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ROLE OF *AYURVEDA* IN THE HOLISTIC MANAGEMENT OF TYPE 2 DIABETES MELLITUS (*MADHUMEHA)*: A SINGLE-CASE STUDY

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ABSTRACT

Type 2 Diabetes Mellitus (T_2DM) is a multifactorial metabolic disorder characterized by insulin resistance, impaired insulin secretion, and chronic hyperglycemia, contributing significantly to global morbidity and mortality through microvascular and macrovascular complications. While conventional management includes lifestyle modification, pharmacotherapy, and regular monitoring, *Ayurveda* identifies T_2DM as *Madhumeha*, a subtype of *Prameha*, primarily involving vitiated *Kapha* and *Vata doshas* with pathogenesis rooted in *Agni* derangement and *Srotorodha*. This case study evaluates the effect of *Ayurvedic* treatment in a 44-year-old male who presented at Jeena Sikho Lifecare Limited Hospital, Dehradun, Uttarakhand, India, with fatigue, general weakness, diabetic neuropathy, frothy urine, and burning micturition. A personalized *Ayurvedic* treatment plan involving *Shodhana*, *Shamana*, *Ayurvedic* medications, dietary changes, and lifestyle recommendations was implemented. Following treatment, the patient showed significant improvement, including a reduction in Random Blood Sugar from 265 mg/dL to 153 mg/dL, HbA1c from 9.3% to 6.4%, and average blood glucose from 220 mg/dL to 137 mg/dL. Symptomatic relief was also reported, with resolution of neuropathic and urinary symptoms. This case highlights the promising role of *Ayurvedic* interventions as a complementary approach to the holistic management of T_2DM.

KEYWORDS: Type 2 Diabetes Mellitus (T2DM), *Ayurveda*, *Samprapti*, *Ayurvedic* diet, *Madhumeha*, Diabetic neuropathy.

INTRODUCTION

Type 2 diabetes mellitus (T_2DM) is a prevalent metabolic disorder characterized by insulin resistance, inadequate insulin secretion, and chronic hyperglycemia. It presents significant public health challenges globally due to its association with microvascular and macrovascular complications, leading to diminished quality of life and increased mortality risk. Genetic predisposition, obesity, sedentary lifestyle, and aging contribute significantly to its pathogenesis.[1] The "ominous octet" proposed by DeFronzo details the eight major pathophysiological disturbances involved in T2DM, including impaired insulin secretion, increased hepatic glucose production, and decreased incretin effect.[2] Alarmingly, the global diabetes burden affected approximately 415 million adults in 2015, with projections indicating a rise by an additional 200 million by 2040.[3]

Several landmark studies have demonstrated the importance of intensive blood sugar control in mitigating complications associated with T2DM. The United Kingdom Prospective Diabetes Study (UKPDS) showed that rigorous glycemic control reduced microvascular complications significantly.[4] Similarly, the Diabetes Control and Complications Trial (DCCT) confirmed the

benefits of tight glucose regulation in preventing retinopathy, nephropathy, and neuropathy.[5] However, later trials such as ADVANCE and ACCORD highlighted the potential adverse effects of overly aggressive glucose lowering, emphasizing the need for individualized therapeutic targets.[6,7] Recent cardiovascular outcome trials like EMPA-REG OUTCOME and LEADER further expanded management goals to include cardiovascular and renal protection alongside glycemic control.[8,9]

Current management strategies for T2DM emphasize a multifaceted approach, incorporating lifestyle modifications (diet, exercise) and pharmacological interventions. First-line therapy generally includes metformin, while additional medications such as sulfonylureas, GLP-1 receptor agonists, and SGLT2 inhibitors are utilized based on patient-specific factors.[1,2] Regular monitoring for complications, including cardiovascular risk and kidney function, is essential to improve long-term outcomes.[1] Modern management now increasingly aims for comprehensive metabolic control rather than just glycemic control, aligning with holistic health principles.

In *Ayurveda*, T2DM is identified as *Madhumeha*, a subtype of *Prameha*, primarily involving vitiation of *Kapha* and *Vata doshas*. The pathogenesis includes derangement of Agni and obstruction of *Srotas*, especially *Meda vaha* and *Mutra vaha srotas*, leading to symptoms like frequent urination, sweetness in urine, thirst, dryness, fatigue, and weight loss.[10,11] Key causative factors include sedentary habits, intake of heavy, oily, sweet foods, and genetic susceptibility (*Beeja Dosha*). The S*amprapti* G*hataka*.[12,13] of this case is mentioned in Table 1.

Table 1: The *Samprapti Ghataka*.

Parameter	Condition
Dosha	*Kapha Pradhana Tridosha*
Dushya	*Meda, Mamsa, Kleda, Sukra, Rakta, Vasa, Majja, Lasika, Rasa, Ojas*
Agni	*Jatharagni, Medodhatu Agni*
Ama	*Jatharagni, Dhatwagni-Mandya-Janya*
Srotas	*Mutravaha Srotas, Medovaha Srotas*
Srotodushti	*Sanga and Atipravriti*
Udbhavasthana	*Amashaya*
Vyaktasthana	*Mutravaha*
Adhisthana	*Basti*
Roga Marga	*Madhyama*
Swabhava	*Chirakari*
Sadhya Asadhyata	*Yapya*

