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AYURVEDIC MANAGEMENT OF TYPE 2 DIABETES MELLITUS: A CASE STUDY

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ABSTRACT

Type 2 Diabetes Mellitus (T2DM) is a chronic metabolic disorder marked by persistent hyperglycemia, often accompanied by comorbidities such as dyslipidemia and exocrine pancreatic insufficiency, contributing to metabolic imbalance and complications. This case study presents a 45-year-old female with T2DM, who visited Jeena Sikho Lifecare Limited Hospital, Ambala, India, on April 11, 2025. She had a history of multiple abdominal surgeries, including hysterectomy, cholecystectomy, splenectomy, and distal pancreatectomy. Her symptoms included general weakness, reduced appetite, and elevated blood sugar levels. A comprehensive *Ayurvedic* evaluation revealed features of *Agnimandya* (weakened digestion), *Srotorodha* (channel obstruction), and *Meda Dhatu Dushti* (fat tissue imbalance), correlating with the clinical findings of hyperlipidemia and pancreatic enzyme insufficiency. *Ayurvedic* management involved *Deepan-Pachan* (digestive stimulation), *Srotoshodhana* (channel cleansing) and *Pathya-Apathya* (dietary and lifestyle regulation). Following treatment, the patient showed marked clinical improvement: blood glucose reduced from 159 mg/dl to 129 mg/dl, HbA_{1c} from 7.3% to 6.4%, fecal elastase improved from 102 µg/g to 694 µg/g, and lipid profile, including cholesterol and triglycerides, significantly normalized. Hematological values also stabilized, indicating improved systemic health. This case highlights the effectiveness of individualized *Ayurvedic* therapy in managing complex metabolic disorders such as T2DM with associated pancreatic and lipid dysfunction, addressing the root causes and promoting sustained metabolic balance.

KEYWORDS: *Agnimandya*, *Ayurveda*, Dyslipidemia, Fecal Pancreatic Elastase, *Madhumeh*, Type 2 Diabetes Mellitus.

INTRODUCTION

Type 2 diabetes mellitus (T2DM) is a widespread chronic metabolic disorder marked by persistent hyperglycemia resulting from insulin resistance and/or inadequate insulin secretion.[1] It is commonly associated with a range of comorbidities, among which dyslipidemia is particularly significant due to its contribution to cardiovascular disease, the leading cause of mortality in diabetic patients.[2] Dyslipidemia in T2DM is characterized by elevated levels of total cholesterol, low-density lipoprotein (LDL), triglycerides, and non-HDL cholesterol.[3] According to studies, a substantial proportion of T2DM patients show lipid abnormalities, with over 60% presenting with raised LDL and more than 50% with high triglyceride levels.[4] Furthermore, emerging research highlights the role of remnant cholesterol and inflammatory markers in exacerbating metabolic risk, even when conventional lipid profiles appear normal.[5] In elderly populations, the so-called "cholesterol paradox", wherein lower cholesterol levels are paradoxically linked to worse outcomes, further complicates cholesterol management in T2DM.[6]

In addition to lipid imbalance, growing evidence has shown a strong correlation between T2DM and exocrine pancreatic dysfunction, as assessed by fecal pancreatic elastase-1 (FE-1) levels.[7] FE-1 is a non-invasive biomarker used to evaluate pancreatic exocrine activity, with values below 200 µg/g indicating insufficiency.[8] Research indicates that a significant proportion of T2DM patients exhibit low FE-1 levels, suggesting concurrent exocrine pancreatic insufficiency (PEI).[9] This dysfunction may impair the digestion and absorption of dietary fats and cholesterol, potentially contributing to malnutrition and altered lipid profiles.[10] FE-1 levels have also been found to negatively correlate with fasting blood glucose and HbA_{1c}, and positively correlate with insulin reserve (C-peptide), underscoring its relevance in the broader metabolic landscape of diabetes.[11] Despite its diagnostic value, interpreting FE-1 in isolation may be misleading, as fat malabsorption may not always manifest clinically in all patients, pointing to a complex interplay between digestive enzymes, nutrient assimilation, and systemic metabolism.[12]

From an *Ayurvedic* standpoint, the interconnected dysfunctions of blood sugar regulation, cholesterol imbalance, and digestive enzyme insufficiency can be understood through the lens of *Agni* (Metabolic fire), *Dosha* imbalance, and *Dhatu* metabolism.[13] T2DM corresponds to *Prameha*, a *Kapha-Medaja Vyadhi* (disease rooted in *Kapha* and *Meda* vitiation) characterized by improper digestion, tissue-level metabolic derangement, and excessive accumulation of unprocessed nourishment.[14] Similarly, impaired fat digestion and lipid accumulation correspond to *Medoroga*, arising from *Meda Dhatvagni Mandya* (impaired fat tissue metabolism) and *Ama Sanchaya* (accumulation of toxic byproducts due to weak *Agni*).[15] Reduced pancreatic function, as reflected by low FE-1, can be interpreted as *Agnyashaya Dushti* (disturbance in the function of digestive organs) and *Mandagni*, resulting in *Srotorodha* (blockage of bodily channels) and deranged nutrient transformation.[16] The *Samprapti Ghataka*[17,18,19,20] is mentioned in **Table 1**.

Table 1: The *Samprapti Ghataka*.

Samprapti Ghataka	**Details (Sanskrit with English)**
***Dosha* (Bio-energetic factors)**	*Kapha* (phlegm/hypometabolic), *Pitta* (bile/enzymatic), *Vata* (air/neuro-metabolic – in chronic cases)
***Dushya* (Affected tissues)**	*Rasa* (plasma/lymph), *Meda* (fat/adipose tissue), *Mamsa* (muscle), *Majja* (marrow/nerve tissue), *Shukra* (reproductive tissue), *Ojas* (vital essence/immunity)
***Agni* (Digestive fire)**	*Mandagni* (low digestive/metabolic fire), especially *Jatharagni* (primary digestive fire) and *Dhatvagni* (tissue-level metabolic fire) of *Rasa* (plasma) and *Meda* (fat)
***Ama* (Metabolic toxins)**	*Present* – due to incomplete digestion and absorption
***Srotas* (Body channels)**	*Rasavaha* (channels of plasma), *Medovaha* (channels of fat), *Annavaha* (channels of food), *Pittavaha* (channels of bile/enzymes), *Purishavaha* (channels of feces)
***Udbhav Sthan* (Origin site)**	*Amashaya* (stomach) / *Grahani* (duodenum/small intestine – functional digestive zone)
***Sanchar Sthan* (Path of spread)**	*Rasa Dhatu* (plasma/lymph) and *Meda Dhatu* (fat/adipose), via affected *Srotas* (channels)
***Vyakti Sthan* (Manifestation site)**	*Agnyashaya* (conceptual seat of pancreas), *Meda Dhatu* (fat), *Dhamani* (blood vessels)
***Adhisthan* (Seat of disease)**	*Sarva Sharira* (whole body/systemic involvement), especially metabolic and endocrine organs
***Rog Marg* (Pathway of disease)**	*Abhyantara Marga* (internal disease pathway)
Samprapti Type (Pathogenesis type)	*Sama* (with toxins), *Santarpanajanya* (due to overnutrition), *Agnimandyajanya* (due to weak digestion), *Srotorodhajanya* (due to channel blockage)

The treatment begins with *Deepan* and *Pachan* to rekindle digestive capacity and prevent further formation of *Ama*.[21] Alongside, attention is given to clearing obstructions in bodily channels (*Srotoshodhana*) to ensure the proper flow of nutrients and metabolic waste.[22] Therapies are selected to regulate fat and sugar metabolism by pacifying the aggravated *Kapha* and balancing *Pitta* and *Vata*, depending on the individual's constitution and stage of disease.[23] Cleansing procedures like *Virechana* (therapeutic purgation) and *Basti* (medicated enema) may be employed to expel deep-seated imbalances, especially those affecting the gastrointestinal and metabolic systems.[24] Dietary guidance is a cornerstone of treatment, emphasizing

light, easily digestible foods that support *Agni* and discourage the accumulation of *Meda* (fat tissue).[25] Lifestyle modifications including regular physical activity, stress management, and proper sleep hygiene are also integral.[26] This holistic approach aims not just to manage symptoms but to address the underlying dysfunctions in digestion, metabolism, and tissue nourishment that contribute to reduced pancreatic function, poor glycemic control, and lipid imbalances.

OBJECTIVE

To assess the effectiveness of *Ayurvedic* treatment in managing T2DM with low fecal pancreatic elastase and high cholesterol levels.

MATERIALS AND METHODS

I. Case Report

A 45-year-old female diagnosed with Type 2 Diabetes Mellitus (T2DM) visited Jeena Sikho Lifecare Limited Hospital, Ambala, India, on April 11, 2025. A comprehensive assessment was conducted, including detailed medical history, physical examination, and diagnostic tests. She had a past surgical history of hysterectomy, cholecystectomy, splenectomy, and distal pancreatectomy. There was no significant family history or any addiction. She presented with complaints of general weakness and reduced appetite. She was also diagnosed with Hyperlipidemia. The *Ashtasthana Pareeksha* during the first visit are mentioned in **Table 2.** The basic vitals during the visits are mentioned in **Table 3.** The blood test results during the treatment period are shown in **Table 4.** The cholesterol test results are mentioned in **Table 5**, fecal elastase results are mentioned in **Table 6 and** HbA_{1c} is mentioned in **Table 7.**

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

Parameter	11-04-2025	06-05-2025	19-06-2025
***Nadi* (Pulse)**	*Vataj Pittaj*	*Vataj Pittaj*	*Vataj Pittaj*
***Mala* (Stool)**	*Saam* (Coated)	*Avikrit* (Normal)	*Avikrit* (Normal)
***Mutra* (Urine)**	*Safena* (Frothy)	*Safena* (Frothy)	*Avikrit* (Normal)
***Jiwha* (Tongue)**	*Saam* (Coated)	*Avikrit* (Normal)	*Avikrit* (Normal)
***Shabda* (Voice)**	*Spashta* (Clear)	*Spashta* (Clear)	*Spashta* (Clear)
***Sparsha* (Touch)**	*Anushna sheet* (Normal)	*Anushna sheet* (Normal)	*Anushna sheet* (Normal)
***Drik* (Eye)**	*Avikrit* (Normal)	*Avikrit* (Normal)	*Avikrit* (Normal)
***Akriti* (Physique)**	*Alpasharirata* (Underweight)	*Alpasharirata* (Underweight)	*Alpasharirata* (Underweight)

Table 3: The Basic vitals during the visits.

