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Research Article

Evaluation Of Synergistic Effect Of *Nisha Aamlaki Churna*, *Brahmi Churna* And *Chankramana* Therapy: A Critical Review

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ABSTRACT

Background: *Madhumeha* is described as a subtype of *Vataja Prameha* in classical text. It shares similarities with type 2 diabetes mellitus (T2DM) as per contemporary science. Ayurvedic treatment mainly focus on the three types of management which incorporate *Ahara*, *Vihara* and *Aushdha*. *Nisha Amalaki Churna*, *Brahmi churna* and *Chankramana* therapy has been established for their anti-hyperglycemic, antioxidant, immunomodulatory and stress relieving potential. *Chankaramana* (walking) is well known therapy explained by *Acharya Sushruta* in management of *Madhumeha*. Though various search revealed anti-hyperglycemic effect of all the above mentioned treatment modalities (*Nisha Amalaki Churna*, *Brahmi churna* and *Chankaramana*) yet their comparative and synergistic effect is needed to be established. In the above background the review is done.

Aim: To review individual and synergistic potential of *Nisha Amalaki Churna*, *Brahmi churna* and *Chankramana* therapy in the management of *Madhumeha*

Objectives:

Primary objective:

- To study the pharmacological action of the *Nisha Amalaki Churna*, *Brahmi churna* and *Chankaramana* in *Madhumeha*.
- To study comparative pharmacological and therapeutic potential all the intervention.

Secondary objectives:

- To compare the effect of each intervention and their synergistic effect in prevention of complication aroused due to type 2 diabetes mellitus.
- To develop a pragmatic approach in terms of *Ahara*, *Vihara* and *Aushdha* in management of *Madhumeha*.

Material & Methods:

The review is based on the information extracted from the Ayurvedic text including *Brihattarayi* and *Laghuttarayi* along with contemporary studies obtained from Pub Med, AYUSH research portal, Scopus databases. It includes RCTs, observational studies, pharmacological studies, pharmaco-diagnostic analysis regarding these interventions. Subjective assessment was done through comparison of dosage, mode of action (*Karma*) pharmacological properties (*Rasa*, *Guna*, *Virya*, *Vipaka*) and objective assessment was done through parameters including change in fasting Blood Sugar level(FBS), Post Prandial Blood Sugar (PPBS) lipid profile. **Result:** *Nisha Amalaki Churna* is a powder formed by combining *Nisha* (*Curcuma longa*) and *Amalaki* (*Phyllanthus emblica*) Churna. It has *Kapha-Pitta Shamaka* properties. Studies suggested its antioxidant and antidiabetic effects through modulation of pancreatic beta cell function and insulin activity. *Brahmi Churna* act as neuroprotective and having the property of reducing the oxidative stress which further helps in diabetic neuropathy condition. *Chankramana* therapy, if done regularly improves the metabolism, consume excess of glucose in the blood, reduce stress, improve glucose uptake, decrease the postprandial hyperglycemia and improves the function of various digestive juices and enhance metabolism. By comparing all these three interventions, improvement in glycemic control seems to be more efficient as compared to the individual intervention effect.

Conclusion: Usage of all the three modalities in treatment of *Madhumeha* help in the metabolic regulations, stops over

exploitation of the cells due to stress and hence preventing the systemic complications aroused due to the effect of type 2 diabetes mellitus. Hence, a well-planned RCTs are beneficial to validate these outcomes and help to aid the treatment protocol of *Madhumeha*.

KEYWORDS: *Madhumeha*, *Nisha Amlaki Churna*, *Brahmi Churna*, *Chankraman*, Ayurveda, Diabetes Mellitus

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INTRODUCTION

Madhumeha is a type of *Vataja Prameha* which is considered to be difficult to treat¹. In classical text it is explained as subtype of *Vataja Prameha*. The main *Dushya* in *Madhumeha* are *Meda*, *Rakta*, *Shukra*, *Jala*, *Mamsa*, *Vasa*, *Lasika*, *Majja*, and *Ojas*². Its pathogenesis include vitiation of all the three *Doshas*. *Kapha* contributes by altering effect on lipid metabolism, muscle and body fluid. *Pitta* aids in inflammatory changes and vitiated *Vata* on relative diminution of the other two *Doshas* draws on *Dhatu* in the *Basti Pradesh*, affect the urine output by changing its color, smell, texture and other physical symptoms also³. In *Madhumeha* due to dominance of *VataDosh* along with *Pitta* and *Kapha*, obstruction of channels occurs which ultimately causes the depletion of *Ojas*⁴. In Modern Science due to symptoms similarity, it can be said that *Madhumeha* can be correlated with Type 2 diabetes mellitus which is a metabolic syndrome shown by continuous hyperglycemia due to insulin resistance, improper insulin secretion or may exist both the condition. Restoring the capability of the *Agni* and maintaining the balances of *Dosha*, *Dhatu* and *Malain* the body, as their equilibrium can endure the body in a disease-free state. There are various formulations of Ayurvedic medicines available in *Samhita*'s and other classical text, among *Nisha Amalaki Churna*, *Brahmichurna* and *Chankramana* therapy have been founded more role in controlling glycemic level of body glucose, effect on metabolism, improving the condition from complications, targeted pharmacological action, ease in taking medicine, cost effective implementation in daily life.

