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A CONCEPTUAL REVIEW ON THE ROLE OF *KATAK KHADIRADI KASHAYAM* IN THE MANAGEMENT OF *MADHUMEHA* (TYPE 2 DIABETES MELLITUS)

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ABSTRACT

Background *Madhumeha* is one of the major *Vataja Prameha* disorders described in Ayurvedic classics and is characterized by excessive and turbid urination associated with derangement of *Kapha*, *Meda*, *Mamsa*, and *Kleda*. In contemporary medicine, Type 2 Diabetes Mellitus is a chronic metabolic disorder characterized by hyperglycemia resulting from insulin resistance and impaired insulin secretion. The increasing prevalence of diabetes and its long-term complications necessitate the exploration of safe and effective therapeutic options. *Katak Khadiradi Kashayam*, comprising herbs possessing *Kapha-Medohara*, *Lekhana*, *Kledahara*, and *Pramehaghna* properties, has been traditionally utilized for the management of *Prameha*. This review explores its potential role in the management of *Madhumeha* from both Ayurvedic and modern perspectives. **Aim** To conceptually evaluate the role of *Katak Khadiradi Kashayam* in the management of *Madhumeha* (Type 2 Diabetes Mellitus). **Objectives** To review the Ayurvedic concept of *Madhumeha*. To analyze the pharmacological properties of *Katak Khadiradi Kashayam*. To correlate Ayurvedic principles with modern diabetic pathophysiology. To assess the probable therapeutic role of *Katak Khadiradi*

Kashayam in Type 2 Diabetes Mellitus. **Materials and Methods** Classical Ayurvedic texts including *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and authoritative textbooks were reviewed. Relevant scientific articles, journals, and electronic databases were searched for evidence regarding Type 2 Diabetes Mellitus and constituent drugs of *Katak Khadiradi Kashayam*. Data were critically analyzed and interpreted conceptually. **Results** The ingredients of *Katak Khadiradi Kashayam* predominantly possess *Tikta*, *Kashaya Rasa*, *Laghu-Ruksha Guna*, and *Kapha-Medohara* actions. These properties help reduce pathological *Kleda*, improve *Agni*, and normalize *Meda Dhatu* metabolism. Modern studies indicate antidiabetic, antioxidant, anti-inflammatory, and insulin-sensitizing activities of the constituent herbs. **Discussion** The formulation acts by correcting *Agnimandya*, reducing *Kapha* and *Meda Dushti*, and restoring metabolic balance. Its pharmacological actions may contribute to glycemic control and prevention of diabetic complications. **Conclusion** *Katak Khadiradi Kashayam* appears to be a promising Ayurvedic formulation for the management of *Madhumeha*. Its multidimensional actions support both Ayurvedic principles and modern therapeutic requirements in Type 2 Diabetes Mellitus.

Keywords *Madhumeha*, *Prameha*, *Katak Khadiradi Kashayam*, Type 2 Diabetes Mellitus, *Kapha-Medohara*, *Pramehaghna*

INTRODUCTION

Madhumeha is one of the most extensively described metabolic disorders in Ayurveda and is included under the broad category of *Prameha*. The disease is characterized by excessive urination, turbidity of urine, sweetness of urine, progressive tissue depletion, and impairment of vital functions. Classical Ayurvedic texts recognize *Madhumeha* as a chronic and difficult-to-manage disorder involving multiple *Doshas* and *Dushyas*, predominantly *Kapha*, *Meda*, *Mamsa*, and *Kleda*.[1]

The modern counterpart of *Madhumeha* is Type 2 Diabetes Mellitus, a chronic endocrine disorder marked by elevated blood glucose levels resulting from insulin resistance and β-cell dysfunction. According to global health estimates, diabetes has emerged as a major public health challenge, affecting millions worldwide and leading to complications involving the cardiovascular, renal, nervous, and visual systems.[2]

Ayurveda emphasizes correcting the root pathology through restoration of *Agni*, elimination of excess *Kleda*, normalization of *Dosha-Dushya Sammurchana*, and improvement of tissue

metabolism. Various formulations described in classical literature possess significant *Pramehaghna* activity and have been traditionally used in the management of *Madhumeha*.[3]

Among these formulations, *Katak Khadiradi Kashayam* occupies an important place due to its potent *Kapha-Medohara*, *Lekhana*, *Kledahara*, and *Pramehaghna* properties. The constituent drugs collectively target the fundamental pathological mechanisms involved in *Madhumeha*, making the formulation a subject of considerable academic and clinical interest.[4]

AIM AND OBJECTIVES

AIM

To conceptually evaluate the role of *Katak Khadiradi Kashayam* in the management of *Madhumeha* (Type 2 Diabetes Mellitus).

OBJECTIVES

1. To review the Ayurvedic concept of *Madhumeha*.
2. To study the pharmacodynamic properties of *Katak Khadiradi Kashayam*.
3. To understand the modern pathophysiology of Type 2 Diabetes Mellitus.
4. To evaluate the probable mode of action of *Katak Khadiradi Kashayam*.