Parameter	Blood pressure (mmHg)	Weight (Kg)	Blood Sugar
11-04-2025	110/70 mmHg	51 Kg	159 mg/dl
06-05-2025	100/70 mmHg	51 Kg	129 mg/dl
19-06-2025	100/60 mmHg	51 Kg	136 mg/dl

Table 4: The blood test results during the treatment period (Fig 1).

Parameter	27-05-2024	15-04-2025	11-06-2025
Hemoglobin	14.34 mg/dl	13.83 mg/dl	13.57 mg/dl
RBC	4.66 mill/mm3	4.32 mill/mm3	4.24mill/mm3
TLC	**10.70 thou/mm3**	8.44 thou/mm3	8.34 thou/mm3
Platelets	348 thou/mm3	**519 thou/mm3**	375 thou/mm3

Table 5: The cholesterol test results during the treatment period (Fig 2).

Parameter	27-05-2024	15-04-2025	11-06-2025
Cholesterol, Total	**217 mg/dl**	157 mg/dl	177 mg/dl
Triglycerides	**439 mg/dl**	**220 mg/dl**	**246 mg/dl**
HDL Cholesterol	**36.40 mg/dl**	**44.60 mg/dl**	**43.80 mg/dl**
LDL Cholesterol, Calculated	-	68.40 mg/dl	84 mg/dl
VLDL Cholesterol,Calculated	-	**44 mg/dl**	**49.20 mg/dl**
Non-HDL Cholesterol	**181 mg/dl**	112 mg/dl	**133 mg/dl**

Table 6: The fecal elastase results (Fig 3).

Date	Fecal Elastase
26-06-2024	**102 µg/g stool**
21-05-2025	694 µg/g stool
13-06-2025	640 µg/g stool

Table 7: The HbA1c results (Fig 4).

Date	HbA1c
27-05-2024	7.3%
15-04-2025	6.4%
11-06-2025	6.4%

II. Treatment protocol

I. Diet Plan

An accurately designed *Ayurveda* and Disciplined and Intelligent Person's (DIP) Diet was provided to the patient to complement the *Ayurvedic* treatments administered for T2DM with low fecal pancreatic elastase and high cholesterol levels at Jeena Sikho Lifecare Limited[27]:

In traditional texts, various food items suitable for individuals with these conditions are described[28,29]:

***Ahar* [Table 8].**

Pathya	***Apathya***
• *Mudga Yusha* (green gram soup), *Laja Manda* (thin rice gruel), *Yavagu* (rice porridge with herbs like Musta or Jeeraka) • Steamed vegetables like ash gourd, ridge gourd, snake gourd • Barley (*Yava*), millets (except those too drying like *Bajra* in *Vata* dominant cases) • Whole grains in moderation • Avocado, flaxseeds, walnuts (contain omega-3) • *Jamun* (Syzygium cumini), *Amla* (Emblica officinalis), pomegranate (in moderation), guava • *Jeeraka* (cumin), Ajwain (carom), *Saindhava lavana, Triphala* • *Gudmar* (Gymnema sylvestre), Haridra (turmeric), *Daruharidra*, *Katuki* (Picrorhiza kurroa), *Bilva* leaves.	• High-fat and fried foods: • Deep-fried snacks, fast food, red meat • High glycemic index foods: • White rice, potatoes, refined wheat products, sugar, jaggery, honey • Dairy: • Especially heavy milk products like paneer, cheese, curd at night • Carbonated drinks & processed foods • Cold and refrigerated food items • Especially black gram, rajma, chana.

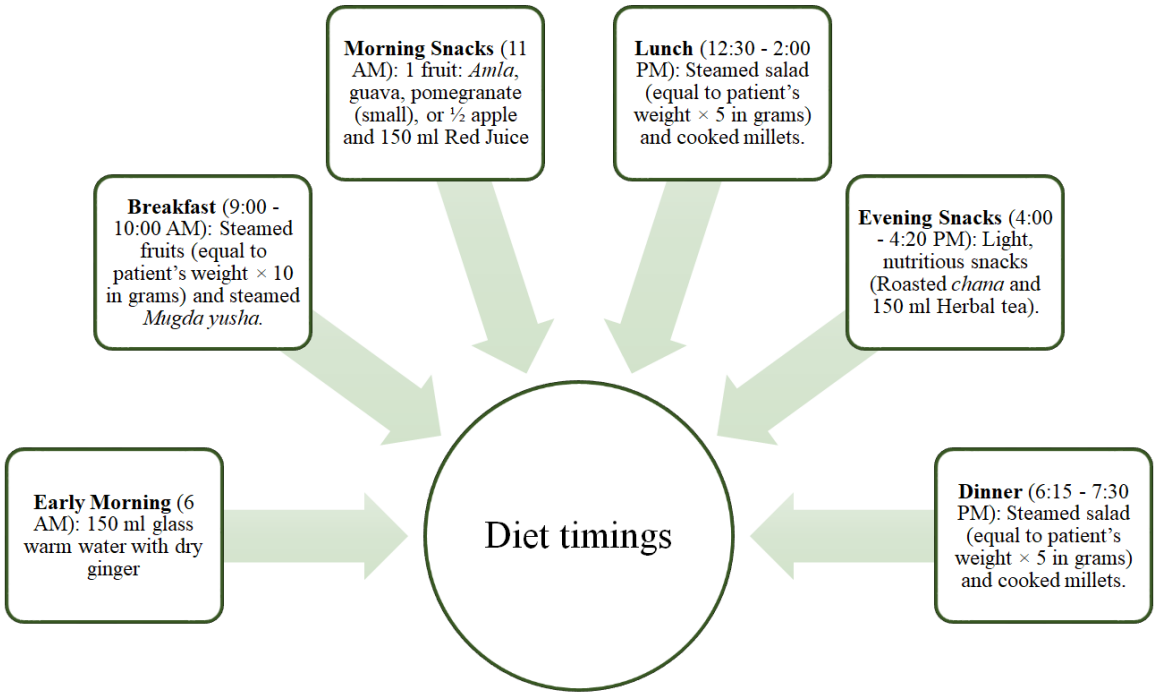
Dietary Conduct

- It is advised not to consume food after 8 PM. While eating, take small morsels and chew each bite thoroughly—about 32 times—to aid digestion and Cook only in steel utensils to preserve nutritional value.

***Jalapana* [Table 9].**

Pathya	***Apathya***
• Warm water (*Ushnodaka*). • Cumin water (*Jeera Jal*) – 1–2 glasses/day. • Coriander water (*Dhaniya Jal*). • Barley water (*Yavambu*) – 1–2 glasses/day. • Amla juice (diluted) – 20–30 ml in 100 ml water, 3–4 times/week. • Herbal infused water (with *Musta*, *Ajwain, Hing*). • Buttermilk (*Takra*) with roasted cumin or *Trikatu*. • *Triphala* infusion or decoction – at bedtime or alternate days. • Tender coconut water – 100 ml, 1–2 times/week.	• Cold or refrigerated water. • Sweetened beverages (soft drinks, packaged juices). • Fruit juices (even fresh). • Milkshakes and smoothies with banana/mango. • Alcohol. • Excessive tea/coffee.

Meal Timing and Structure (Fig 5)[31]



Fasting

- Fast once a week.[31]

Special Instructions

- Sit in gentle sunlight for one hour in the morning and evening, keeping your feet soaked in warm water. Maintain a meditative state in *Gyan Mudra*, softly chanting the seed sounds: LUM, VUM, RUM, YUM, HUM, OM, and AUM to harmonize internal energy centers.
- Before eating or drinking, take a moment to express gratitude to the divine, acknowledging the nourishment with reverence.

II. Lifestyle Recommendations [Table 10]

Pathya	*Apathya*
• Wake up early (*Brahma Muhurta*: ~4:30–5:30 AM) • Oral hygiene & oil pulling (*Gandusha*) • Mild exercise or yoga (30–45 min daily) – Brisk walking, Surya *Namaskar*, or light *asanas* (like *Pavanamuktasana*, *Ardha Matsyendrasana*, *Vajrasana* after meals). • *Pranayama* and meditation (15–20 min daily) – Especially *Nadi Shodhana*, *Bhramari*, and *Anuloma Viloma*. • Bath with warm water (*Snana*). • Avoid overeating; leave 1/4 of stomach empty. • Sit in *Vajrasana* after meals for 5–10 minutes to aid digestion. • Avoid emotional eating or late-night snacking. • Light dinner before 8 PM.	• Sedentary lifestyle or prolonged sitting. • Daytime naps or oversleeping. • Late dinners or irregular eating patterns. • Cold showers or exposure to cold. • Overexertion or extreme fasting. • Excessive alcohol or smoking.

Recommended *Yoga Asanas*

Surya Namaskar, Ardha Matsyendrasana, Pavana muktasana, Vajrasana, Bhujangasana, Dhanurasana, Paschimottanasana, Trikonasana, Setu Bandhasana, Shavasana and Pranayama.

III. Medicinal Interventions

The *Ayurvedic* treatment employed in this case included Prameh Har Powder, DM+ Syrup, Dhatu Poshak Capsule, Yakrit Shoth Har Vati, Divya Shakti Powder, Dr. Immune tablet, 32 Herbs Tea, Dr. Nabhi oil, Dr. Tooth Oil, Dr. Madhumeh, Blood Purifier Syrup and Dr. Diab Tablet. The medications prescribed for the patient during the treatment is outlined in **Table 11.** The details of the medicine prescribed are described in **Table 12.**

Table 11: The medications prescribed for the patient during the treatment.