Nisha Amalaki Churna is an herbal preparation that contain equal amount of *Haridra* (*Curcuma longa*) and *Amalaki* (*Embllica officinalis*). Both the drugs are very familiar content in various *Mahakshayas* by *Acharya Charak*, *Ganas* by *Acharya Sushruta* and in groups by *Acharya Vagbhata*. They also come under the single drug efficiency list given by *Bhava Prakash Nighantu*. Due to high prevalence rate, increased complications, day by day economic burden, this disease create a havoc in the health management system.

Ayurvedic science applies a comprehensive approach to the prevention and management of diseases in respect of daily lifestyle, daily dietary regime, seasonal regimen, mental stability and ultimately guiding the disease with all the four pillars of treatment. It not only gives relief in terms of symptoms but it also talks about the ways to remain disease free from that particular disease. By avoiding the causes in the preliminary stages, it is mandatory to follow the pathogenesis of the disease so that the stages of *Doshas* can be assessed as further their symptoms lead to the authentic medication of the disease. Main focus area is to break the pathogenesis cycle of *Doshas* and *Dushyas*.

Along with the action on the *Doshas*, their action of immunomodulation property, antioxidant property, ability to modulate carbohydrate digestion by affecting metabolism, by increasing insulin sensitivity it impacts the hypoglycemic index. *Haridra* having ability to balance *Kapha*-*Pitta* which are two important *Dosh* in the *Prameha* disease.

Amalaki is well known drug that pacify all the three *Doshas* i.e., *Vata*, *Pitta* and *Kapha* which are main *Doshas* in *Prameha*. It is having high concentration of natural antioxidants which strengthen the immune system, nourishes the tissues and hence reduce the oxidative stress. Their combination as a drug in *Prameha* is supported by *Acharya Vagbhata*⁵.

Brahmi (*Bacopa monnieri*), from ancient times it is used in memory related mental disorders. Various *Acharyas* described it as *Medhya Rasayan* in their text but now a days as modern science research reveals stress as an inducing factor in insulin sensitivity. Role of *Brahmi* is searched for the treatment of *Madhumeha*, although *Acharya* already describe it as *Prameha Ghana*⁶. Constant increase in blood glucose level result in complications that are neuropathy and decrease in cognitive ability.

Chankraman therapy is described in *Dincharya* as well as in the treatment of *Prameha*. *Chankraman* being a part of *Vyayama* help in the reduction of aggravated *Kapha* and *Meda*, increase the ability of digestive fire, enhance the *Bala* in the body⁷. Modern science shows the improvement in the glucose uptake by the skeletal

muscles, cause reduction in post prandial hyperglycemia. This also helps in checking status of many lifestyle diseases and further improves the microcirculation in the body.

Although the individual benefits of these three interventions, comparative literature analyzing their pharmacological actions and clinical outcomes is limited in status. Thoughtfulness regarding their similarities, differences, and potential synergistic effects can aid in strategy to integrated Ayurvedic protocols for *Madhumeha*. It not only strengthens evidence-based Ayurvedic practice but also encourages traditional wisdom with modern scientific validation. This review study aims to critically examine *Nisha Amlaki Churna*, *Brahmi Churna*, and *Chankramana* therapy from both Ayurvedic and contemporary perspectives, depicts their roles in the all-inclusive management of *Madhumeha*.

AIM AND OBJECTIVES

Aim

To review the qualities, pharmacological actions and clinical aspects of *Nisha Amlaki Churna*, *Brahmichurna* and *Chankramana* therapy in the management of *Madhumeha*.

Objectives

1. To study the pharmacological action of the drugs and therapy with respect to *Madhumeha*. To evaluate modern pharmacological and clinical evidence supporting their use in *Madhumeha*.
2. To analyze the modern pharmacological and clinical evidences of the intervention. To suggest an integrated Ayurvedic approach for *Madhumeha* management.
3. To compare the qualities of effect given in glycemic control and in prevention of complication aroused due to type 2 diabetes mellitus.
4. To suggest a holistic approach in terms of Ayurvedic medicine, food and *Vihara* (lifestyle) in management of *Madhumeha*.

MATERIAL AND METHODS

The review is based on the information extracted from the Ayurvedic text including *Brihattarayi* and *Laghuttarayi* along with contemporary studies obtained from Pub Med, AYUSH research portal, Scopus databases. It includes RCTs, observational studies, pharmacological studies, pharmacodiagnostic analysis regarding these interventions. Comparison done on the basis of dosage, mode of action (*Karma*) pharmacodynamics (*Rasa*, *Guna*, *Virya*, *Vipaka*) and clinical outcomes in controlling symptoms, preventing complications and in objective parameters like random blood sugar, fasting blood sugar, lipid profile, etc. Inclusion criteria embraced classical references, pharmacognostic studies, experimental research, and clinical trials published in English while non-relevant studies were excluded. Data were compared based on Ayurvedic properties of the intervention used (*Rasa*, *Guna*, *Virya*, *Vipaka*, *Prabhava*), modern pharmacology, dosage, duration, and clinical outcomes such as glycemic control, lipid profile, and complication prevention.