गुरुस्निग्धाम्ललवणान्यतिमात्रं समश्नताम्।
नवमन्नं च पानं च निद्रामास्यासुखानि च॥७८॥
त्यक्तव्यायामचिन्तानां संशोधनमकुर्वताम्।
श्लेष्मा पित्तं च मेदश्च मांसं चातिप्रवर्धते॥७९॥
तैरावृतगतिर्वायुरोज [१] आदाय गच्छति।
यदा बस्तिं तदा कृच्छ्रो मधुमेहः प्रवर्तते॥८०॥[14]

Ayurvedic treatment emphasizes *Nidana Parivarjana*, *Shodhana* therapies (*Vamana*, *Virechana*, *Basti*), and *Shamana* (palliative treatments) with *Ayurvedic* formulations.[12,15,16,17] Lifestyle modifications focusing on a light, dry, and bitter diet, regular *Vyayama* (exercise), and individualized care are integral. Modern research supports *Ayurvedic* principles, demonstrating that *Ayurvedic* herbs like *Curcuma longa*, *Emblica officinalis*, and *Pterocarpus marsupium* possess antidiabetic, antioxidant, and insulin-sensitizing properties.[18,19] Furthermore, contemporary *Ayurvedic* clinical studies have reported that combining *Ayurvedic* formulations with standard treatments enhances glycemic control, significantly reducing HbA1c levels.[20,21] Thus, *Ayurveda* offers a time-tested holistic and complementary approach to the modern management of T2DM. This study explores the impact of *Ayurvedic* interventions in a 44-year-old male with Type 2 Diabetes mellitus.

MATERIALS AND METHODS

I. Case Report

A 44-year-old male visited Jeena Sikho Lifecare Limited Hospital, Dehradun, Uttarakhand, India, on September 20, 2024. His evaluation included a thorough medical history, physical examination, and diagnostics. There was no relevant family history, surgical history and addiction. He came with the conditions like General weakness, Fatigue, Diabetic neuropathy and frothy urine. He was diagnosed with Type 2 Diabetes mellitus. The *Ashtasthana Pareeksha* during the first visit are mentioned in **Table 2.** The basic vitals during the visits are mentioned in **Table 3.** Laboratory investigation results during the treatment period are shown in **Table 4.** Conditions during the visits are mentioned in **Table 5.**

Table 2: The *Ashtasthana Pareeksha* during the visits.

Date	20-09-2024
Nadi	*Vataj Kaphaj*
Mala	*Niram*
Mutra	*Safena*
Jiwha	*Saam*
Shabda	*Spashta*
Spashta	*Anushna sheeta*
Drik	*Avikrit*
Akriti	*Madhyam*

Table 3: The Basic vitals during the visits.

Date	Blood pressure (mmHg)	Weight (Kg)	Sugar
20-09-2024	140/90 mmHg	59 Kg	265 mg/dl
23-10-2024	160/90 mmHg	58.8 Kg	230 mg/dl
25-11-2024	150/90 mmHg	60.5 Kg	190 mg/dl
21-12-2024	140/80 mmHg	61.8 Kg	194 mg/dl
21-01-2025	140/80 mmHg	62.6 Kg	202 mg/dl
21-02-2025	140/80 mmHg	62.9 Kg	156 mg/dl
03-03-2025	150/80 mmHg	62.4 Kg	173 mg/dl
19-04-2025	120/90 mmHg	62.6 Kg	153 mg/dl

Table 4: Laboratory investigation results on during the treatment period (Fig 1).

Parameter	Findings		
Date	**24-10-2024**	**21-12-2024**	**22-03-2025**
HbA1c	9.3%	7.0%	6.4%
Average Glucose	220 mg/dl	154 mg/dl	137 mg/dl

Table 5: The conditions during visits.

Date	Conditions presented
20-09-2024	Weakness, Fatigue, Diabetic nephropathy and Frothy urine
23-10-2024	Numbness in limbs and increased appetite
25-11-2024	Pain in left flanks
21-01-2025	Numbness in soles and Burning micturation
03-03-2025	No fresh complaints

An accurately designed *Ayurveda* and DIP Diet was provided to the patient to complement the *Ayurvedic* treatments administered for T_2DM[22]:

II. Treatment Plan

I. Diet Plan

Dietary Guidelines from Jeena Sikho Lifecare Limited Hospital:

In traditional texts, various food items suitable for individuals with diabetes are described:

- Cereals: Barley (*Yava*) is highly recommended, and various preparations such as Mantha, Odana, Appopa, bread, and Roti can be made from barley. Wheat (*godhooma*) and old rice (*purana shali*) are also acceptable cereals for diabetic patients.
- Pulses: Green gram (*Mudga*), Bengal gram (*Chanaka*), horse gram (*Kulattha*), pigeon pea (*Adhaki*), and others are suitable for consumption.
- Vegetables: *Tikta Shakas- Nimba, Sarshapa* (Mustard), *Methika, Karbellak, Kulaka* (Patola), *Shobhanjana, Karkotaka, Udumbara, Rasona* (Garlic)
- Fruits: Black berry (*Jambu*), Indian gooseberry (*Amalaki* or *Amla*), Wood Apple (*Kapitta*), Asian Palmyra palm (*Tala phala*), Date Sugar Palm (*Kharjura*), Indian lotus (*Kamala*), and Nymphoea Stellata (*Utpala*) can be consumed.
- Seeds: Seeds of *Kamala* and *Utpala* are permissible.
- Oils: Mustard oil (*Sarshapa taila*) is recommended, and *Ingudi Ghritha* (*Balanitis aegypotiaca* Ghee) may be used for individuals with *pitthaja prameha*[23]