Date	Medicines	Dosage with *Anupana*
11-04-2025	Prameh Har Powder	A teaspoon BD *(Adhobhakta* with *koshna jala* - After meal with lukewarm water)
	DM+ Syrup	7.5 ml BD (*Adhobhakta* with *sama matra koshna jala*- After meal with equal amount of lukewarm water)
	Dhatu Poshak Capsule	1 CAP BD (*Adhobhakta* with *koshna jala*)
	Yakrit Shoth Har Vati	1 TAB BD (*Adhobhakta* with *koshna jala*)
	Vata, Pitta & Kapha Care Package	20 days
06-05-2025	Prameh Har Powder	A teaspoon BD *(Adhobhakta* with *koshna jala)*
	DM+ Syrup	7.5 ml BD (*Adhobhakta* with *sama matra koshna jala)*
	Dhatu Poshak Capsule	1 CAP BD (*Adhobhakta* with *koshna jala*)
19-06-2025	Dhatu Poshak Capsule	1 CAP BD (*Adhobhakta* with *koshna jala*)
	Dr. Madhumeh	1 TAB BD (*Adhobhakta* with *koshna jala*)
	Dr. Diab Tablet	1 TAB BD (*Adhobhakta* with *koshna jala*)
	Blood Purifier	7.5 ml BD (*Adhobhakta* with *sama matra koshna jala)*

Table 12. 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).*	*Pramehaghna* (anti-diabetic), *Raktashodhak* (blood purifier), *Deepan* (digestive stimulant), *Pachan* (digestive), *Rasayana* (rejuvenative), *Medohar* (fat-reducing), *Shoth har* (anti-inflammatory), *Mutral* (diuretic)
DM+ Syrup	***Kumari*** *(Aloe vera),* ***Papita*** *(Carica papaya),* ***Giloy*** *(Tinospora cordifolia),* ***Saptrangi*** *(Salacia oblonga),* ***Karela*** *(Momordica charantia),* ***Jamun*** *(Syzygium cumini),* ***Neem*** *(Azadirachta indica),* ***Gurmar*** *(Gymnema sylvestre),* ***Kalmegh*** *(Andrographis paniculata),* ***Arjun*** *(Terminalia arjuna),* ***Pipal*** *(Ficus religiosa),* ***Dalchini*** *(Cinnamomum verum),* ***Tulsi*** *(Ocimum sanctum),* ***Vijaysaar*** *(Pterocarpus marsupium),* ***Ashwagandha*** *(Withania somnifera).*	*Madhumeha Nashaka* (Anti-diabetic), *Kapha-Vata Shamaka* (Balances *Kapha* and *Vata doshas*), *Agnivardhaka* (Enhances digestive fire), *Rasayana* (Rejuvenative), *Shoth har* (Anti-inflammatory), *Balya* (Strength-promotin), *Medohara* (Reduces excess fat), *Prameha Nashak* (Removes urinary disorders related to diabetes)
Dhatu Poshak Capsule	***Chuna Shuddh, Shankh Bhasm, Mukta Shukti, Prawal Pishti, Kapardika and Loh***	*Dhatuposhaka* (Tissue nourishing), *Rasayana* (Rejuvenative), *Balya* (Strengthening), *Srotoshodhak* (Channel cleansing), *Vata-Pitta shaman (Vata* and *Pitta* balancing), *shodhak* (Detoxifier), *Agni Deepan* (Digestive fire stimulant), *Lekhana* (Scraping)

Yakrit Shoth Har Vati	***Punarnava*** *(Boerhavia diffusa),* ***Kalimirch*** *(Piper nigrum),* ***Pippali*** *(Piper longum),* ***Vayavidanga*** *(Embelia ribes),* ***Devdaru*** *(Cedrus deodara),* ***Kutha Haldi*** *(Picrorhiza kurroa),* ***Chitrak*** *(Plumbago zeylanica),* ***Harad*** *(Terminalia chebula),* ***Bahera*** *(Terminalia chebula, Terminalia bellirica),* ***Amla*** *(Emblica officinalis),* ***Danti*** *(Baliospermum montanum),* ***Chavya*** *(Piper chaba),* ***Indra Jon*** *(Taraxacum officinale),* ***Pippla Mool*** *(Piper longum),* ***Motha Kalajira*** *(Nigella sativa),* ***Kayphal*** *(Myrica esculenta),* ***Kutaki*** *(Picrorhiza kurroa),* ***Nisoth*** *(Operculina turpethum),* ***Saunth*** *(Zingiber officinale),* ***Kakd Singhi*** *(Cucumis*	*Raktashodhak* (Blood purifier), *Deepan* (Appetizer), *Pachan* (Digestant), *Shoth har* (Anti-inflammatory), *Vata-kapha shamaka* (*Dosha*- balancer), *Rasayana* (Rejuvenator), *Ojovardhaka* (Immunity enhancer)
Divya Shakti Powder	***Trikatu*** *(Zingiber officinale, Piper nigrum, Piper longum),* ***Triphala*** *(Emblica officinalis, Terminalia chebula, Terminalia belliric),* ***Nagarmotha*** *(Cyperus rotundus),* ***Vay Vidang*** *(Embelia ribes),* ***Chhoti Elaichi*** *(Elettaria cardamomum),* ***Tej Patta*** *(Cinnamomum tamala),* ***Laung*** *(Syzygium aromaticum),* ***Nishoth*** *(Operculina turpethum),* ***Sendha Namak*** *,* ***Dhaniya*** *(Coriandrum sativum),* ***Pipla Mool*** *(Piper longum root),* ***Jeera*** *(Cuminum cyminum),* ***Nagkesar*** *(Mesua ferrea),* ***Amarvati*** *(Achyranthes aspera),* ***Anardana*** *(Punica granatum),* ***Badi Elaichi*** *(Amomum subulatum),* ***Hing*** *(Ferula assafoetida),* ***Kachnar*** *(Bauhinia variegata),* ***Ajmod*** *(Trachyspermum ammi),* ***Sazzikhar*** ***Pushkarmool*** *(Inula racemosa),* ***Mishri*** *(Saccharum officinarum)*	*Ojakshaya* (Loss of vitality/immunity), *Agnimandya* (Low digestive fire), *Chakshukshaya* (Weak vision), *Deepan* (Appetizer), *Rasayana* (Rejuvenator)
Dr. Immune tablet	***Kesar*** *(Crocus sativus),* ***Shuddh Kuchla*** *(Strychnos nux-vomica),* ***Ashwagandha Ext.*** *(Withania somnifera),* ***Shatawari Ext.*** *(Asparagus racemosus),* ***Pipali*** *(Piper longum),* ***Tulsi*** *(Ocimum sanctum),* ***Laung*** *(Syzygium aromaticum),* ***Chhoti Elaichi*** *(Elettaria cardamomum),* ***Sonth*** *(Zingiber officinale),* ***Haldi*** *(Curcuma longa),* ***Loh Bhasma*** *(Ferrum),* ***Swaran Makshik Bhasma*** *(Chalcopyrite),* ***Mukta Shukti Bhasma*** *(Pinctada margaritifera)*	*Ojas Vardhak* (Vitality enhancer), *Rasayana* (Rejuvenator), *Vyadhi Kshamatva* (Immunity booster), *Shoth har* (Anti-inflammatory), *Raktashodhak* (Blood purifier), *Deepan* (Appetizer), *Balya* (Strength promoter)
32 Herbal Tea	***Gauzaban*** *(Echium amoenum),* ***Kulanjan*** *(Alpinia galanga),* ***Chhoti Elaichi*** *(Elettaria cardamomum),* ***Laung*** *(Syzygium aromaticum),* ***Badi Elaichi*** *(Amomum subulatum),* ***Badiyan Khtay*** *(Illicium verum),* ***Banafsha*** *(Viola odorata),* ***Jufa*** *(Clerodendrum serratum),* ***Ashwagandha*** *(Withania somnifera),* ***Mulethi*** *(Glycyrrhiza glabra),* ***Punarnava*** *(Boerhavia diffusa),* ***Brahmi*** *(Bacopa monnieri),* ***Chitrak*** *(Plumbago zeylanica),* ***Kali Mirch*** *(Piper nigrum),* ***Adoosa*** *(Adhatoda vasica),* ***Saunf*** *(Foeniculum vulgare),* ***Shankh Pushp*** *(Evolvulus alsinoides),* ***Tulsi*** *(Ocimum sanctum),* ***Arjun*** *(Terminalia arjuna),* ***Motha*** *(Cyperus rotundus),* ***Senaye*** *(Cuscuta reflexa),* ***Sonth*** *(Zingiber officinale),* ***Majeeth*** *(Rubia cordifolia),* ***Sarfoka*** *(Sphaeranthus indicus),* ***Dalchini*** *(Cinnamomum verum),* ***Gulab*** *(Rosa spp.),* ***Green Tea*** *(Camellia sinensis),* ***Giloy*** *(Tinospora cordifolia),* ***Tej Patta*** *(Cinnamomum tamala),* ***Lal Chandan*** *(Pterocarpus santalinus),* ***White Chandan*** *(Santalum album),* ***Pudina*** *(Mentha spicata)*	*Deepan* (Digestive stimulant), *Pachan* (Digestion or digestive process).
Dr. Nabhi oil	***Amla*** *(Phyllanthus emblica),* ***Haritaki*** *(Terminalia chebula),* ***Bahera*** *(Terminalia bellerica),* ***Almond*** *(Prunus dulcis),* ***Jaiphal*** *(Myristica fragrans),* ***Ajwain*** *(Trachyspermum ammi),* ***Alsi*** *(Linum usitatissimum),* ***Long*** *(Syzygium aromaticum),* ***Camphor*** *(Cinnamomum camphora),* ***Olive*** *(Olea europaea),* ***Coconut*** *(Cocos nucifera),* ***Lemongrass*** *(Cymbopogon citratus),* ***Kali Jeeri*** *(Nigella sativa),* ***Ajmod*** *(Apium graveolens),* ***Guggul*** *(Commiphora wightii),* ***Giloy*** *(Tinospora cordifolia),* ***Chirayata*** *(Swertia chirata),* ***Kalonji*** *(Nigella sativa),* ***Katu Taila*** *(Sesamum indicum),* ***Taramira*** *(Eruca sativa),* ***Til Tailam*** *(Sesamum indicum).*	*Agnideepan* (Stimulates digestive fire), *Vata-nashaka* (Vata pacifying), *Rasayana* (Rejuvenative), *Ojovardhak* (Enhances vitality or strengthens immunity), *Chakra sthirikara* (Stabilizes or strengthens the energy centers).