CONCEPTUAL STUDY

MADHUMEHA

The word *Madhumeha* is derived from two Sanskrit words: *Madhu* (honey) and *Meha* (urination). Literally, it means "urination resembling honey" in taste, smell, or appearance. According to *Charaka Samhita* in *Madhumeha*, the urine shows the features of honey due to the vitiation of *Vata Dosha* decrease in the *Ojas*⁸. According of *Sharangdhar Samhita*, urination that resembles the colour of honey in appearance is called as *Madhumeha*. *Acharya Shushruta* considered that if *Prameha* is not treated as per their pathogenesis, all are converted into *Madhumeha* and became untreatable in management. In modern science parameters, it can be compared with type 2 diabetes mellitus, featured by persistent hyperglycemia due to insulin resistance, impaired insulin secretion, or both the condition.

Nidana (Etiological Factors)^{9,10,11}

The causative factors of *Madhumeha* are divided into two categories –

Aharaja: Excessive intake of *Guru*, *Snigdha* and *Sheetaguna Ahara*; excess intake of milk, curd, sugarcane products, newly harvested grains like wheat, rice, sour and salty taste dominated food and freshly prepared alcohol.

Viharaja: Sedentary lifestyle, day sleep (*Diwaswapna*), excess sleep pattern, lack of physical activity, excessive rest, not using purificatory measures.

Pathogenesis of Prameha¹²

Aggravated *Kapha* and *Medas* obstruct the channels of *Vata* (*Margavarana*). Resulting in initiation of *Prakopa* of *Vata Dosha* and carries *Ojas* into the urine.

Nidana Sevana

↓

Agnimandya (*Mandagni*)

↓

Ama Utpatti (*formation of metabolic toxins*)

↓

Dravarooपा Shleshma Pradhana Tridosha Prakopa

↓

Mixing with *Bahu Abaddha Meda*

↓

Medo Dhatu Dushti

↓

Dushana of *Sharira Kleda* and other *Dushaya*

↓

Prakupita Dosha and *Dushya Adhisthan* in *Basti* leads to *Prabhuta Avila Mutrata* (*excessive turbid urination*)

↓

*Prameha*¹³.

↓

Vata Dosha Vyapavta (*spread of Vata due to depletion*)

↓

Madhumeha

Samprapti Ghatak of Madhumeha

Samprapti Ghatak	Details
Dosha	<i>Dravaroopa Shleshma Pradhana Tridosha Prakopa</i>
Dushya	<i>Rasa, Rakta, Mamsa, Meda, Majja, Shukra, Ojas, Vasa, Lasika, Kleda</i>
Strotas	<i>Mutravaha Strotas and medovaha strotas</i>
Strotomoola	<i>Basti and Sarvsharira</i>
Agni	<i>Mandagni (mainly Jatharagni Mandya and Dhatvagni Mandya)</i>
Strotodusti	<i>Sanga and Atipravritti</i>
Rogamarga	<i>Bahya Rogamarga</i>
Swabhava	<i>Chirakari</i>
Sadhya-Asadhyata	Early <i>Kapha</i> -dominant – <i>Sadhya</i> ; <i>Pitta</i> dominant – <i>Yapya</i> Chronic <i>Vata</i> -dominant – <i>Asadhya</i>

Poorvarupa (Premonitory Symptoms)¹⁴

- Sweating
- Abnormal smell from body
- Frequent urination
- Excessive thirst
- Laxity in body parts
- Sweet taste in mouth (*Madhurasya*)
- Heaviness in body (*Gaurava*)
- Lethargy (*Alasya*)
- Inclination toward comfortable bedding and sitting position
- Rapid growth of hairs and nails
- Dryness feeling in throat and palate region
- Feeling of waste lodged in eyes, tongue and other body openings
- Burning sensation in hands and feet

Rupa (Clinical Features) of Prameha

- Turbid and profuse urination with sweet taste and odor
- Excessive thirst and increased urge of hunger
- Fatigue and weakness
- Burning sensation in palms and soles
- Dryness of mouth and skin

Complication of Prameha¹⁵

Thirst, diarrhoea, fever, malaise, *Alji Roga*, anorexia, indigestion, gangrene, burning sensation in body and diabetic carbuncles. In Ayurvedic texts, *Madhumeha* is considered as *Asadhyabut* manageable with *Rasayana* and lifestyle regulation.

When chronic in stages, shows complications resembling diabetic retinopathy, neuropathy, nephropathy and recurrent infections in Modern science.

MODERN REVIEW OF THE DISEASE

Type 2 Diabetes mellitus is a metabolic disorder considered by hyperglycemia due to insulin resistance and/or impaired insulin secretion.

Etiology of Type 2 Diabetes mellitus¹⁶

- Genetic predilection
- High-calorie diet, sophisticated carbohydrates, excess fats
- Obesity, especially central obesity
- Physical sedentariness
- Chronic anxiety, stress and strain

Pathophysiology of Type 2 Diabetes mellitus¹⁷

Insulin resistance in peripheral tissues decrease glucose uptake, while pancreatic β -cell dysfunction confines insulin secretion. Persistent hyperglycemia sources glycosuria, polyuria, polydipsia, and polyphagia. Long-term complications comprise microvascular and macrovascular damage to the body.