तत्र श्लोकाः-

हेतुर्दोषो दूष्यं मेहानां साध्यतानुरूपश्च|

मेही द्विविधस्त्रिविधं [१] भिषग्जितमतिक्षपणदोषः||५९||

आद्या यवान्नविकृतिर्मन्था मेहापहाः कषायाश्च|

तैलघृतलेहयोगा भक्ष्याः प्रवरासवाः सिद्धाः॥६०॥
व्यायामविधिर्विविधः स्नानान्युद्वर्तनानि गन्धाश्च|
मेहानां प्रशमार्थं चिकित्सिते दिष्टमेतावत्॥६१॥[23]

- Do not eat after 8 PM.
- When eating solid foods, take small bites and chew each bite 32 times.
- *Apathya Vivechana Apathya* (unfavorable diet): *Dugdha Nava-Anna, Dadhi Guda, Takra Urada, Ikshuvikara Gramya-Audaka, Pista-Anna Anoopa Mansa, Madhur-Amla- Naveen Sura, Lavana Rasadi Kapha-Meda* and *Aahara Vardhak Aahara*[24,25]

वेपथुर्वेष्टनं स्तम्भः प्रमोहः शून्यता दरः.[२] |
हृदि वातातुरे रूपं जीर्णे चात्यर्थवेदना॥३१॥
उष्णाम्ललवणक्षारकटुकाजीर्णभोजनैः|
मद्यक्रोधातपैश्चाशु हृदि पित्तं प्रकुप्यति॥३२॥ [26]

Hydration

- Almond milk, coconut water & coconut milk.
- Hydration: Maintain Adequate Hydration with Warm Water, Herbal Tea, And Soups.

Millet Inclusion

- Incorporate five varieties of millets into diet: Foxtail, Barnyard, Little, Kodo and Browntop.[27,28]
- Ensure that millets are cooked using only steel utensils to preserve their nutritional properties.

Meal Timing and Structure (**Fig 2**)*:*

रूक्षः शीतोऽगुरुः स्वादुर्बहुवातशकृद्यवः|
स्थैर्यकृत् सकषायश्च [१] बल्यः श्लेष्मविकारनुत्॥१९॥
रूक्षः कषायानुरसो मधुरः कफपित्तहा|
मेदःक्रिमिविषघ्नश्च बल्यो वेणुयवो मतः॥२०॥[29]

Fasting

- Fast once a week.[30]

Special Instructions

- Sit in sunlight for 1 hour, morning and evening, with feet soaked in lukewarm water while chanting LUM, VUM, RUM, YUM, HUM, OM, and AUM in *gyan mudra* position.
- Offer thanks to the divine before eating or drinking.

II. Lifestyle Recommendations

- Get-up early in morning (*Brahama Muhurta*)
- Brisk Walking (*Chakramana*) (*Abyanga*)
- Yoga (*Aasana Pranayama*) Light Exercise.
- After lunch walking for 15 minutes.
- After dinner slow walking for 15 minutes.
- Sleep only 6-7 Hr. during night time.
- Avoid excess intake of high calorie product and packed food.
- Avoid dairy product, Animal product, chocolate, Milk product

- Avoid sleep in day time.
- Avoid deep fried items, fast food, pickles,
- Fermented items.
- Avoid sweet, cold drinks, and alcohol substance.
- Avoid taking excessive food (improperly digested)
- Yoga Asana - *Bhujangasana*, *Mandukasana*, *Kapalbhati*, *Surya Namaskar*, *Tadasan*, *Paschimottanasan*, *Bhujangasan*, *Bhramari*, *Pavanmuktasan*.[20]

Medicinal Interventions

The *Ayurvedic* treatment employed in this case included Prameh Har Powder, Madhumeh Nashak Syrup, Panchsakar churna, Chandraprabha vati, DM Capsule, Ashwagandha Tablets and Dhatu Poshak Capsule. The medications prescribed for the patient during the treatment is outlined in **Table 6.** The details of the medicine prescribed are described in **Table 7.**

Table 6: The medications prescribed for the patient during the treatment.

Date	Medicines	Dosage with *Anupana*
20-09-2024	Prameh Har Powder	Half a teaspoon BD *(Adhobhakta* with *koshna jala)*
	Madhumeh Nashak Syrup	10 ml BD (*Adhobhakta* with *sama matra koshna jala)*
23-10-2024	Prameh Har Powder	Half a teaspoon BD *(Adhobhakta* with *koshna jala)*
	DM Capsules	1 CAP BD (*Adhobhakta* with *koshna jala*)
	Madhumeh Nashak Syrup	10 ml BD (*Adhobhakta* with *sama matra koshna jala)*
25-11-2024	Prameh Har Powder	Half a teaspoon BD *(Adhobhakta* with *koshna jala)*
	DM Capsules	1 CAP OD (*Adhobhakta* with *koshna jala*)
	Madhumeh Nashak Syrup	10 ml BD (*Adhobhakta* with *sama matra koshna jala)*
21-12-2024 and 21-01-2025	Prameh Har Powder	Half a teaspoon BD *(Adhobhakta* with *koshna jala)*
	Panchsakar churna	Half a teaspoon HS *(Nishikala* with *koshna jala)*
	Chandraprabha Vati	1 TAB BD (*Adhobhakta* with *koshna jala*)
	Madhumeh Nashak Syrup	10 ml BD (*Adhobhakta* with *sama matra koshna jala)*
03-03-2025	Prameh Har Powder	Half a teaspoon BD *(Adhobhakta* with *koshna jala)*
	Ashwagandha Tablets	1 TAB BD (*Adhobhakta* with *koshna jala*)
	Dhatu Poshak	1 TAB BD (*Adhobhakta* with *koshna jala*)
	Madhumeh Nashak Syrup	10 ml BD (*Adhobhakta* with *sama matra koshna jala)*

Table 7: The details of the medicine prescribed during the treatment.