Dr. Tooth Oil	**Clove oil, Sat ajwain, peppermint and glycerine**	*Danta-māṃsa-bala-vardhak* (strengthens teeth and gums), *Krimighna* (antimicrobial), and *Durgandg -har*
Dr. Madhumeh	***Gudmar*** *(Gymnema sylvestre),* ***Methi*** *(Trigonella foenum-graecum),* ***Giloy*** *(Tinospora cordifolia),* ***Neem*** *(Azadirachta indica),* ***Haritaki*** *(Terminalia chebula),* ***Karela*** *(Momordica charantia),* ***Chiraita*** *(Swertia chirayita),* ***Jamun*** *(Syzygium cumini),* ***Vijaysar*** *(Pterocarpus marsupium),* ***Daruhaldi*** *(Berberis aristata),* ***Karanj*** *(Pongamia pinnata)*	*Prameha nashak* (Anti-diabetic), *Deepan* (Appetizer), *Pachan* (Digestant), *Rasayana* (Rejuvenator), *Vatahara (Vata* pacifier)
Blood Purifier Syrup	***Khair Chaal*** *(Acacia catechu),* ***Babchi*** *(Psoralea corylifolia),* ***Devdaru*** *(Cedrus deodara),* ***Daru Haldi*** *(Curcuma aromatica),* ***Haritaki*** *(Terminalia chebula),* ***Bhera*** *(Terminalia bellerica),* ***Amla*** *(Phyllanthus emblica),* ***Mahamajishtha*** *(Rubia cordifolia),* ***Dhamasa*** *(Gmelina arborea),* ***Sariva*** *(Hemidesmus indicus),* ***Amba Haldi*** *(Curcuma amada),* ***Kutki*** *(Picrorhiza kurroa),* ***Chiraita*** *(Swertia chirata),* ***Rasont*** *(Ruta graveolens),* ***Satyanashi*** *(Cissampelos pareira),* ***Madhu*** *(Honey), and* ***Shaker*** *(Saccharum officinarum)*	*Raktashodhak* (Blood purifier), *Shoth har* (Anti-inflammatory), *Deepan* (Digestive stimulant), *Rasayana* (Rejuvenator), *Vata-Pitta Shaman* (Pacifier of *Vata* and *Pitta doshas), Kushtahara* (Anti-skin disease)
Dr. Diab Tablet	***Nimoli*** *(Azadirachta indica),* ***Gudmar*** *(Gymnema sylvestre),* ***Devdar*** *(Cedrus deodara),* ***Methi*** *(Trigonella foenum-graecum),* ***Jamun*** *(Syzygium cumini),* ***Paneer Dodi*** *(Withania coagulans),* ***Vijaysar*** *(Pterocarpus marsupium),* ***Kutaki*** *(Picrorhiza kurroa),* ***Kali Jiri*** *(Centratherum anthelminticu)*	*Prameh Hara* (Antidiabetic), *Agnideepan* (Carminative), *Medohar* (Hypolipidemic), *Raktashodhak* (Hemopurifier), *Kleda Shoshan* (Desiccant), *Kapha-Vata Shamak* (Dosha-balancer), *Rasayana* (Rejuvenative), *Mutral* (Diuretic)

RESULT

Following a structured three-month *Ayurvedic* treatment regimen, the patient demonstrated marked clinical improvement, indicating that the interventions were effective in managing T2DM with by low fecal pancreatic elastase and elevated cholesterol levels. After treatment, the patient was alert and oriented, with significant relief from earlier symptoms such as generalized weakness, poor appetite, and hyperglycemia. These improvements suggest that the *Ayurvedic* therapies addressed both metabolic dysfunction and neuropathic symptoms typically associated with this condition. This case highlights the potential role of *Ayurvedic* interventions as supportive strategies in the comprehensive management of T2DM with associated pancreatic insufficiency and dyslipidemia. The comparative clinical status before and after treatment is presented in **Table 13.**

Table 13The conditions before and after treatment.

Symptom	Before Treatment	After Treatment
Generalized Weakness	Present	Alleviated
Poor Appetite	Markedly reduced	Appetite improved significantly
Hyperglycemia	Elevated fasting and postprandial glucose levels	Blood glucose levels reduced and better controlled

Implications for Future Research

Although this study yielded promising results in managing T2DM with low fecal pancreatic elastase and elevated cholesterol levels, its limitations, especially the small sample size, underscore the necessity for further research. Future investigations should prioritize large-scale, randomized controlled trials to confirm the safety, effectiveness, and consistency of *Ayurvedic* interventions. Moreover, research exploring long-term outcomes, dosage standardization, underlying pharmacological mechanisms, and integrative treatment approaches will be crucial in formulating evidence-based, standardized therapeutic protocols for the *Ayurvedic* management of T2DM with associated pancreatic insufficiency and dyslipidemia.

DISCUSSION

Ayurvedic treatment for T2DM with low fecal pancreatic elastase and elevated cholesterol levels offers a holistic alternative to conventional therapy by aiming to balance the *Doshas*, enhance digestive function, and eliminate metabolic toxins. This case study presents a 45-year-old female diagnosed with T2DM, complicated by low fecal pancreatic elastase and hyperlipidemia, who underwent a structured *Ayurvedic* regimen. Over the course of treatment, the patient reported significant improvement in symptoms such as generalized weakness, diminished appetite, and hyperglycemia. The outcomes of this case suggest that when applied consistently and under appropriate supervision, *Ayurvedic* interventions can effectively support glycemic control and enhance overall quality of life in individuals with T2DM. The *Samprapti* (pathogenesis) of this condition is detailed in **Fig 6.**[30,31,32,33]