Signs and Symptoms Type 2 Diabetes mellitus¹⁸

- Polyuria, polydipsia, polyphagia
- Unexplained and increased weight loss despite good appetite
- Fatigue
- Recurrent infections
- Blurred vision
- Slow wound healing

Chikitsa Siddhanta (Treatment Principle) in Ayurveda

- **Ahara:** Low *Kapha-Meda* aggravating diet; balanced use on *Tikta, Katu, Kashaya Rasa*; high-fiber grains; use of *Shilajatu*, bitter gourd, aged grains and fenugreek.
- **Vihara:** *Chankraman* (walking), yoga, controlled sleep-wake cycles and avoid day sleep.
- **Aushadha:** Hypoglycemic and *Rasayana* drugs like *Nisha Amlaki Churna*, *Brahmi Churna*, *Gudmar*, *Vijaysar* etc.
- **Shodhana:** *Vamana*, *Virechana*, and *Basti* in selected cases to clear *Strotas* and restore *Agni*.

DRUG REVIEW

NISHA AAMLAKI CHURNA —

Composition and Identity

- Classical name: *Nisha Amlaki Churna*
- Ingredients: *Haridra* (*Curcuma longa* L.) rhizome powder + *Aamalaki* [syn. *Amalaki*] (*Phyllanthus emblica* L., syn. *Emblica officinalis* Gaertn.) fruit powder in equal parts.

Botanical Name

- *Haridra*: *Curcuma longa* L.
- *Aamalaki*: *Phyllanthus emblica* L. (syn. *Emblica officinalis* Gaertn.)

Taxonomical Classification

Curcuma longa¹⁹

- Kingdom: Plantae
- Clade: Angiosperms → Monocots
- Order: Zingiberales
- Family: Zingiberaceae
- Genus: *Curcuma*
- Species: *C. longa*

Phyllanthus emblica²⁰

- Kingdom: Plantae
- Clade: Angiosperms → Eudicots
- Order: Malpighiales
- Family: Phyllanthaceae
- Genus: Phyllanthus
- Species: P. emblica

Vernacular Classification

- *Haridra*: Turmeric (Eng), Haldi (Hin), Manjal (Tam), Halad (Mar), Pasupu (Tel).
- *Aamalaki*: Indian gooseberry/Amla (Eng), Amla (Hin), Nelli (Tam/Mal), Avala (Mar), Usiri (Tel).

Macroscopic Characters (as per API monographs; concise)

Curcuma longa (rhizome, dried)

- Exterior yellowish to orange-brown; cut surface deep yellow to orange. Aromatic, warm taste. Pieces cylindrical or ovate, with rings of leaf scars and rootlet marks; fracture short to fibrous.

Phyllanthus emblica (dried fruit/pericarp)

- Dried segments irregular, yellow-brown to dark brown, highly astringent, faintly aromatic; surface wrinkled with embedded vascular strands. Stone hard and striated when present.

Microscopic Characters (as per API monographs; concise)

Curcuma longa

- Thin cork; parenchymatous cortex with numerous oil/oleoresin cells; abundant simple starch grains of varied size; vessels with spiral/reticulate thickening; fibers and yellow-orange contents in secretory cells.

Phyllanthus emblica

- Epicarp with polygonal cells; mesocarp parenchyma containing numerous groups of thick-walled stone cells; scattered vascular elements; abundant simple and compound starch grains; tannin-rich cells frequently observed.

Chemical Composition

Curcuma longa

- Curcuminoids: curcumin, demethoxycurcumin, bisdemethoxycurcumin.
- Volatile oil: α -turmerone, α - and β -turmerone, curlone, zingiberene.
- Other: polysaccharides, proteins, phenolic acids.

Phyllanthus emblica

- Ellagitannins and gallotannins: emblicanin A & B, punigluconin, pedunculagin.
- Phenolics: gallic acid, ellagic acid; flavonoids including quercetin.
- High natural vitamin C in a tannin-stabilized complex; pectin, minerals.

Ayurvedic Properties

Haridra

- *Rasa*: Tikta, Katu
- *Guna*: Laghu, Ruksha
- *Virya*: Ushna
- *Vipaka*: Katu

- *Karma*: Kapha-Pitta Shamaka, Krimighna, Kandughna, Varnya, Vishaghna, Lekhana, Raktashodhaka, Pramehaghna

Aamalaki

- *Rasa*: Predominantly Amla with presence of all except Lavana
- *Guna*: Laghu, Ruksha (mild)
- *Virya*: Sheeta
- *Vipaka*: Madhura
- *Karma*: Tridoshaghna with emphasis on Pitta Shamaka, Rasayana, Chakshushya, Vayasthapana, Raktaprasadana, Pramehaghna

Synergistic Rationale in Nisha Amlaki Churna

- *Haridra* provides *Amapachana*, *Agnideepana*, insulin-sensitizing and anti-inflammatory actions.
- *Aamalaki* provides *Rasayana*, antioxidant and β -cell supportive effects with *Pitta* pacification.
- Together: *Kapha-Pitta Shamaka*, *Medohara*, *Srotoshodhana*, protection of *Ojas*, bring into line with the *Samprapti* of *Madhumeha*.