MATERIALS AND METHODS

The present study is a conceptual review based on a comprehensive analysis of Ayurvedic classics such as *Charaka Samhita*, *Sushruta Samhita*, *Ashtanga Hridaya*, and relevant commentaries. Contemporary scientific literature was collected from PubMed, Google Scholar, Scopus, and peer-reviewed journals. Information regarding the pathology of Type 2 Diabetes Mellitus and the pharmacological activities of the constituent drugs of *Katak Khadiradi Kashayam* was systematically reviewed and critically analyzed.

CONCEPTUAL STUDY

Concept of *Prameha*

Prameha is a group of twenty urinary disorders caused by derangement of *Kapha*, *Pitta*, and *Vata*. Among these, *Madhumeha* is considered the most severe form due to extensive involvement of body tissues and chronicity. The disease develops due to excessive intake of sweet, unctuous, heavy foods and sedentary lifestyle.[5]

Concept of *Madhumeha*

Madhumeha is characterized by passage of urine resembling honey in color, taste, and consistency. It represents an advanced stage of *Prameha* where *Vata Dosha* predominates following progressive tissue depletion. Classical texts describe it as a difficult-to-cure disorder requiring long-term management.[6]

Etiological Factors (*Nidana*)

- Excessive consumption of sweet foods
- Excessive intake of dairy products
- Sedentary lifestyle
- Lack of physical exercise
- Day sleep
- Obesity
- Psychological stress
- Genetic predisposition

Dosha Involvement

- Predominant: *Kapha Dosha*
- Secondary: *Pitta Dosha*
- Advanced stage: *Vata Dosha*

Dushya Involvement

- *Meda*
- *Mamsa*
- *Rakta*
- *Lasika*
- *Shukra*
- *Kleda*
- *Ojas*

Ingredient *Katak Khadiradi Kashayam*

S. No.	Name of drug	Botanical name	Part used	*Rasa*	*Guna*	*Virya*	*Vipaka*	*Dosha Karma*	Major *Karma*	Ratio
1	*Katak*	*Strychnos potatorum*	Seed	*Kashaya, Madhura*	*Laghu, Vishada*	*Sheeta*	*Madhura*	*Kapha-Pitta Shamaka*	*Ambuprasadana, Chakshushya, Grahi, Pramehaghna, Mutrala*	Equal amount
2	*Khadir*	*Acacia catechu*	Heart wood	*Kashaya, Tikta*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kapha-Pitta Shamaka*	*Kushthaghna, Kandughna, Krimighna, Raktashodhaka, Pramehaghna, Vranaropana*	Equal amount
3	*Amalaki*	*Emblica officinalis*	Fruit rind	Five tastes except *Lavana*, with predominance of *Amla* and *Kashaya*	*Guru, Ruksha*	*Sheeta*	*Madhura*	*Tridosha Shamaka*, especially *Pitta Shamaka*	*Rasayana, Vayasthapana, Chakshushya, Vrishya, Dahahara, Pramehaghna*	Equal amount
4	*Saptachakra*	*Salacia chinensis*	Root	*Tikta, Kashaya*	*Laghu, Ruksha, Tikshna*	*Ushna*	*Katu*	*Kapha-Pitta Shamaka*	*Pramehaghna, Lekhana, Medohara, Deepana, Pachana, Kushthaghna*	Equal amount
5	*Daruharidra*	*Berberis*	Bark	*Tikta, Kashaya*	*Laghu,*	*Ushna*	*Katu*	*Kapha-*	*Deepana, Pachana,*	Equal

		aristata			*Ruksha*			*Pitta Shamaka*	*Raktashodhaka, Pramehaghna, Kushthaghna, Jwaraghna, Netrya*	amount
6	*Samanga*	*Mimosa pudica*	Whole plant	*Kashaya, Tikta*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kapha-Pitta Shamaka*	*Stambhana, Grahi, Raktastambhaka, Atisaraghna, Pradaraghna, Vranaropana*	Equal amount
7	*Vidula*	*Homonoia riparia*	Root	*Tikta, Kashaya*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kapha-Pitta Shamaka*	*Mutrala, Ashmaribhedana, Bastishodhaka, Pramehaghna, Shulahara, Dahahara*	Equal amount
8	*Haridra*	*Curcuma longa*	Rhizome	*Katu, Tikta*	*Laghu, Ruksha*	*Ushna*	*Katu*	*Kapha-Vata Shamaka*	*Pramehaghna, Kushthaghna, Kandughna, Krimighna, Shothahara, Vranaropana, Raktashodhaka*	Equal amount
9	*Patha*	*Cissampelos pareira*	Rhizome	*Tikta, Katu*	*Laghu, Tikshna*	*Ushna*	*Katu*	*Kapha-Pitta Shamaka*	*Deepana, Pachana, Grahi, Jwaraghna, Krimighna*	Equal amount