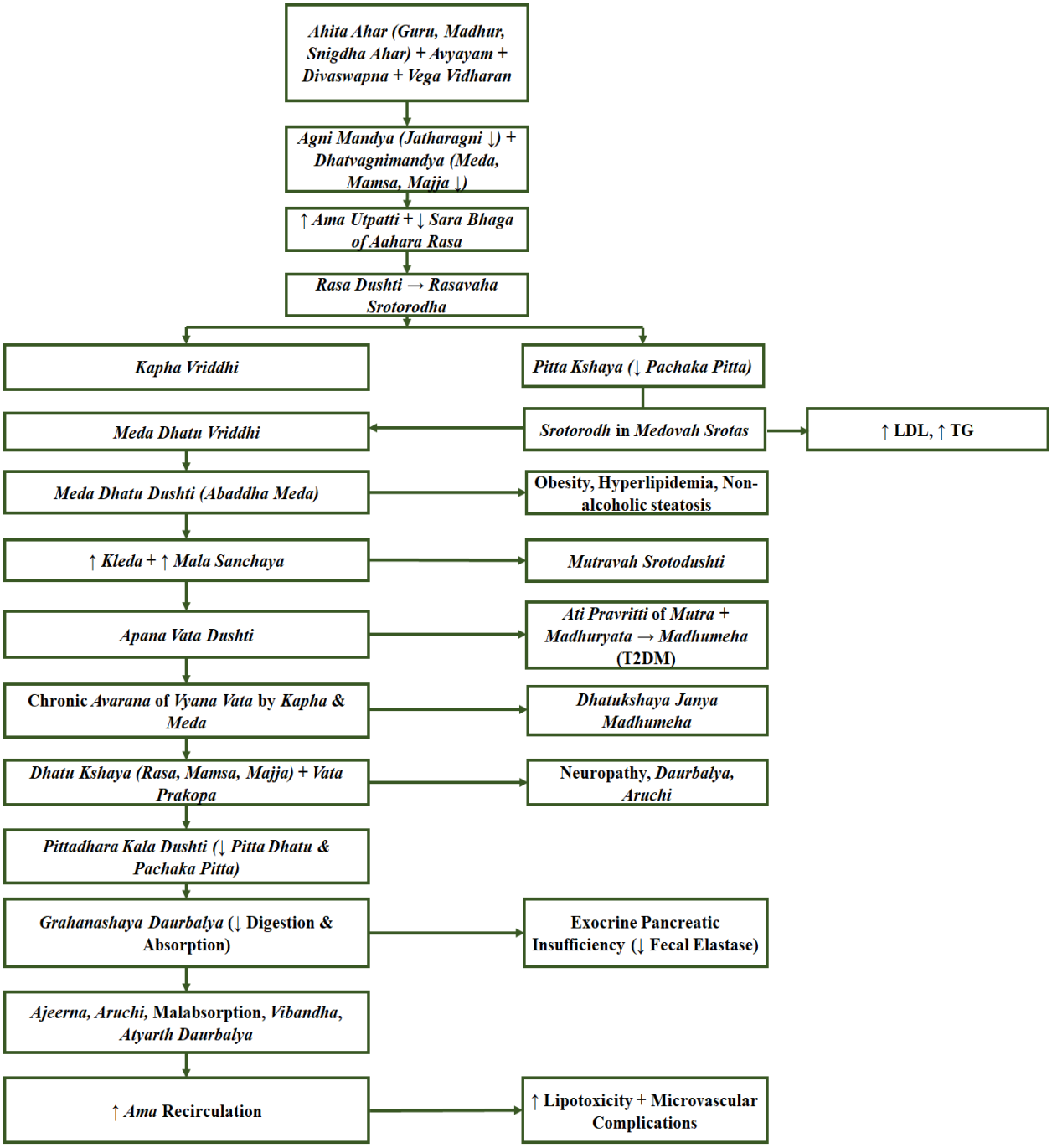
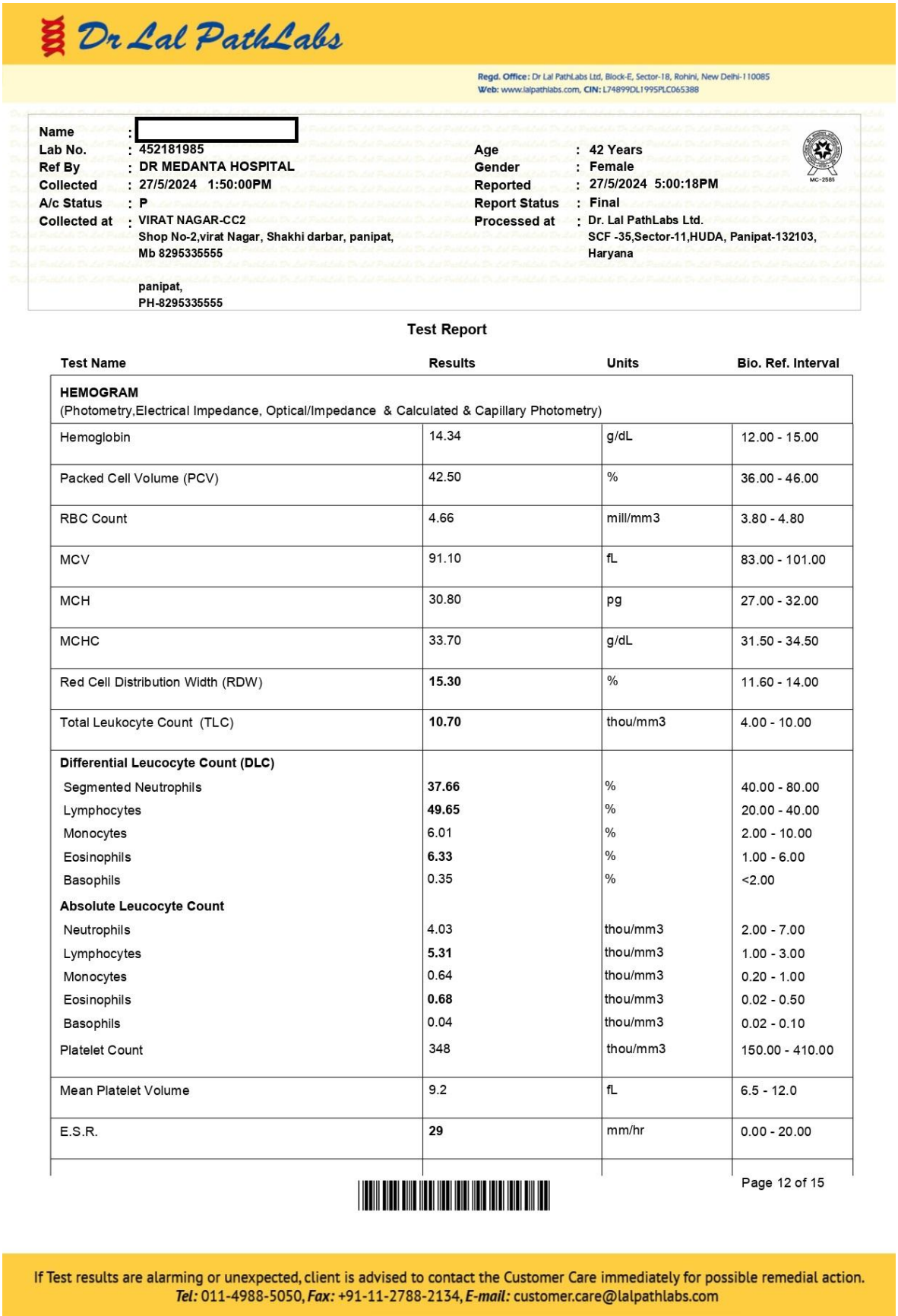


Fig 6: The *Samprapti* of this case study.



Dr Lal PathLabs

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Web: www.lalpathlabs.com, CIN: L74899DL1995PLC065388

Name	:		
Lab No.	: 452181985	Age	: 42 Years
Ref By	: DR MEDANTA HOSPITAL	Gender	: Female
Collected	: 27/5/2024 1:50:00PM	Reported	: 27/5/2024 5:00:18PM
A/c Status	: P	Report Status	: Final
Collected at	: VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555	Processed at	: Dr. Lal PathLabs Ltd. SCF -35,Sector-11,HUDA, Panipat-132103, Haryana

MC-2585

Test Report

Test Name	Results	Units	Bio. Ref. Interval
HEMOGRAM (Photometry,Electrical Impedance, Optical/Impedance & Calculated & Capillary Photometry)			
Hemoglobin	14.34	g/dL	12.00 - 15.00
Packed Cell Volume (PCV)	42.50	%	36.00 - 46.00
RBC Count	4.66	mill/mm3	3.80 - 4.80
MCV	91.10	fL	83.00 - 101.00
MCH	30.80	pg	27.00 - 32.00
MCHC	33.70	g/dL	31.50 - 34.50
Red Cell Distribution Width (RDW)	**15.30**	%	11.60 - 14.00
Total Leukocyte Count (TLC)	**10.70**	thou/mm3	4.00 - 10.00
Differential Leucocyte Count (DLC)			
Segmented Neutrophils	**37.66**	%	40.00 - 80.00
Lymphocytes	**49.65**	%	20.00 - 40.00
Monocytes	6.01	%	2.00 - 10.00
Eosinophils	**6.33**	%	1.00 - 6.00
Basophils	0.35	%	<2.00
Absolute Leucocyte Count			
Neutrophils	4.03	thou/mm3	2.00 - 7.00
Lymphocytes	**5.31**	thou/mm3	1.00 - 3.00
Monocytes	0.64	thou/mm3	0.20 - 1.00
Eosinophils	**0.68**	thou/mm3	0.02 - 0.50
Basophils	0.04	thou/mm3	0.02 - 0.10
Platelet Count	348	thou/mm3	150.00 - 410.00
Mean Platelet Volume	9.2	fL	6.5 - 12.0
E.S.R.	**29**	mm/hr	0.00 - 20.00

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Fig. 1: Blood test reports.

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Name	: [redacted]		
Lab No.	: 196367743	Age	: 43 Years
Ref By	: Self	Gender	: Female
Collected	: 11/6/2025 8:31:00AM	Reported	: 11/6/2025 2:49:43PM
A/c Status	: P	Report Status	: Final
Collected at	: VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555	Processed at	: Dr. Lal PathLabs Ltd. SCF -35,Sector-11,HUDA, Panipat-132103, Haryana

MC-2585

Test Report

Test Name	Results	Units	Bio. Ref. Interval
COMPLETE BLOOD COUNT; CBC (Photometry,Electrical Impedance, Optical/Impedance & Calculated)			
Hemoglobin	13.57	g/dL	12.00 - 15.00
Packed Cell Volume (PCV)	41.50	%	36.00 - 46.00
RBC Count	4.24	mill/mm3	3.80 - 4.80
MCV	97.80	fL	83.00 - 101.00
Mentzer Index	23.1		
MCH	32.00	pg	27.00 - 32.00
MCHC	32.70	g/dL	31.50 - 34.50
Red Cell Distribution Width (RDW)	14.00	%	11.60 - 14.00
Total Leukocyte Count (TLC)	8.34	thou/mm3	4.00 - 10.00
Differential Leucocyte Count (DLC)			
Segmented Neutrophils	**32.26**	%	40.00 - 80.00
Lymphocytes	**53.32**	%	20.00 - 40.00
Monocytes	7.71	%	2.00 - 10.00
Eosinophils	**6.30**	%	1.00 - 6.00
Basophils	0.41	%	<2.00
Absolute Leucocyte Count			
Neutrophils	2.69	thou/mm3	2.00 - 7.00
Lymphocytes	**4.45**	thou/mm3	1.00 - 3.00
Monocytes	0.64	thou/mm3	0.20 - 1.00
Eosinophils	**0.53**	thou/mm3	0.02 - 0.50

Page 7 of 9

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Fig. 2: The cholesterol test results during the treatment period.

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Web: www.lalpathlabs.com, CIN: L74899DL1995PLC065388

Name	[redacted]		
Lab No.	: 452181985	Age	: 42 Years
Ref By	: DR MEDANTA HOSPITAL	Gender	: Female
Collected	: 27/5/2024 1:50:00PM	Reported	: 27/5/2024 5:00:18PM
A/c Status	: P	Report Status	: Final
Collected at	: VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555	Processed at	: Dr. Lal PathLabs Ltd. SCF -35,Sector-11,HUDA, Panipat-132103, Haryana

MC-2585

Test Report

Test Name	Results	Units	Bio. Ref. Interval
LIPID SCREEN, SERUM (Enzymatic)			
Cholesterol, Total	**217.00**	mg/dL	<200.00
Triglycerides	**439.00**	mg/dL	<150.00
HDL Cholesterol	**36.40**	mg/dL	>50.00
Non-HDL Cholesterol	**181**	mg/dL	<130