Pharmacological Activity

Antidiabetic and Metabolic

- Curcuminoids progress insulin sensitivity, enhance GLUT4 translocation in muscle, down-regulate inflammatory mediators connected to insulin resistance, and may protect β -cells from glucolipotoxicity.
- *Aamalaki* tannins and vitamin C complex lessen fasting and post-prandial glucose, lower HbA1c in small clinical studies, and improve lipid profile.
- Combination is testified clinically in Ayurveda practice to reduce polyuria, thirst, and fatigue with enhancements in FPG, PPG, HbA1c, TG, and LDL over 8–12 weeks.

Antioxidant

- Both drugs show strong free-radical scavenging. *Aamalaki* emblicanins improve endogenous antioxidants (SOD, catalase, GSH).

Hypolipidemic and Hepatoprotective

- Turmerones and curcuminoids reduce hepatic lipogenesis and help in increasing bile flow. *Aamalaki* drops triglycerides and LDL while supporting HDL; hepatoprotective effects mitigate fatty liver commonly allied with insulin resistance.

Microvascular Protection

- Neuroprotective, nephroprotective, and retinal antioxidant effects are reported in preclinical models, aligning with prevention of *Prameha* complications.

Safety and Precautions

- Generally, well tolerated at traditional doses as described in ayurvedic texts.
- Monitor glucose closely when combined with modern antidiabetic drugs to avoid hypoglycemia.

BRAHMI CHURNA²¹

Botanical Name

Bacopa monnieri (L.) Wettst.

Taxonomical Classification

- **Kingdom**: Plantae
- **Clade**: Angiosperms → Eudicots → Asterids
- **Order**: Lamiales

- **Family:** Plantaginaceae (formerly Scrophulariaceae)
- **Genus:** *Bacopa*
- **Species:** *B. monnieri*

Vernacular Classification

- **English:** Water hyssop, Thyme-leaved gratiola
- **Hindi:** Brahmi, Jal-Brahmi
- **Sanskrit Synonyms:** *Brahmi, Saraswati, Somavati, Matsyakshi*
- **Tamil:** Nirpirami
- **Telugu:** Saraswathi aku
- **Malayalam:** Nirbrahmi

Macroscopic Characters (API)

- **Plant:** Creeping, succulent, perennial herb with rooting nodes.
- **Leaves:** Opposite, sessile, obovate, thick, 0.6–2.5 cm long, with entire margins, smooth surface, and obtuse apex.
- **Flowers:** Small, axillary, solitary, bluish-white to purple, 5-petaled.
- **Odor:** Slightly aromatic.
- **Taste:** Bitter.

Microscopic Characters (API)

- **Stem:** Epidermis single-layered with cuticle; cortex of 4–6 layers of thin-walled parenchyma with air spaces; collateral vascular bundles; pith present.
- **Leaf:** Single-layered epidermis on both sides with anisocytic stomata; palisade cells beneath the upper epidermis; spongy parenchyma with large intercellular spaces; vascular bundles with xylem and phloem.
- **Powder microscopy:** Fragments of epidermis with stomata, spiral vessels, parenchymatous cells with chloroplasts, and trichomes absent.

Chemical Composition

- **Alkaloids:** Brahmine, herpestine.
- **Saponins (Bacosides):** Bacoside A (comprising bacoside A3, bacopaside II, bacopasaponin C), Bacoside B.
- **Sterols:** β -sitosterol, stigmasterol.
- **Flavonoids:** Luteolin, apigenin.
- **Others:** Betulic acid, asiatic acid, polyphenols.

Ayurvedic Properties

- **Rasa:** Tikta, Kashaya
- **Guna:** Laghu, Sara
- **Virya:** Sheeta
- **Vipaka:** Madhura
- **Karma:** Medhya Rasayana (nootropic), Tridosahara (especially Kapha-Pitta Shamaka), Pramehaghna, Balya, Rasayana, Jvaraghna, Anulomana, Mutral, Hrudya, Shothahara.
- **Prabhava:** Improves cognitive and neurological functions, supports Ojas, and strengthens Majja Dhatu.

Pharmacological Activities

1. Nootropic & Cognitive Enhancement

- Improves memory, learning, and concentration by increasing synaptic transmission and neurogenesis.
- Bacosides increase protein kinase activity in hippocampus neurons and facilitate nerve impulse transmission.

2. Neuroprotective

- Antioxidant effect over brain tissue; reduces β -amyloid aggregation; protects against oxidative stress in neurons.
- Useful in anticipation of neurodegenerative conditions.

3. Adaptogenic & Anti-stress

- Lessens cortisol levels; modulates hypothalamic–pituitary–adrenal axis response to stress.

4. Antidiabetic

- Lessens fasting blood glucose and reading score in HbA1c in experimental models; improves pancreatic β -cell function. This will indirectly help in *Madhumeha*.

5. Antioxidant

- It does scavenge of reactive oxygen species; increases SOD, catalase and glutathione peroxidase levels.

6. Anti-inflammatory & Analgesic

- Inhibits COX-2 and iNOS pathways; decrease inflammatory cytokines.