Medicine	Ingredients	Therapeutic Effects
Prameh Har Powder	**Kutaki** (*Picrorhiza kurroa*), **Chiraita** (*Swertia chirata*), **Neem** (*Azadirachta indica*), **Karela** (*Momordica charantia*), **Rasonth** (*Berberis aristata*), **Imli Beej** (*Tamarindus indica*), **Kala Namak**, **Giloy** (*Tinospora cordifolia*), **Sonth** (*Zingiber officinale*), **Babool Chhaal** (*Vachellia nilotica*), **Sarpgandha** (*Rauvolfia serpentina*), **Trivang Bhasm**, **Yashad Bhasm**, **Revend Chinni** (*Rheum emodi*), **Sodhit Guggulu** (*Commiphora mukul*), **Methi** (*Trigonella foenum-graecum*), **Jamun** (*Syzygium cumini*), **Babool Fruit** (*Vachellia nilotica*), **Karanj** (*Millettia pinnata*), **Shilajeet**, **Haldi** (*Curcuma longa*), **Harad** (*Terminalia chebula*), **Inderjaun** (*Holarrhena antidysenterica*), **Vanshlochan** (*Bambusa arundinacea*), **Bahera** (*Terminalia bellirica*), **Amla** (*Phyllanthus emblica*), **White Musli** (*Chlorophytum borivilianum*), **Gurmar** (*Gymnema sylvestre*).	*Vata-hara, Agni deepana, Raktashodhana, Mutrala* and *Rasayana*
Madhumeh Nashak Syrup	**Karela** *(Momordica charantia)* , **Jamun** (*Syzygium cumini)* , **Neem** *(Azadirachta indica)* , **Chirata** *(Swertia chirata)* , **Gurmar** *(Gymnema sylvestre)* , **Kutaj** (*Holarrhena antidysenterica)*	*Prameh har, Kapha-vata shamana, Agni deepana, Raktashodhana, Mutrala* and *Rasayana*
Panchsakar churna	**Senn Patti** *(Senna alexandrina)* , **Sonth** *(Zingiber officinale),* **Sonf** *(Foeniculum vulgare)* , **Sendha Namak and Shiva** (*Terminalia chebula).*	*Virechana, Vatanulomana, Agnideepana, Shothahara* and *Medohara*
Chandraprabha vati	**Camphor** (*Cinnamomum camphora*), **Vacha** (*Acorus calamus*), **Nagarmotha** (*Cyperus rotundus*), **Bhumi Amla** *(Phyllanthus niruri),* **Giloy** *(Tinospora cordifolia)* , **Turmeric** (*Curcuma longa*), **Daruharidra** (*Berberis aristata*), **Dhania** (*Coriandrum sativum*), **Haritaki** (*Terminalia chebula*), **Baheda** (*Terminalia bellerica*), **Amla** (*Phyllanthus emblica*), **Vidanga** (*Embelia ribes*), **Ginger** (*Zingiber officinale*), **Kalimirch** (*Piper nigrum*), **Himalayan Salt, Nisoth** (*Operculina turpethum*), **Tejpatta** (*Cinnamomum tamala)* , **Cinnamon** (*Cinnamomum cassia*), **Cardamom** (*Elettaria cardamomum*), **Shilajeet**	*Prameh har, Mutral, Raktashodhana, Agni deepana* and *Rasayana*
DM Capsule	**Amba Haldi** (*Curcuma amada*), **Giloy** (*Tinospora cordifolia*), **Safed Musli** (*Chlorophytum borivilianum*), **Methi** (*Trigonella foenum-graecum*), **Neem** (*Azadirachta indica*), **Karela** (*Momordica charantia*), **Jamun** (*Syzygium cumini*), **Bilva Patra** (*Aegle marmelos*), **Gudmar** (*Gymnema sylvestre*), **Shuddh Shilajeet**.	*Prameh har, Raktashodhana, Agni deepana* and *Rasayana*
Ashwagandha Tablets	**Ashwagandha (***Withania somnifera* **)**	*Ojas vardhana, Medhya rasayana, Shothahara* and *Balya*
Dhatu Poshak Capsule	**Chuna Shuddh, Shankh Bhasm, Mukta Shukti, Prawal Pishti, Kapardika and Loh**	*Dhatuposhaka, Rasayana, Balya, Srotoshodhaka, Vata-pitta shamana, Shodhaka, Agni deepana* and *Lekhana*

RESULT

Effectiveness of *Ayurvedic* Treatments: The patient underwent 7 months of *Ayurvedic* regimen, after the treatment He experienced noteworthy development in symptoms, which denotes the interventions used in the study are effective against T_2DM**.** After the treatment he was well oriented and got relief from symptoms like weakness, fatigue, diabetic neuropathy, frothy urine and burning micturition which shows that the *Ayurvedic* interventions used in the case study are effective for T_2DM. The conditions before and after treatment is mentioned in **Table 8.**

Table 8: The conditions before and after treatment.