Note

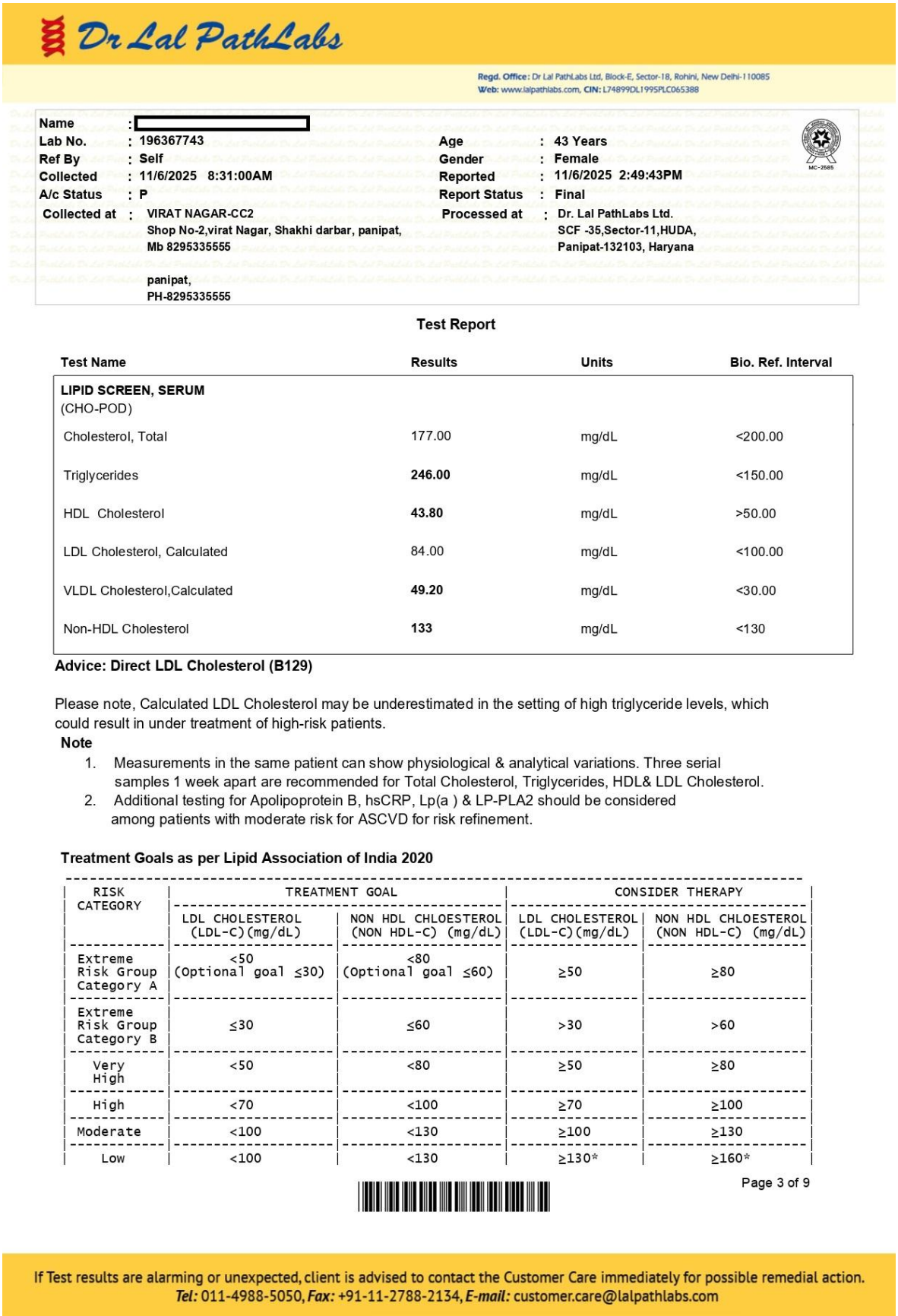
1. Measurements in the same patient can show physiological & analytical variations. Three serial samples 1 week apart are recommended for Total Cholesterol, Triglycerides, HDL& LDL Cholesterol.
2. Additional testing for Apolipoprotein B, hsCRP, Lp(a) & LP-PLA2 should be considered among patients with moderate risk for ASCVD for risk refinement.

Treatment Goals as per Lipid Association of India 2020

RISK CATEGORY	TREATMENT GOAL		CONSIDER THERAPY	
	LDL CHOLESTEROL (LDL-C)(mg/dL)	NON HDL CHLOESTEROL (NON HDL-C) (mg/dL)	LDL CHOLESTEROL (LDL-C)(mg/dL)	NON HDL CHLOESTEROL (NON HDL-C) (mg/dL)
Extreme Risk Group Category A	<50 (Optional goal ≤30)	<80 (Optional goal ≤60)	≥50	≥80
Extreme Risk Group Category B	≤30	≤60	>30	>60
Very High	<50	<80	≥50	≥80
High	<70	<100	≥70	≥100
Moderate	<100	<130	≥100	≥130
Low	<100	<130	≥130*	≥160*

*In low risk patient, consider therapy after an initial non-pharmacological intervention for at least 3 months

GLUCOSE, FASTING (F)
(Hexokinase)



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Web: www.lalpathlabs.com, CIN: L74899DL1995PLC065388

Name : [redacted]
Lab No. : 196367743
Ref By : Self
Collected : 11/6/2025 8:31:00AM
A/c Status : P
Collected at : VIRAT NAGAR-CC2
Shop No-2,virat Nagar, Shakhi darbar, panipat,
Mb 8295335555

panipat,
PH-8295335555

Age : 43 Years
Gender : Female
Reported : 11/6/2025 2:49:43PM
Report Status : Final
Processed at : Dr. Lal PathLabs Ltd.
SCF -35,Sector-11,HUDA,
Panipat-132103, Haryana

MC-2585

Test Report

Test Name	Results	Units	Bio. Ref. Interval
LIPID SCREEN, SERUM (CHO-POD)			
Cholesterol, Total	177.00	mg/dL	<200.00
Triglycerides	**246.00**	mg/dL	<150.00
HDL Cholesterol	**43.80**	mg/dL	>50.00
LDL Cholesterol, Calculated	84.00	mg/dL	<100.00
VLDL Cholesterol,Calculated	**49.20**	mg/dL	<30.00
Non-HDL Cholesterol	**133**	mg/dL	<130

Advice: Direct LDL Cholesterol (B129)

Please note, Calculated LDL Cholesterol may be underestimated in the setting of high triglyceride levels, which could result in under treatment of high-risk patients.

Note

1. Measurements in the same patient can show physiological & analytical variations. Three serial samples 1 week apart are recommended for Total Cholesterol, Triglycerides, HDL& LDL Cholesterol.
2. Additional testing for Apolipoprotein B, hsCRP, Lp(a) & LP-PLA2 should be considered among patients with moderate risk for ASCVD for risk refinement.

Treatment Goals as per Lipid Association of India 2020

RISK CATEGORY	TREATMENT GOAL		CONSIDER THERAPY	
	LDL CHOLESTEROL (LDL-C)(mg/dL)	NON HDL CHLOESTEROL (NON HDL-C) (mg/dL)	LDL CHOLESTEROL (LDL-C)(mg/dL)	NON HDL CHLOESTEROL (NON HDL-C) (mg/dL)
Extreme Risk Group Category A	<50 (Optional goal ≤30)	<80 (Optional goal ≤60)	≥50	≥80
Extreme Risk Group Category B	≤30	≤60	>30	>60
Very High	<50	<80	≥50	≥80
High	<70	<100	≥70	≥100
Moderate	<100	<130	≥100	≥130
Low	<100	<130	≥130*	≥160*

Page 3 of 9

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Fig. 3: The fecal elastase.

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Name	[redacted]		
Lab No.	: 470646344	Age	: 42 Years
Ref By	: DR MEDANTA HOSPITAL	Gender	: Female
Collected	: 25/6/2024 11:07:00AM	Reported	: 26/6/2024 5:08:40PM
A/c Status	: P	Report Status	: Final
Collected at	: VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555	Processed at	: LPL-NATIONAL REFERENCE LAB National Reference laboratory, Block E, Sector 18, Rohini, New Delhi -110085

MC-2113

Test Report

Test Name	Results	Units	Bio. Ref. Interval
FECAL ELASTASE (CLIA)	**102.00**	µg/g stool	>200.00

Interpretation

FECAL ELASTASE IN µg/g stool	REMARKS
200 - >500	Normal
100-200	Moderate to mild exocrine pancreatic insufficiency
<100	Severe exocrine pancreatic insufficiency

Note

1. False negative result may be observed in mild pancreatic insufficiency but has better sensitivity than other tests
2. False positive results may be observed in certain nonpancreatic diseases such as Inflammatory bowel disease, Chronic diarrhea, bacterial overgrowth or watery stool sample
3. The test is not specific for Chronic Pancreatitis and detects moderate to severe impairment of pancreatic function from any cause

Comment

Pancreatic elastase-1 is a Pancreas specific protease in pancreatic juice. It remains undegraded during intestinal transit and concentration in feces is five to six fold as compared to pancreatic juice. Its measurement in feces has high sensitivity for detection of moderate and severe chronic pancreatitis in adults. It has high sensitivity and high negative predictive value for discriminating between diarrhea of pancreatic and nonpancreatic origin. It is considered the most suitable test to confirm pancreatic insufficiency in screened Cystic Fibrosis infants older than 2 weeks. The test results remain unaffected by pancreatic enzyme supplements.

Usage

- To diagnose or exclude pancreatic involvement in association with gastrointestinal symptoms e.g abdominal pain, failure to thrive, maldigestion, etc.
- To diagnose or exclude exocrine pancreatic insufficiency caused by Chronic Pancreatitis, Diabetes Mellitus, Cholelithiasis, Cystic Fibrosis, Pancreatic Cancer, Celiac disease etc

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Web: www.lalpathlabs.com, CIN: L74899DL1995PLC065388

Name	:	[redacted]			
Lab No.	:	196367744	Age	:	43 Years
Ref By	:	Self	Gender	:	Female
Collected	:	11/6/2025 8:32:00AM	Reported	:	13/6/2025 4:32:06PM
A/c Status	:	P	Report Status	:	Final
Collected at	:	VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555	Processed at	:	LPL-NATIONAL REFERENCE LAB National Reference laboratory, Block E, Sector 18, Rohini, New Delhi -110085

MC-2113

Test Report

Test Name	Results	Units	Bio. Ref. Interval
FECAL PANCREATIC ELASTASE (CLIA)	640.00	µg/g stool	>200.00

Interpretation

Pancreatic elastase concentration above 200 mcg/g is normal. Please note, Normal concentrations do not exclude the possibility of exocrine pancreatic insufficiency.

