 1. Inclusion, Exclusion & Diagnostic Criteria

Table No. 2 Drug Review

<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Parameter</th>
<th>Follow ups</th>
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<tr>
<td></td>
<td>Day 0</td>
<td>Day 15</td>
</tr>
<tr>
<td>1</td>
<td>Prabhuta mutrata</td>
<td>+++</td>
</tr>
<tr>
<td>2</td>
<td>Avil mutrata</td>
<td>+++</td>
</tr>
<tr>
<td>3</td>
<td>Atisweda</td>
<td>++</td>
</tr>
<tr>
<td>4</td>
<td>Daurbalya</td>
<td>++</td>
</tr>
<tr>
<td>5</td>
<td>Atipipasa</td>
<td>+++</td>
</tr>
<tr>
<td>6</td>
<td>BSL Fasting</td>
<td>178</td>
</tr>
<tr>
<td>7</td>
<td>BSL PP</td>
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<tr>
<td>8</td>
<td>HbA1C</td>
<td>8.2</td>
</tr>
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Table No. 3 Follow up wise improvement in Case No. 1 (ND – not done)

<table>
<thead>
<tr>
<th>Sr. No.</th>
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</tr>
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<tr>
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<td>++</td>
</tr>
<tr>
<td>3</td>
<td>Atisweda</td>
<td>+++</td>
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<tr>
<td>4</td>
<td>Daurbalya</td>
<td>+++</td>
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<tr>
<td>5</td>
<td>Atipipasa</td>
<td>+++</td>
</tr>
<tr>
<td>6</td>
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