Conditions before treatment	Conditions after treatment
Weakness	Reduced
Fatigue	Relief
Diabetic neuropathy	Reduced
Frothy urine	Clear
Pain in left flanks (6/10)	Mild (2/10)
Burning micturation	Clear

Implications for Future Research

This study focused on a T_2DM, yielding promising results. However, due to the small sample size, further research with randomized controlled trials and larger cohorts is needed to confirm the safety, efficacy, and reliability of *Ayurvedic* treatments, helping to establish standardized therapeutic guidelines.

DISCUSSION

Ayurvedic treatment for T_2DM offers a viable substitute for conventional medical methods. This case study describes the application of several *Ayurvedic* treatments to a 44-year-old man who has been diagnosed with T_2DM. *Samprapti*[31,32,33,34, 35,36,37] of this case study is illustrated in **Fig 3**.

कषायमधुरं पाण्डु रूक्षं मेहति यो नरः|
वातकोपादसाध्यं तं प्रतीयान्मधुमेहिनम्‌||४४||
इत्येते चत्वारः प्रमेहा वातप्रकोपनिमित्ता व्याख्याता भवन्ति||४५||
एवं त्रिदोषप्रकोपनिमित्ता विंशतिः प्रमेहा व्याख्याता भवन्ति||४६||[34]

Fig. 3: *Samprapti* of this case study.

Accuprobe Diagnostics

Accuracy Matters...

Customer Care Number
9599593622
9599593625

Code No	13252489	Lab No	00012410240576
Client Name	[redacted]	Reg Date	24/Oct/2024 04:06AM
Age/Sex	40 YRS/Male	Sample Coll. Date	24/Oct/2024 03:12 AM
Referred By	DR. PAWAN RAWAT	Sample Rec.Date	24/Oct/2024 04:08 AM
Client Code/Name	AP030848 KHOSLA HEALTHCARE		
Ref. Lab/Hosp		Report Date	24/Oct/2024 05:15AM
Panel Address	76/1, 1st Floor, Saket Lane No.1 opp K.P. Memorial School Canal Road (Rajpur Road) Dehradun		

Test Name With Methodology	Result	Unit	Biological Ref.Interval
HbA1c (Glycated hemoglobin)	**HAEMATOLOGY**		
Glycosylated Hb (HbA1c) EDTA, HPLC	9.3	%	4.2-6.5
Average Glucose Calculated.	220	mg/dl	73-140

Ref Range for HBA1c

Non Diabetic:	< 5.7 %
Pre-Diabetic:	5.7 - 6.5 %
Diabetic:	> 6.5 %

Remark: Hemoglobin A1c criteria for diagnosing diabetes have not been established for patients who are <18 years of age.

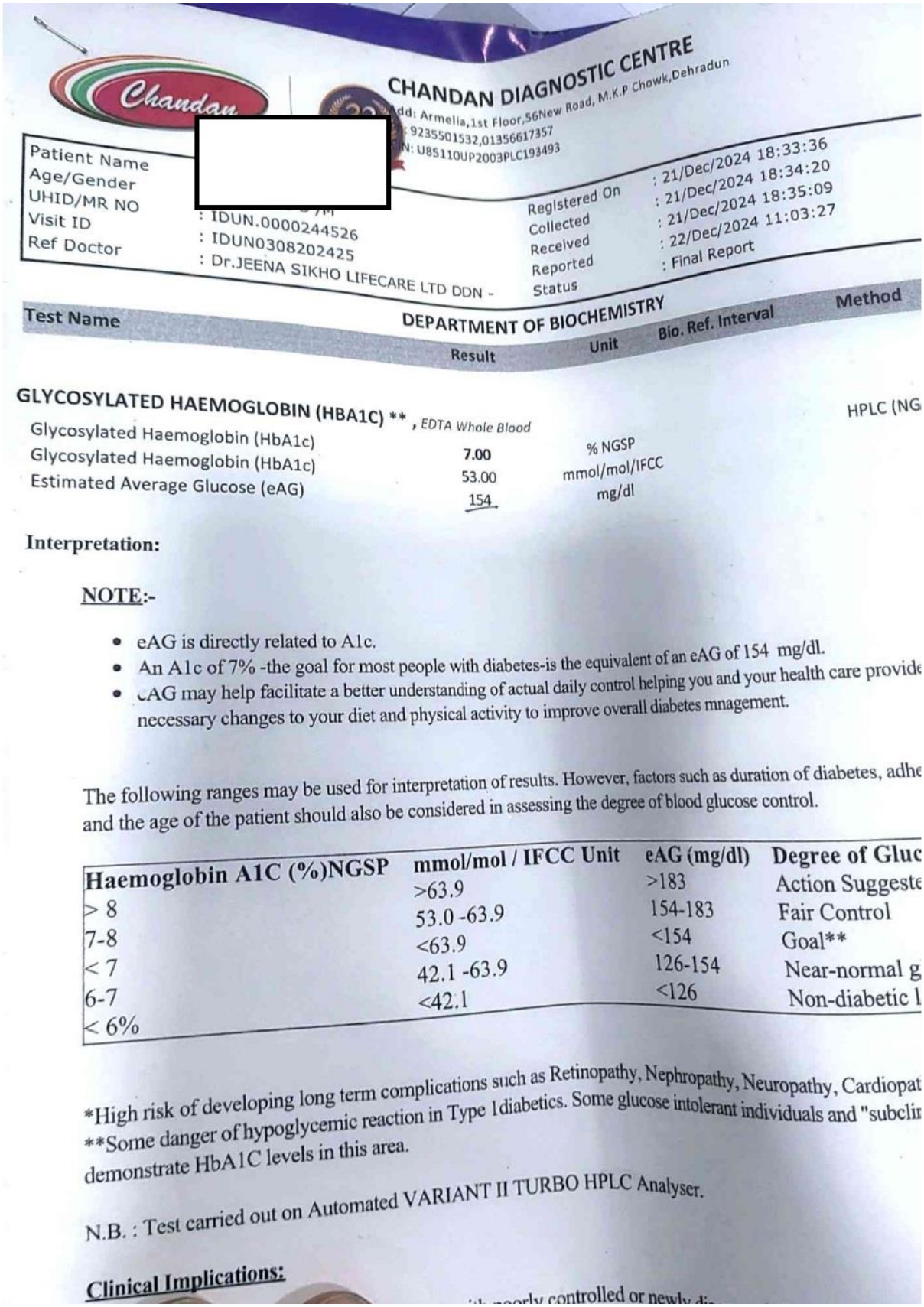
HbA1c goals in treatment of diabetes:

Ages 0-6 years:	7.6% - 8.4%
Ages 6-12 years:	<8%
Ages 13-19 years:	<7.5%
Adults:	<7%

COMMENT:

The Glycosylated Hemoglobin (HbA1c or A1c) test evaluates the average amount of glucose in the blood over the last 2 to 3 months. This test is used to monitor treatment in someone who has been diagnosed with diabetes. It helps to evaluate how well the person's glucose levels have been controlled by treatment over time. This test may be used to screen for and diagnose diabetes or risk of developing diabetes. Depending on the type of diabetes that a person has, how well their diabetes is controlled, and on doctor recommendations, the HbA1c test may be measured 2 to 4 times each year. The American Diabetes Association recommends HbA1c testing in diabetics at least twice a year. When someone is first diagnosed with diabetes or if control is not good, HbA1c may be ordered more frequently.

Note: If a person has anemia, few type of hemoglobinopathy, hemolysis, or heavy bleeding, HbA1c test results may be falsely low. If someone is iron-deficient, the HbA1c level may be increased. If a person has had a recent blood transfusion, the HbA1c may be inaccurate and may not accurately reflect glucose control for 2 to 3 months..



CHANDAN DIAGNOSTIC CENTRE

Add: Armelia,1st Floor,56New Road, M.K.P Chowk,Dehradun

: 9235501532,01356617357

N: U85110UP2003PLC193493

Patient Name	[redacted]	Registered On	: 21/Dec/2024 18:33:36
Age/Gender		Collected	: 21/Dec/2024 18:34:20
UHID/MR NO	: IDUN.0000244526	Received	: 21/Dec/2024 18:35:09
Visit ID	: IDUN0308202425	Reported	: 22/Dec/2024 11:03:27
Ref Doctor	: Dr.JEENA SIKHO LIFECARE LTD DDN -	Status	: Final Report

DEPARTMENT OF BIOCHEMISTRY

Test Name	Result	Unit	Bio. Ref. Interval	Method
GLYCOSYLATED HAEMOGLOBIN (HBA1C) ** , *EDTA Whole Blood*				HPLC (NG
Glycosylated Haemoglobin (HbA1c)	7.00	% NGSP		
Glycosylated Haemoglobin (HbA1c)	53.00	mmol/mol/IFCC		
Estimated Average Glucose (eAG)	154	mg/dl		

Interpretation:

NOTE:-

- eAG is directly related to A1c.
- An A1c of 7% -the goal for most people with diabetes-is the equivalent of an eAG of 154 mg/dl.
- eAG may help facilitate a better understanding of actual daily control helping you and your health care provide necessary changes to your diet and physical activity to improve overall diabetes mnagement.