Note

1. False positive results may be observed in certain nonpancreatic diseases such as Inflammatory bowel disease, Chronic diarrhea, bacterial overgrowth or watery stool sample
2. The test is not specific for Chronic Pancreatitis and detects moderate to severe impairment of pancreatic function from any cause

Comment

Fecal pancreatic elastase (FEL-1) test is a suitable first-line test for Pancreatic exocrine insufficiency (PEI). FEL-1 is a measurement of a pancreatic exocrine-specific enzyme that is not degraded in the bowel lumen, is concentrated during intestinal passage and reflects the total overall pancreatic secretion. As FEL-1 only tests for human elastase, the result is unaffected if the patient is taking enzyme replacement therapy.

Usage

- To diagnose or exclude pancreatic involvement in association with gastrointestinal symptoms e.g. abdominal pain, failure to thrive, maldigestion, etc.
- To diagnose or exclude exocrine pancreatic insufficiency caused by Chronic Pancreatitis, Diabetes Mellitus, Cholelithiasis, Cystic Fibrosis, Pancreatic Cancer, Celiac disease etc.

DMC – 67327
Dr Anjalika Goyal
MD,Biochemistry
Consultant Biochemist
NRL - Dr Lal PathLabs Ltd

MCI 15-19066
Dr.Richa Sirohi
MD, Biochemistry
Sr. Consultant Biochemist
NRL - Dr Lal PathLabs Ltd

DMC – 9550
Dr Nimmi Kansal
MD, Biochemistry
Technical Director - Clinical Chemistry & Biochemical Genetics
NRL - Dr Lal PathLabs Ltd

DMC - 89819
Dr Himangshu Mazumdar
MD, Biochemistry
Sr. Consultant Biochemist
NRL - Dr Lal PathLabs Ltd

----------End of report ----------

Page 1 of 2

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Fig. 4: The HbA1c results.

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Web: www.lalpathlabs.com, CIN: L74899DL1995PLC065388

Name	:				
Lab No.	: 452181985		Age	: 42 Years	
Ref By	: DR MEDANTA HOSPITAL		Gender	: Female	
Collected	: 27/5/2024 1:50:00PM		Reported	: 27/5/2024 5:00:18PM	
A/c Status	: P		Report Status	: Final	
Collected at	: VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555		Processed at	: Dr. Lal PathLabs Ltd. SCF -35,Sector-11,HUDA, Panipat-132103, Haryana	

Test Report

Test Name	Results	Units	Bio. Ref. Interval
HbA1c (GLYCOSYLATED HEMOGLOBIN), BLOOD (HPLC, NGSP certified)			
HbA1c	**7.3**	%	4.00 - 5.60
Estimated average glucose (eAG)	163	mg/dL	

Interpretation

HbA1c result is suggestive of Diabetes/ Higher than glycemic goal in a known Diabetic patient.

Please note, Glycemic goal should be individualized based on duration of diabetes, age/life expectancy, comorbid conditions, known CVD or advanced microvascular complications, hypoglycaemia unawareness, and individual patient considerations

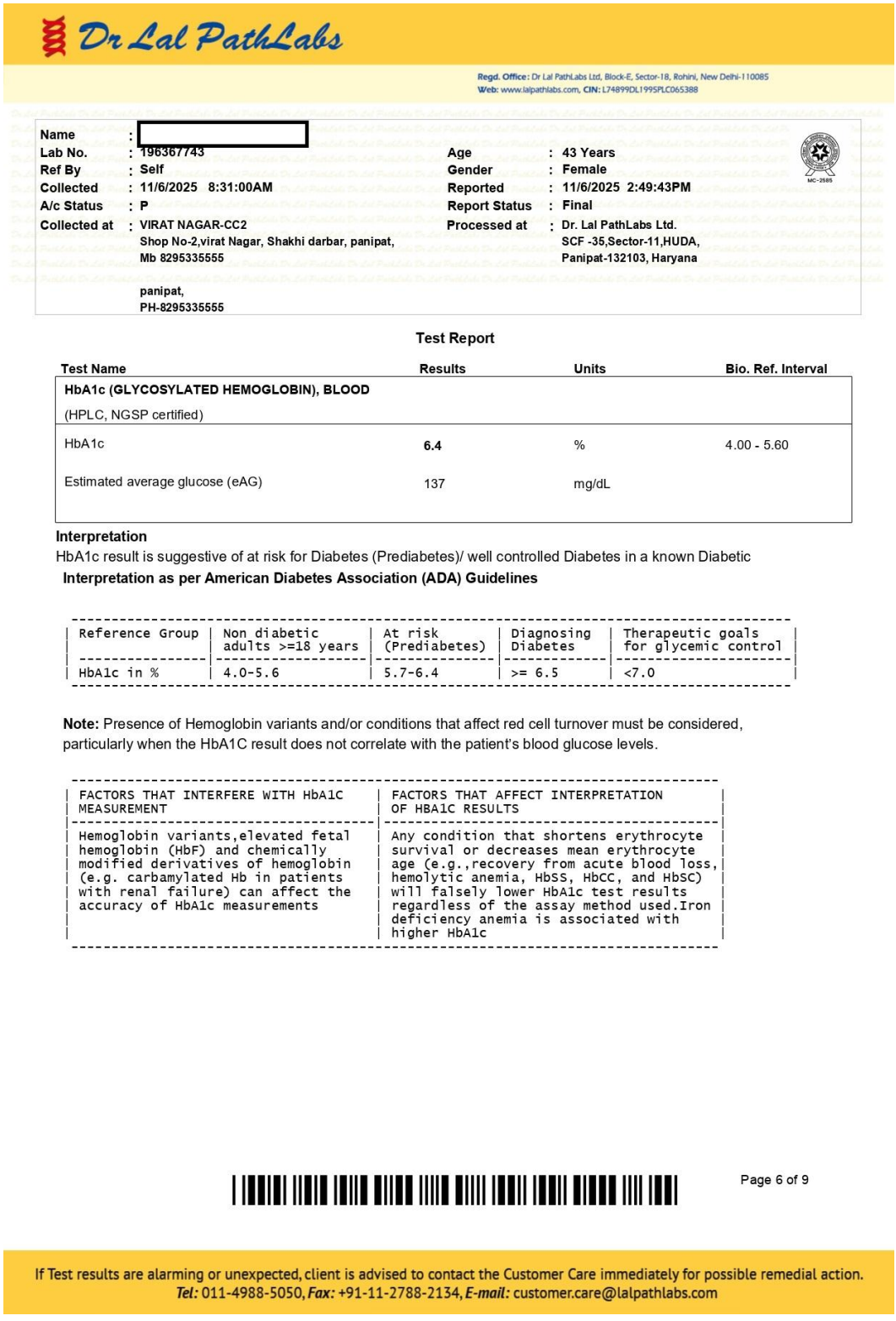
Result Rechecked,
Please Correlate Clinically.

Interpretation as per American Diabetes Association (ADA) Guidelines

Reference Group	Non diabetic adults >=18 years	At risk (Prediabetes)	Diagnosing Diabetes	Therapeutic goals for glycemic control
HbA1c in %	4.0-5.6	5.7-6.4	>= 6.5	<7.0

Note: Presence of Hemoglobin variants and/or conditions that affect red cell turnover must be considered, particularly when the HbA1C result does not correlate with the patient's blood glucose levels.

FACTORS THAT INTERFERE WITH HbA1C MEASUREMENT	FACTORS THAT AFFECT INTERPRETATION OF HBA1C RESULTS
Hemoglobin variants,elevated fetal hemoglobin (HbF) and chemically modified derivatives of hemoglobin (e.g. carbamylated Hb in patients with renal failure) can affect the accuracy of HbA1c measurements	Any condition that shortens erythrocyte survival or decreases mean erythrocyte age (e.g.,recovery from acute blood loss, hemolytic anemia, HbSS, HbCC, and HbSC) will falsely lower HbA1c test results regardless of the assay method used.Iron deficiency anemia is associated with higher HbA1c



Dr Lal PathLabs

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Name	:				
Lab No.	:	196367743	Age	:	43 Years
Ref By	:	Self	Gender	:	Female
Collected	:	11/6/2025 8:31:00AM	Reported	:	11/6/2025 2:49:43PM
A/c Status	:	P	Report Status	:	Final
Collected at	:	VIRAT NAGAR-CC2 Shop No-2,virat Nagar, Shakhi darbar, panipat, Mb 8295335555 panipat, PH-8295335555	Processed at	:	Dr. Lal PathLabs Ltd. SCF -35,Sector-11,HUDA, Panipat-132103, Haryana

MC-2585

Test Report

Test Name	Results	Units	Bio. Ref. Interval
HbA1c (GLYCOSYLATED HEMOGLOBIN), BLOOD (HPLC, NGSP certified)			
HbA1c	**6.4**	%	4.00 - 5.60
Estimated average glucose (eAG)	137	mg/dL	

Interpretation

HbA1c result is suggestive of at risk for Diabetes (Prediabetes)/ well controlled Diabetes in a known Diabetic

Interpretation as per American Diabetes Association (ADA) Guidelines

Reference Group	Non diabetic adults >=18 years	At risk (Prediabetes)	Diagnosing Diabetes	Therapeutic goals for glycemic control
HbA1c in %	4.0-5.6	5.7-6.4	>= 6.5	<7.0

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If Test results are alarming or unexpected, client is advised to contact the Customer Care immediately for possible remedial action.
Tel: 011-4988-5050, *Fax:* +91-11-2788-2134, *E-mail:* customer.care@lalpathlabs.com

1. The *Samprapti* and *Nidan Parivarjana*

The *Samprapti* of T2DM associated with low fecal pancreatic elastase and elevated cholesterol levels originates from the chronic consumption of *Ahita Ahar* (unwholesome diet) such as Guru (heavy), *Madhura* (sweet), *Snigdha* (oily), and *Abhishyandi* (clogging) foods, along with *Avyayama* (lack of physical activity), *Divaswapna* (daytime sleep), and suppression of natural urges (*Vega Dharana*).[17,34] These factors lead to *Jatharagni Mandya* (weak digestive fire) and subsequently *Dhatvagni Mandya*, particularly at the *Meda Dhatu* level, resulting in the formation of *Ama*.[35] The accumulated *Ama* circulates through the *Rasavaha* and *Medovaha Srotas*, causing obstruction (*Srotorodha*) and aggravating *Kapha Dosha*, while simultaneously depleting *Pachaka Pitta*.[36] This imbalance further impairs pancreatic and hepatic function. The aggravated *Kapha* and obstructed channels eventually lead to

Avarana of *Vata*, specifically *Vyana Vata*, which manifests as *Madhumeha*.[37] As the disease progresses, *Vata* becomes increasingly vitiated, leading to *Dhatukshaya* (tissue depletion), particularly affecting *Rasa*, *Rakta*, *Meda*, *Mamsa*, and *Majja Dhatus*.[38] Low fecal pancreatic elastase reflects *Pachaka Pitta Kshaya* and *Grahani Dushti*, leading to symptoms like *Ajeerna* (indigestion), *Aruchi* (loss of appetite), and *Daurbalya* (weakness).[39] The presence of elevated cholesterol is attributed to *Meda Dhatu Vriddhi* and *Abaddha Meda* formation due to impaired fat metabolism.[40] Thus, the overall pathology involves *Kapha-Pitta* vitiation in the early stages and secondary *Vata* aggravation leading to chronicity and complications.