7. Cardioprotective & Hypolipidemic

- Corrected lipid profile; decrease triglycerides and LDL cholesterol; increases HDL.

Dosage & Anupana

- **Churna:** 3–6 g twice daily.
- **Anupana:** *Ksheera* (milk) or lukewarm water.

CHANKRAMANA THERAPY

- The term *Chankramana* derives from Sanskrit roots “*Cha*” (to move) and “*Kramana*” (to step/walk).
- In Ayurveda, *Chankramana* refers to regulated, purposeful walking performed at a prescribed pace, distance, and timing, usually after meals, as part of *Vihara Chikitsa* (lifestyle therapy).

Method and Practice

Timing:

- Best performed after meals (postprandial walking).
- Also beneficial in the morning as part of *Dinacharya*.

Pace & Duration:

- Slow to moderate pace for 10–30 minutes after meals, depending on individual capacity.
- In *Madhumeha*, aim for a steady rhythm that allows comfortable breathing without fatigue.

Modern Scientific Correlation²²

Mechanism in Diabetes:

- **Glucose uptake:** Postprandial walking increases GLUT4-mediated glucose transport into skeletal muscles, reducing blood glucose spikes.
- **Insulin sensitivity:** Regular walking improves insulin receptor function and reduces insulin resistance.
- **Energy balance:** Increases caloric expenditure, aids weight control, reduces visceral adiposity.
- **Cardiovascular benefits:** Improves lipid profile, reduces blood pressure, and enhances peripheral circulation.
- **Neurovascular protection:** Improves microvascular blood flow and prevent diabetic complications.

Evidence²³:

- Clinical studies show that 15–30 minutes of walking after meals can significantly lower postprandial glucose in type 2 diabetics.
- Regular brisk walking improves HbA1c, fasting plasma glucose, and triglyceride levels over 12 weeks.

RESULTS AND FINDINGS

Effectiveness of Nisha Amlaki Churna^{24,25,26,27}

- It helps to reducing fasting as well as postprandial blood glucose level in the patients of *Madhumeha*.
- It helps in increasing efficiency of insulin and also helps to enhance the pancreatic β -cell function.
- It helps in protection of cells from the damaged caused by free radicals and also help in reducing oxidative stress markers.
- It helps in improving lipid profile with decreased triglycerides and LDL, increased HDL.
- It helps in reducing the *Madhumeha* symptoms such as *Prabhuta Aavila Mutrata*, *Trishna*, *Karpadadaha* and fatigue.

Effectiveness of Brahmi Churna^{28,29,30}

- It helps in giving mild to moderate hypoglycemic effect as per recorded by various researchers in clinical and experimental studies.
- It helps in significant enhancement in cognitive functions and memory scores and helps for *Madhumeha* patients to deal with the stress as a causative factor.
- It performs the protective action against diabetic neuropathy.
- It helps in reducing stress-related glycemic fluctuations by adaptogenic action.

Effectiveness of Chankramana Therapy^{31,32,33}

- If used regularly for 15–30 minutes after meals, it helps in reduction in postprandial glucose spikes after food.
- It helps in improving overall glycemic control.
- It helps in maintenance of BMI by reducing weight and also helps in reduction of visceral adipose fat.
- It helps in improving hence reduce the risk of diabetic foot complications.
- It helps in improving digestion fire and induce proper digestion by avoiding formation of *Ama*.

Comparative Result

- *Nisha Amlaki Churna* shows the highest direct glycemic control.
- *Brahmi Churna* shows excellence effectiveness in neuroprotection and cognitive enhancement, which are much more beneficial in chronic cases of *Madhumeha*.
- *Chankramana* found out to be most effective in postprandial hyperglycemia and improving lifestyle-related parameters.
- Collective use gave dual effect on improving both biochemical and symptomatic relief in *Madhumeha*.

Integrated Outcome

- Collectively three interventions, when used in synergy with each other gave many clinical benefits that helps in clinical condition improvement.
- *Dosha- Kapha-Pitta Shamana*.
- *Agni - Deepana*
- *Strotas - Strotoshodhana* improves overall systemic functions.
- *Ojas*—restoration and preservice of *Ojas* to stop complications.

DISCUSSION

The present review study shows the efficacy of *Nisha Amlaki Churna*, *Brahmi Churna*, and *Chankramana* therapy in the management of *Madhumeha*, by incorporating classical Ayurvedic principles with modern scientific evidence.

From the light of Ayurvedic *Siddhanta*, *Madhumeha* occurs primarily due to the *Kapha* and *Meda Dushti* which leads to *Strotorodha*, this *strotorodha* further aggravates the *Vata Dosha* by creating *Aavarna Dosha*. This pathogenesis is supported further by *Agnimandhya* which leads to formation of *Ama*. Depletion of *Ojas* also aids in the pathogenesis to develop the disease. The main line of treatment given in classical ayurvedic texts is *Samshodhana* and *Shamana Chikitsa*. Under *Shamana Chikitsa* main approach is *Tridosha Shamana*, *Agni Deepanam* and keeping the *Aahar-Vihara* according to the *Pathya-Apathya* of the *Madhumeha*.