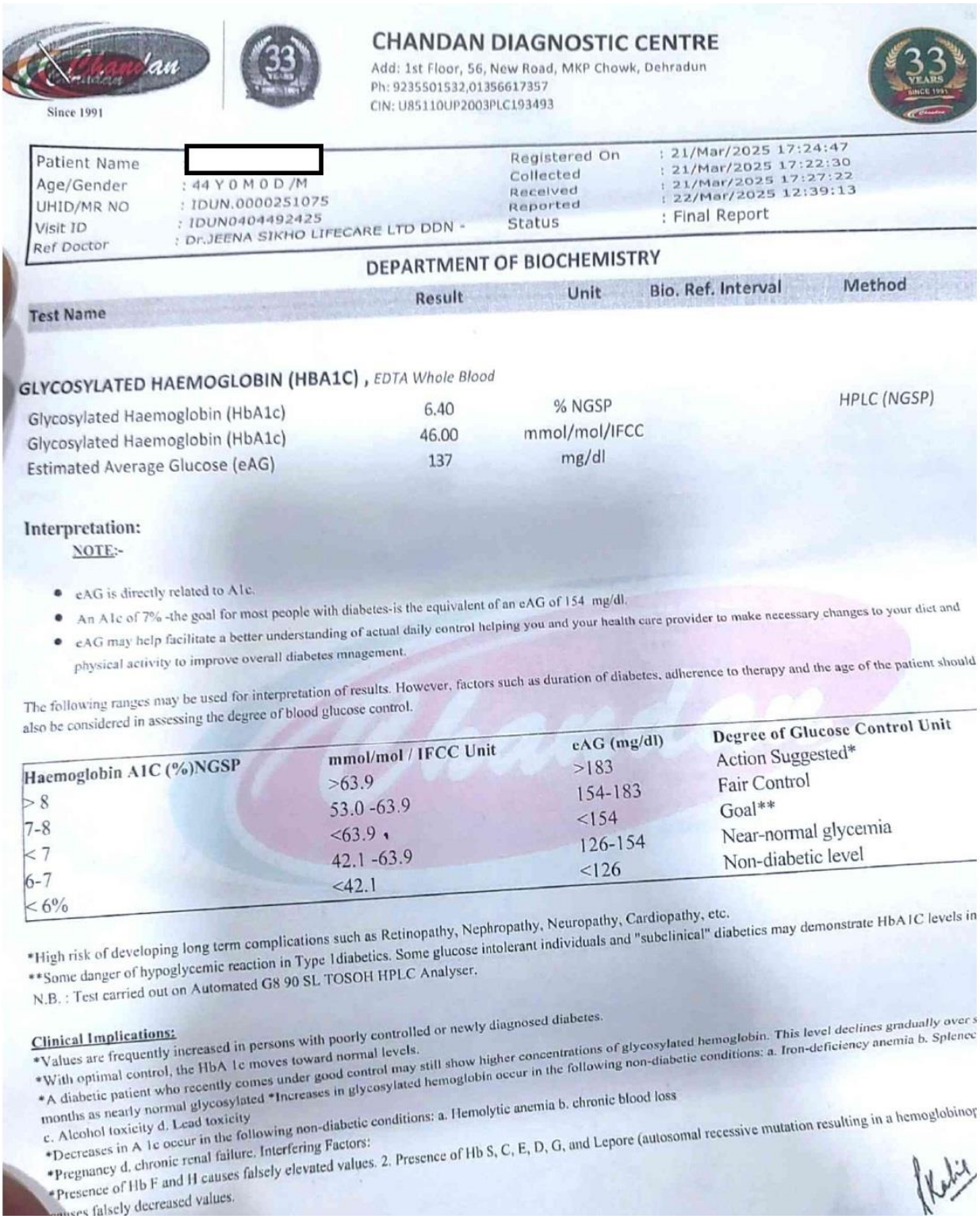
The following ranges may be used for interpretation of results. However, factors such as duration of diabetes, adhe and the age of the patient should also be considered in assessing the degree of blood glucose control.

Haemoglobin A1C (%)NGSP	mmol/mol / IFCC Unit	eAG (mg/dl)	Degree of Gluc
> 8	>63.9	>183	Action Suggeste
7-8	53.0 -63.9	154-183	Fair Control
< 7	<63.9	<154	Goal**
6-7	42.1 -63.9	126-154	Near-normal g
< 6%	<42.1	<126	Non-diabetic l

*High risk of developing long term complications such as Retinopathy, Nephropathy, Neuropathy, Cardiopat
**Some danger of hypoglycemic reaction in Type 1diabetics. Some glucose intolerant individuals and "subclir demonstrate HbA1C levels in this area.

N.B. : Test carried out on Automated VARIANT II TURBO HPLC Analyser.

Clinical Implications:



CHANDAN DIAGNOSTIC CENTRE
Add: 1st Floor, 56, New Road, MKP Chowk, Dehradun
Ph: 9235501532,01356617357
CIN: U85110UP2003PLC193493
Since 1991

Patient Name	[redacted]	Registered On	: 21/Mar/2025 17:24:47
Age/Gender	: 44 Y 0 M 0 D /M	Collected	: 21/Mar/2025 17:22:30
UHID/MR NO	: IDUN.0000251075	Received	: 21/Mar/2025 17:27:22
Visit ID	: IDUN0404492425	Reported	: 22/Mar/2025 12:39:13
Ref Doctor	: Dr.JEENA SIKHO LIFECARE LTD DDN -	Status	: Final Report

DEPARTMENT OF BIOCHEMISTRY

Test Name	Result	Unit	Bio. Ref. Interval	Method
GLYCOSYLATED HAEMOGLOBIN (HBA1C) , *EDTA Whole Blood*				
Glycosylated Haemoglobin (HbA1c)	6.40	% NGSP		HPLC (NGSP)
Glycosylated Haemoglobin (HbA1c)	46.00	mmol/mol/IFCC		
Estimated Average Glucose (eAG)	137	mg/dl		

Interpretation:

NOTE:-

- eAG is directly related to A1c.
- An A1c of 7% -the goal for most people with diabetes-is the equivalent of an eAG of 154 mg/dl.
- eAG may help facilitate a better understanding of actual daily control helping you and your health care provider to make necessary changes to your diet and physical activity to improve overall diabetes management.

The following ranges may be used for interpretation of results. However, factors such as duration of diabetes, adherence to therapy and the age of the patient should also be considered in assessing the degree of blood glucose control.