In terms of *Nidan Parivarjana*, it is essential to avoid heavy, oily, and sweet foods; processed and fried items; and *Kapha*-aggravating substances like curd, bakery products, and red meat.[41] Lifestyle factors such as inactivity, irregular food habits, daytime sleeping, and chronic stress should be corrected.[42] Emotional eating, late-night meals, and suppression of natural urges must be avoided to prevent further aggravation of *Doshas*.[43] Incorporating regular physical activity, timely meals, mental relaxation techniques, and adherence to *Dinacharya* (daily routine) play a vital role in the prevention and management of T2DM with associated pancreatic insufficiency and dyslipidemia.[44] This comprehensive approach ensures correction at the root level of pathogenesis while promoting long-term metabolic balance.

2. The effects of *Ayurvedic* medicines

The *Ayurvedic* formulations administered in this case target both the metabolic and digestive disturbances associated with T2DM complicated by exocrine pancreatic insufficiency and dyslipidemia. Prameh Har Powder and Dr. Madhumeh act as potent *Prameh Hara* and *Medohara* agents, reducing excess glucose and fat accumulation while promoting urinary clearance of toxins (*Mutrala*). Dr. Diab Tablet offers comprehensive support through *Agni deepana* (enhancing digestive fire), *Prameh Hara*, and *Rasayana* (rejuvenative) properties, helping regulate blood sugar and strengthen *dhatus*. DM+ Syrup and Divya Shakti Powder further enhance metabolic fire, promote insulin sensitization, and restore vitality, making them particularly useful in conditions of low digestive and absorptive capacity seen in low fecal elastase levels. Dhatu Poshak Capsule plays a crucial role in replenishing depleted tissues (*Dhatu Kshaya*) such as Rasa, Mamsa, and Majja, thereby improving strength and reducing generalized weakness. Yakrit Shoth Har Vati and Blood Purifier Syrup support *Rakta shodhana* (blood purification) and improve *Yakrit* (liver) function, which is vital for lipid metabolism and detoxification. 32 Herbs Tea and Dr. Nabhi Oil stimulate digestive function and help reduce *Kapha* and *Meda* aggravation, while Dr. Immune Tablet supports *Vyadhik shamatva* (immunity) and reduces systemic inflammation. Although Dr. Tooth Oil is primarily for oral health, it contributes indirectly by reducing microbial load and inflammation, thus supporting systemic balance. Together, these formulations offer a holistic, multi-pronged *Ayurvedic* approach that addresses the root imbalances in T2DM with pancreatic insufficiency and elevated cholesterol, promoting better glycemic control, improved digestion, and overall quality of life.

In *Ayurvedic* pharmacology, the *Rasa Panchaka* (Fivefold Attributes) – namely *Rasa* (taste), *Guna* (qualities), *Virya* (potency), *Vipaka* (post-digestive effect), and *Prabhava* (specific action), determines the therapeutic behavior of herbs.[45] *Ayurvedic* herbs used in the management of T2DM with low fecal pancreatic elastase and high cholesterol levels share common features like *Tikta* (bitter) and *Kashaya* (astringent) *Rasa*, *Laghu* (light) and *Ruksha* (dry) *Guna*, and *Katu* (pungent) *Vipaka*, which help reduce *Kapha* and *Medas* (fat). *Gudmar* and *Jamun* exhibit *Pramehaghna* (anti-diabetic) *Prabhava*.[46,47] *Kutaki* and Neem possess *Sheeta* (cooling) *Virya* and work as *Raktashodhak* (blood purifiers) and metabolic detoxifiers.[48,49] *Methi* and *Karela* stimulate digestion (*Deepana*), reduce excess fat (*Medohara*), and improve glucose metabolism.[50,51] *Vijaysar*, with its *Kashaya Rasa* and *Sheeta Virya*, acts as a *Kapha-Vata Shamak* (*dosha* pacifier).[52] *Ashwagandha* and *Triphala* contribute *Rasayana* (rejuvenative) and *Balya* (strength-promoting) properties, supporting tissue regeneration and immunity.[53,54] *Trikatu* enhance *Agni* (digestive fire) through *Ushna Virya* and *Tikshna Guna*.[55] These herbs holistically correct *Agnimandya* (low digestive fire), reduce *Kleda* (excess moisture), nourish tissues (*Dhatu Poshana*), and stabilize metabolic functions. Their pharmacodynamic synergy makes them suitable for managing the complex interplay of *doshic* imbalance, poor digestion, and metabolic toxicity observed in T2DM with exocrine pancreatic insufficiency and hyperlipidemia.

3. The effects of *Ahar-Vihar*

An accurately designed *Ayurvedic* and DIP Diet was administered alongside classical treatments to manage T2DM with low fecal pancreatic elastase and high cholesterol levels. The diet emphasized *Pathya Ahar* (wholesome foods), including *Mudga Yusha* (green gram soup), *Laja Manda*, *Yavagu* (thin rice gruels), and steamed vegetables like ash gourd and ridge gourd.[56,57,58,59] Beneficial cereals such as *Yava* (barley) and selected millets were encouraged, alongside healthy fats like avocado, flaxseeds, and walnuts.[60,61,62,63] Hypoglycemic fruits like *Jamun*, *Amla*, and pomegranate in moderation were included.[64] Herbs such as *Gudmar*, *Haridra*, *Katuki*, and *Bilva* leaves were favored for their *Pramehaghna* (antidiabetic) and *Raktashodhak* (blood purifying) actions. Conversely, *Apathya Ahar* (unwholesome foods) like deep-fried items, red meat, refined sugar, white rice, and heavy dairy were avoided due to their *Kapha-Medo* aggravating nature.[65,66] *Jalapana* (drinks) recommendations included *Ushnodaka*

(warm water), *Jeera Jal*, Barley water, and *Takra* (spiced buttermilk), while cold beverages, sweetened juices, alcohol, and heavy milkshakes were strictly discouraged.[67,68,69,70,71]

Lifestyle recommendations (*PathyaVihar)* included waking in *Brahma Muhurta*, *Gandusha* (oil pulling), yoga (30–45 minutes), and Pranayama such as *Nadi Shodhana* and *Bhramari*.[72,73] Meal hygiene involved eating only after full digestion of the previous meal, avoiding overeating, and sitting in *Vajrasana* after meals.[74] Late-night meals, day-sleep, excessive screen time, and cold exposure were considered *Apathya*.[75] Regular fasting (once a week), morning sun exposure, and mindful eating with gratitude were emphasized.[76] Recommended *yoga asanas* included *Surya Namaskar, Ardha Matsyendrasana, Pavanamuktasana*, *Bhujangasana*, and *Shavasana*, enhancing metabolic balance and emotional well-being.[77]

CONCLUSION

This case study evaluating the treatment of T2DM with low fecal pancreatic elastase and high cholesterol levels through *Ayurvedic* interventions yields the following findings:

Symptoms: At the time of the initial assessment, the patient presented with symptoms including general weakness, diminished appetite, and elevated blood sugar levels. However, after undergoing *Ayurvedic* treatment, significant symptomatic relief was noted. The patient reported improvement in existing complaints, and importantly, no new symptoms emerged during the course of therapy. These changes reflect positive clinical progress in managing Type 2 Diabetes Mellitus associated with low fecal pancreatic elastase and elevated cholesterol levels, along with an overall enhancement in health and well-being.

Vitals and Investigations: In the management of T2DM associated with low fecal pancreatic elastase and elevated cholesterol levels, the patient demonstrated notable clinical improvements. Blood sugar levels decreased from 159 mg/dl to 129 mg/dl, with a slight stabilization at 136 mg/dl. HbA1c levels improved significantly from 7.3% to 6.4%. Fecal elastase, initially severely low at 102 µg/g stool, increased to 694 µg/g and remained high at 640 µg/g. Cholesterol levels also showed substantial improvement: total cholesterol dropped from 217 mg/dl to 157 mg/dl, triglycerides decreased from a high 439 mg/dl to 220 mg/dl. Non-HDL cholesterol reduced from 181 mg/dl to 112 mg/dl and remained controlled at 133 mg/dl. Improvements in hemoglobin (from 13.83 to 13.57 mg/dl), RBC count (4.32 to 4.24 mill/mm³), and a decline in TLC (from 10.70 to 8.34 thou/mm³) suggest reduced inflammation and better hematological status.

In conclusion, comprehensive *Ayurvedic* treatment for T2DM associated with low fecal pancreatic elastase and elevated cholesterol levels demonstrated encouraging outcomes, reflected through enhanced laboratory parameters, stabilized vital signs, and reduced symptoms. The incorporation of *Ayurvedic* interventions effectively supported symptom relief and contributed to the patient's overall health improvement.

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