Nisha Amlaki Churna found as the most effective *Pramehaghna* formulation in this review. The contents are *Haridra* and *Aamalaki*, both acts synergistically to help in *Agnibala*, reduce the formation of *Ama*, create balance between the various channels or *Strotas* of the body, and rejuvenate depleted *Dhatu*s. The *Ushna Virya* and *Tikta-Katu Rasa* of *Haridra* kept balance of aggravated *Kapha Dosha* and *Meda Dushtya*. The *Sheeta Virya* and *Madhura Vipaka* of *Aamalaki* by the action of *Prabhava* pacifies the aggravated *Vata Dosha* and *Pitta Dosha*. *Amalaka* also protect *Ojas* and prevent tissue damage as containing *Rasayana* properties. Modern medical science also explained individual effect of both the plants as hypoglycemic, hypolipidemic and antioxidant also.

Brahmi Churna, although seems to be less effective in immediate glycemic control, but have significant value in chronic *Madhumeha* due to its *Medhya Rasayana* properties which help in stress management. Due to its properties, it creates calm effects on oxidative stress related to diabetes. It benefits the chronic diabetic patient from the peripheral neuropathy. Its *Kapha-Pitta Shamaka* action helps in pacification of these *Doshas* and hence helps to break the pathogenesis of the *Madhumeha*.

Chankramana therapy, comes under both the parts in the *Dincharya* as preventive measures as well as in *Prameha Chikitsa* in various ayurvedic texts like *acharya Shusruta* explains the *Chankramana* is helpful in increasing longevity, *Bala*, *Medha* and *Agni*. Modern science also supported the data that postprandial

walking shows enhanced GLUT4-mediated glucose uptake, improved insulin sensitivity, and decrease in visceral adiposity, which correlates with Ayurvedic principles of *Medohara* and *Srotoshodhana*.

A comparative collective analysis divulges that *Nisha Aamlaki Churna* addresses primary metabolic derangement, *Brahmi Churna* enhance and supports neurological and cognitive functions, and *Chankramana* improves lifestyle-related parameters, especially postprandial glucose control. This multidimensional approach of the Ayurvedic principle of *Vyadhi Pratyahana Chikitsa* (disease-specific therapy) integrated with *Rasayana* and *Nidana Parivarjana* (removal of causative factors).

Mixing these interventions can possibly offer comprehensive aids in biochemical control through *Nisha Aamlaki Churna*, complication anticipation via *Brahmi Churna*, and lifestyle intonation with *Chankramana*. This study line up with both classical Ayurvedic emphasis on combined *Ahara-Vihara-Aushadha* treatments and modern evidence preferring multimodal diabetes management.

CONCLUSION

The review study found that *Nisha Aamlaki Churna*, *Brahmi Churna*, and *Chankramana* therapy each play discrete yet complementary roles in the Ayurvedic management of *Madhumeha*. *Nisha Aamlaki Churna* creates potent glycemic control and metabolic correction in the body, *Brahmi Churna* gave neuroprotective and adaptogenic benefits required for preventing long-term complications, and *Chankramana* therapy efficiently check status of postprandial glucose while improving overall lifestyle related health problems. In Composed way, they address multiple facets of *Madhumeha Samprapti*—from *Dosha* balance and *Agni Deepana* to *Srotoshodhana* and conservancy of *Ojas*. These also fulfils the modern science focus of glycemic control, complication prevention, and improvement in modern day lifestyle. Incorporating these interventions within a comprehensive framework can offer a safe, cost-effective, and supportable strategy for managing *Madhumeha* in both preventive and therapeutic contexts.

CONFLICT OF INTEREST –NIL

SOURCE OF SUPPORT –NONE

REFERENCES

1. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 40, reprint edition New Delhi: Chowkhamba Publication; 2017. P.215.
2. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 7, reprint edition New Delhi: Chowkhamba Publication; 2017. P.212.
3. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 8, reprint edition New Delhi: Chowkhamba Publication; 2017. P.213.
4. Pt.hari Sadashiv shastri , editor, Ashtang Hridayam of Vagbhatta, Nidana Sthanach. 10, verse 5, reprint edition Varanasi: Chowkhamba Publication; 2017. P.678.
5. Pt.hari Sadashiv shastri , editor, Ashtang Hridayam of Vagbhatta, Chikitsa Sthanach. 12, verse 7, reprint edition Varanasi: Chowkhamba Publication; 2017. P.503.
6. Shastri A, editor. Bhaishajya Ratnavali of Govind Das. Varanasi: Chaukhambha Sanskrit Sansthan; 2014. *Prameha Chikitsa*.
7. Pt.hari Sadashiv shastri , editor, Ashtang Hridayam of Vagbhatta, Sutra Sthanach. 2, verse 10, reprint edition Varanasi: Chowkhamba Publication; 2017. P.27.
8. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 44, reprint edition New Delhi: Chowkhamba Publication; 2017. P.215.
9. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 5, reprint edition New Delhi: Chowkhamba Publication; 2017. P.212.
10. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 24, reprint edition New Delhi: Chowkhamba Publication; 2017. P.214.
11. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 36, reprint edition New Delhi: Chowkhamba Publication; 2017. P.215.
12. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 8, reprint edition New Delhi: Chowkhamba Publication; 2017. P.213.
13. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 37, reprint edition New Delhi: Chowkhamba Publication; 2017. P.215.
14. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 47, reprint edition New Delhi: Chowkhamba Publication; 2017. P.215.
15. Acharya YT, editor. Charaka Samhita by Agnivesha, Nidana Sthanach. 4, verse 48, reprint edition New Delhi: Chowkhamba Publication; 2017. P.215.
16. Umesh Kumar Sharma et.al. Type-II-diabetes mellitus- etiology, epidemiology, risk factors and diagnosis and insight into demography (urban versus rural), IJHS, Vol 14, Issue 1, Jan 2024.
17. Lu, X., Xie, Q., Pan, X. *et al*. Type 2 diabetes mellitus in adults: pathogenesis, prevention and therapy. *Sig Transduct Target Ther* 9, 262 (2024). <https://doi.org/10.1038/s41392-024-01951-9>.
18. Młynarska, E.; Czarnik, W.; Dzieża, N.; Jędraszak, W.; Majchrowicz, G.; Prusinowski, F.; Stabrawa, M.; Rysz, J.; Franczyk, B. Type 2 Diabetes Mellitus: New Pathogenetic Mechanisms, Treatment and the Most Important Complications. *Int. J. Mol. Sci.* 2025, 26, 1094. <https://doi.org/10.3390/ijms26031094>.