									, Stanyashodhana, Atisaraghna	
10	*Amra*	*Mangifera indica*	Seed	*Kashaya*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kapha-Pitta Shamaka*	*Grahi, Stambhana, Atisaraghna, Pramehaghna, Krimighna, Raktastambhaka*	Equal amount
11	*Haritaki*	*Terminalia chebula*	Fruit rind	Five tastes except *Lavana*, predominantly *Kashaya*	*Laghu, Ruksha*	*Ushna*	*Madhura*	*Tridosha Shamaka*, especially *Vata Shamaka*	*Rasayana, Deepana, Pachana, Anulomana, Mridu Virechana, Pramehaghna, Medohara*	Equal amount
12	*Abda* (*Nagarmotha*)	*Cyperus rotundus*	Rhizome	*Tikta, Katu, Kashaya*	*Laghu, Ruksha*	*Sheeta*	*Katu*	*Kapha-Pitta Shamaka*	*Deepana, Pachana, Grahi, Jwaraghna, Trishnahara, Pramehaghna, Lekhana*	Equal amount

Pharmacodynamic Actions

- *Pramehaghna*
- *Kledahara*
- *Kapha-Medohara*
- *Lekhana*
- *Deepana*
- *Pachana*
- *Rasayana*

Therapeutic Significance

The formulation helps normalize disturbed metabolism, reduce obesity-related factors, improve digestion, and prevent progression of diabetic complications.

SAMPRAPTI OF *MADHUMEHA*

Nidana Sevana
↓
Kapha Prakopa
↓
Agnimandya
↓
Ama Formation
↓
Meda Dushti + Kleda Vriddhi
↓
Srotorodha
↓
Dushya Sammurchana
↓
Prameha
↓
Dhatu Kshaya
↓
Vata Prakopa
↓
Madhumeha

MODERN REVIEW

Definition of Type 2 Diabetes Mellitus

Type 2 Diabetes Mellitus is a chronic metabolic disorder characterized by persistent hyperglycemia due to insulin resistance and progressive β-cell dysfunction.

Epidemiology

The prevalence of Type 2 Diabetes Mellitus continues to rise globally due to urbanization, obesity, unhealthy dietary habits, and reduced physical activity.

Risk Factors

- Obesity
- Sedentary lifestyle
- Family history
- Aging
- Hypertension
- Dyslipidemia
- Stress

Clinical Features

- Polyuria
- Polydipsia
- Polyphagia
- Fatigue
- Blurred vision
- Delayed wound healing
- Recurrent infections

Complications

Microvascular

- Diabetic retinopathy
- Nephropathy
- Neuropathy

Macrovascular

- Coronary artery disease
- Stroke
- Peripheral vascular disease

Pharmacological Potential of Constituents

Modern studies suggest that the ingredients of *Katak Khadiradi Kashayam* possess:

- Antidiabetic activity
- Antioxidant activity
- Anti-inflammatory effects
- Insulin sensitizing effects
- Free radical scavenging properties
- Tissue protective actions

PATHOGENESIS OF TYPE 2 DIABETES MELLITUS

Genetic Predisposition

+

Environmental Factors

↓

Obesity

↓

Insulin Resistance

↓

Reduced Glucose Uptake

↓

Beta Cell Dysfunction

↓

Decreased Insulin Secretion

↓

Persistent Hyperglycemia

↓

Oxidative Stress

↓

Microvascular & Macrovascular Complications

FINDINGS

- *Katak Khadiradi Kashayam* contains herbs with significant *Pramehaghna* activity.

- Majority of ingredients possess *Tikta* and *Kashaya Rasa*.
- The formulation exhibits *Kapha-Medohara* and *Kledahara* properties.
- It helps improve metabolic functions by correcting *Agnimandya*.
- The constituent drugs demonstrate antioxidant and anti-inflammatory activities.
- The formulation may enhance insulin sensitivity.
- It may help reduce diabetic complications through tissue protective actions.
- Ayurvedic and modern mechanisms show substantial conceptual correlation.

DISCUSSION

Madhumeha is fundamentally a metabolic disorder involving derangement of *Kapha*, *Meda*, and *Kleda*. The formulation addresses these pathological factors through its *Lekhana*, *Deepana*, and *Pachana* properties. Correction of *Agnimandya* forms the primary therapeutic basis of its action.[7]

The predominance of *Kashaya* and *Tikta Rasa* in the constituent drugs contributes to reduction of excessive *Kapha* and pathological tissue accumulation. These actions are particularly beneficial in patients exhibiting obesity, insulin resistance, and metabolic syndrome.[8]

From a modern perspective, the antioxidant and anti-inflammatory activities of the ingredients may improve insulin sensitivity, reduce oxidative stress, and protect target organs from diabetic complications. Thus, the formulation demonstrates a multidimensional approach toward management of Type 2 Diabetes Mellitus.[10]

CONCLUSION

Madhumeha represents a complex metabolic disorder involving multiple pathological mechanisms described in both Ayurveda and modern medicine. *Katak Khadiradi Kashayam* possesses significant *Pramehaghna*, *Kapha-Medohara*, *Kledahara*, and metabolic regulatory properties that directly address the core pathogenesis of the disease. The formulation offers a holistic therapeutic approach and may serve as an effective supportive intervention in the management of Type 2 Diabetes Mellitus.

CONFLICT OF INTEREST - Nil.

SOURCE OF SUPPORT - None.

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