Haemoglobin A1C (%)NGSP	mmol/mol / IFCC Unit	eAG (mg/dl)	Degree of Glucose Control Unit
> 8	>63.9	>183	Action Suggested*
7-8	53.0 -63.9	154-183	Fair Control
< 7	<63.9	<154	Goal**
6-7	42.1 -63.9	126-154	Near-normal glycemia
< 6%	<42.1	<126	Non-diabetic level

*High risk of developing long term complications such as Retinopathy, Nephropathy, Neuropathy, Cardiopathy, etc.
**Some danger of hypoglycemic reaction in Type 1diabetics. Some glucose intolerant individuals and "subclinical" diabetics may demonstrate HbA1C levels in
N.B. : Test carried out on Automated G8 90 SL TOSOH HPLC Analyser.

Clinical Implications:
*Values are frequently increased in persons with poorly controlled or newly diagnosed diabetes.
*With optimal control, the HbA 1c moves toward normal levels.
*A diabetic patient who recently comes under good control may still show higher concentrations of glycosylated hemoglobin. This level declines gradually over s
months as nearly normal glycosylated *Increases in glycosylated hemoglobin occur in the following non-diabetic conditions: a. Iron-deficiency anemia b. Splenec
c. Alcohol toxicity d. Lead toxicity
*Decreases in A 1c occur in the following non-diabetic conditions: a. Hemolytic anemia b. chronic blood loss
*Pregnancy d. chronic renal failure. Interfering Factors:
*Presence of Hb F and H causes falsely elevated values. 2. Presence of Hb S, C, E, D, G, and Lepore (autosomal recessive mutation resulting in a hemoglobinop
causes falsely decreased values.

Fig. 1: Laboratory test reports.

During his 7 months of *Ayurvedic* treatment, He underwent *Ayurvedic* therapy regimen. In *Ayurveda*, T_2DM (*Madhumeha*) is primarily a *Kapha*-predominant *Prameha* with secondary involvement of *Pitta* and *Vata doshas* as the disease progresses. The *nidana* such as consumption of *guru*, *snigdha*, *madhura ahara*, sedentary lifestyle, and *divaswapna* aggravate *Kapha* and lead to *Meda dhatu vriddhi* and *Agnimandya*. This results in the formation of *Ama* and *Srotorodha*, especially of *Medovaha* and *Mootravaha srotas*. Progressive accumulation of *Kleda* in tissues and depletion of *Ojas* leads to characteristic features of *Madhumeha* such as polyuria, fatigue, and loss of strength.

In this context, *Ayurvedic* formulations like Prameh Har Powder play a vital role in reducing *Kapha* and *Meda*,

promoting *Agni*, and digesting *Ama*, thereby correcting the upstream pathology of *Madhumeha*. Madhumeh Nashak Syrup acts as a *Srotoshodhaka* and *Mutrala*, helping clear obstruction in urinary channels and managing *kleda vriddhi*. Panchsakar Churna, being a mild *virechaka* and *deepana-pachana*, helps regulate *Apana Vayu* and eliminate *ama* from the gut, breaking the initial link of *Agnimandya*. Chandraprabha Vati, a classical *Ayurvedic* compound, supports urinary health, promotes *dhatu shuddhi*, and acts as a *Rasayana*, helping to maintain *Ojas* and check complications. DM Capsule, containing herbs like *Gudmar*, *Vijaysar*, and *Karela*, addresses blood sugar regulation directly while reducing *Meda dhatu* and supporting *Dhatvagni*. In the later stages, where *Vata* predominance and *Ojakshaya* manifest, Ashwagandha Tablets restore vitality, reduce stress-induced hyperglycemia, and prevent further *dhatu kshaya*. Finally, Dhatu Poshak Capsule nourishes depleted *dhatus* like *Mamsa*, *Shukra*, and *Ojas*, reversing *dhatu shaithilya* and strengthening the body's resilience. Together, these formulations address the entire spectrum of *Madhumeha Samprapti*—from *dosha* and *dhatu* imbalance to *agni* dysfunction and *srotorodha*—ultimately aiming at both symptomatic relief and reversal of pathophysiological changes in the body.

This case study highlights the potential benefits of *Ayurvedic* therapy for managing T_2DM. *Ayurvedic* treatment, offer a more accessible, cost-effective approach, addressing underlying imbalances that contribute to *Madhumeha*. While promising, further research is needed to confirm the effectiveness, safety, and reliability of *Ayurvedic* treatments in T_2DM management.

CONCLUSION

This case study evaluating the treatment of T_2DM through *Ayurvedic* interventions yields the following findings:

Symptoms: Upon admission, the patient presented with weakness, fatigue, diabetic neuropathy, frothy urine and burning micturition. After *Ayurvedic* treatment, significant improvements were observed. The patient reported relief from diabetic neuropathy, frothy urine and burning micturition, with no new symptoms emerging, suggesting a marked improvement in T2DM and overall health.

Vitals and Investigations: There was a notable reduction in symptoms, reflecting positive changes in both lifestyle and diet. The Blood sugar was reduced significantly from RBS- 265 mg/dl to RBS-153 mg/dl. The HbA1c reduced from 9.3% to 6.4%. The average blood sugar reduced form 220 mg/dl to 137 mg/dl.

In summary, holistic *Ayurvedic* therapies for T_2DM showed promising results, including improvements in laboratory test results, vital signs, and symptoms. The integration of *Ayurvedic* treatments appears to alleviate T_2DM symptoms, and improve overall health.

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