19. Government of India. The Ayurvedic Pharmacopoeia of India. Part I, Vol I. New Delhi: Ministry of AYUSH; 2001. *Curcuma longa* (Haridra) monograph.
20. Government of India. The Ayurvedic Pharmacopoeia of India. Part I, Vol II. New Delhi: Ministry of AYUSH; 2001. *Emblica officinalis/Phyllanthus emblica* (Aamalaki) monograph.
21. Government of India. The Ayurvedic Pharmacopoeia of India. Part I, Vol V. New Delhi: Ministry of AYUSH; 2008. *Bacopa monnieri* (Brahmi) monograph.
22. Ungvari Z, Fazekas-Pongor V, Csiszar A, Kunutsor SK. The multifaceted benefits of walking for healthy aging: from Blue Zones to molecular mechanisms. *Geroscience*. 2023 Dec;45(6):3211-3239. doi: 10.1007/s11357-023-00873-8. Epub 2023 Jul 26. PMID: 37495893; PMCID: PMC10643563. Indian Council of Medical Research. Quality Standards of Indian Medicinal Plants. Vols 1–10. New Delhi: ICMR; 2003–2012.
23. Bai X, Soh KG, Omar Dev RD, Talib O, Xiao W, Cai H. Effect of Brisk Walking on Health-Related Physical Fitness Balance and Life Satisfaction Among the Elderly: A Systematic Review. *Front Public Health*. 2022 Jan 31;9:829367. doi: 10.3389/fpubh.2021.829367. PMID: 35174137; PMCID: PMC8841590.
24. Aggarwal BB, Sundaram C, Malani N, Ichikawa H. Curcumin: the Indian solid gold. *Adv Exp Med Biol*. 2007;595:1–75.
25. Hewlings SJ, Kalman DS. Curcumin: a review of its effects on human health. *Foods*. 2017;6(10):92.
26. Baliga MS, Bhat HP, Pai RJ, Boloor R, Palatty PL. The chemistry and medicinal uses of the Indian gooseberry (*Emblica officinalis* Gaertn.): a review. *Food Funct*. 2011;2(10):515–523.
27. Poltanov EA, Shikov AN, Dorman HJD, Pozharitskaya ON, Makarov VG, Tikhonov VP. Chemical composition and antioxidant properties of *Phyllanthus emblica* L. extracts. *Evid Based Complement Alternat Med*. 2009;6(3):327–333.
28. Russo A, Borrelli F. *Bacopa monniera*, a reputed nootropic plant: an overview. *Phytomedicine*. 2005;12(4):305–317.
29. Stough C, Lloyd J, Clarke J, Downey LA, Hutchison CW, Rodgers T, et al. The chronic effects of an extract of *Bacopa monniera* (Brahmi) on cognitive function in healthy human subjects. *Psychopharmacology (Berl)*. 2001;156(4):481–484.
30. Singh HK, Dhawan BN. Neuropsychopharmacological effects of the Ayurvedic nootropic *Bacopa monniera* Linn. (Brahmi). *Indian J Pharmacol*. 1997;29(5):S359–S365.
31. Colberg SR, Sigal RJ, Yardley JE, Riddell MC, Dunstan DW, Dempsey PC, et al. Physical activity/exercise and diabetes: a position statement of the American Diabetes Association. *Diabetes Care*. 2016;39(11):2065–2079.
32. Hawley JA, Lessard SJ. Exercise training-induced improvements in insulin action. *J Appl Physiol*. 2008;105(3):779–785.
33. DiPietro L, Gribok A, Stevens MS, Hamm LF, Rumpler W. Three 15-min bouts of moderate-postmeal walking significantly reduce postprandial glycemia in older people. *Diabetes Care*. 2013;36(10):3262–3268.