

## AYURVEDIC HERBAL TABLET FORMULATION FOR THE MANAGEMENT OF DIABETES MELLITUS

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### ABSTRACT

The present study focuses on the formulation and evaluation of anti-diabetic Ayurvedic tablets prepared using natural herbs including turmeric, fenugreek, neem, amla, and karela. These herbs are traditionally recognized for their hypoglycemic potential and ability to regulate blood glucose levels. The formulated tablets were subjected to various quality evaluation parameters and were found to meet optimum pharmaceutical standards. Pharmacological screening further established their efficacy in diabetes management. The synergistic combination of herbal ingredients contributed to improved glycemic control, enhanced insulin sensitivity, and overall health benefits. Thus, the developed Ayurvedic formulation demonstrates promising potential as a safe and effective alternative therapy for diabetes management.

**KEYWORDS:** Anti-diabetic Ayurvedic tablets, Turmeric, Fenugreek, Neem, Amla and Karela.

### 1. INTRODUCTION

In recent years, the interest in Ayurvedic medicine as a complementary approach to managing chronic conditions like diabetes has grown significantly. Ayurveda, the traditional Indian system of medicine, offers a holistic perspective that emphasizes the balance of bodily energies and the use of natural substances to promote health and wellness. This article explores the formulation and development of an Ayurvedic tablet aimed at managing diabetes, incorporating potent herbs and appropriate excipients. Diabetes is a challenge for every medical faculty. Herbal medicine is becoming more and more popular in both

developed and developing nations due to its natural origins and several Ayurvedic formulations, herbs, and minerals used to treat diabetes (Madhumeha).<sup>[1]</sup>

Many traditional medicines in use are derived from medicinal plants, minerals and organic matter Madhumeha is Ayurvedic term for Diabetesmellitus. Increased Kapha dosha and adipose tissue Medo dhatu are the important factors which causes D.M. according to Ayurveda.

Ayurvedic diabetic tablets are based on traditional Indian medicine principles and typically incorporate a blend of herbal ingredients believed to help manage blood sugar levels. The key principles involved include<sup>[2]</sup>:

1. Herbal Formulations: Ingredients like bitter gourd (karela), fenugreek (methi), and gymnemastylvestre are commonly used for their reputed effects on glucose metabolism.
2. Balancing Doshas: Ayurveda emphasizes balancing the three doshas (Vata, Pitta, and Kapha) to maintain health. Diabetic tablets are formulated to address the specific imbalances that can lead to diabetes.
3. Lifestyle and Diet: Ayurvedic treatment often includes recommendations for dietary changes and lifestyle modifications alongside herbal remedies.
4. Blood Sugar Regulation: Many herbs used are believed to improve insulin sensitivity, enhance glucose uptake by cells, and support overall metabolic health.
5. Holistic Approach: Treatment often considers emotional and physical well-being, focusing on the individual's overall health rather than just the symptoms of diabetes.

### **TYPE 1 DIABETES (T1D)**

Types 1 Diabetes is a chronic autoimmune disease where the pancreas produces little to no insulin, a hormone regulating blood sugar level.<sup>[3]</sup>

### **TYPE 2 DIABETES (T2D)**

Type 2 diabetes is a chronic metabolic disorder characterized by insulin resistance and impaired insulin secretion, leading to high blood sugar level.<sup>[4]</sup>

## **2. MATERIALS USED**

Fenugreek, Neem (*Azadirachta indica*) Leaf powder, Amla (Indian gooseberry Fruit Powder), Turmeric powder, Kerala (bitter gourd) powder, Cucubitacins, Talc, Starch, Magnesium stearate.

### 3. METHODS USED

#### PREPARATION OF HERBAL POWDERS

Fresh neem leaves, amla, karela, and fenugreek seeds should be gathered. Gather fresh fenugreek seeds, amla, karela, and neem leaves. Now dry this at room temperature for few days and grind them separately to make a fine powder. These herbal powders are commonly used to support blood sugar management and insulin sensitivity, particularly for type2 diabetes, there effectiveness for type1 diabetes is less established.

#### EVALUATION TESTS<sup>[4,5]</sup>

The prepared ayurvedic tablets were subjected to various evaluation methods

1. Test for hardness
2. Friability
3. Disintegration
4. Weight variation

##### Test for hardness

Apparatus used: Monsanto hardness tester

Principle: The hardness of a tablet is a crucial parameter in pharmaceutical quality control, as it affects the tablet's ability to withstand handling, transportation, and storage without breaking or crumbling.

The primary principles involved in testing tablet hardness include – Mechanical strength, Impact of formulation, quality control, uniformity.

Measuring tablet hardness helps ensure product quality and efficacy in pharmaceutical applications.

##### Friability test

A set of pre weighed tablets is placed in the plastic chamber and ensure that the drum is rotating smoothly. Operated the machine for few minutes and then check the weight of the tablets to calculate the friability (% loss).

##### Disintegration test

Apparatus used: Disintegration Apparatus.

Generally works by raising and lowering a beaker in the procedure and out of the medium for a set of period time to see if a tablets dissolves or not A quality control method called the tablet disintegration test evaluates how rapidly and thoroughly a tablet disintegrates into smaller pieces in a given aqueous environment. Manufacturers can ensure that their tablets will perform as intended in the body, facilitating effective drug delivery.

Procedure: fill the beaker with the warm water upto the mark and the place each tablet into the tubes and run the assembly while suspended in the beaker for an hour. At the end, note how long it took for the tablet to dissolve.

### Weight variation

To determine the drug substance using the proper analytical technique, conduct an analysis on a representative sample of the batch. As a percentage of the label claim, result A from this test will be obtained (see Calculation of Acceptance Value). It is assumed that the weight of the drug material per weight of the dose unit, or the concentration, remains constant throughout. Make sure you choose a minimum of thirty dosage units and adhere to the guidelines provided below for the specific dose type.

## 4. RESULTS

**Table 1: Formulation of Herbal tablets.**

INGREDIENTS	QUANTITY
Amla	20mg
Fenugreek	36mg
Karela	32mg
Turmeric	54mg
Neem	20mg
Starch	44mg
Talc	33mg
Magnesium stearate	10mg
Total mg of the drug	250mg

**Table 2: Postcompressional Parameters of Prepared tablets.**

S.NO	TEST	RESULT
1.	HARDNESS	6.5 kg/cm <sup>2</sup>
2.	FRIABILITY	1.75%
3.	DISINTEGRATION	28 seconds

## 5. DISCUSSION

We have selected ayurvedic formulation because ayurveda aims to promotes the main health, prevent disease, cure sickness. It focuses on over all health and use of natural herbs. Now

coming to diabetes it is the most common health condition that affects over 10% of adult population globally. First of all it largely effects the eating choices that one can make Secondly, the spikes of blood sugar levels can lead to various health concerns. We prepared the anti diabetic tablet by following the above mentioned procedure and through this process we observed the result.

## 6. CONCLUSION

Hence from the above analysis, it was found that the formulated anti-diabetic ayurvedic tablets have optimum standards and further pharmacological screening establishes the efficacy of formulated tablets for diabetes. The ayurvedic antidiabetic tablet that is prepared passes all the tests and thus it is good for usage. Our formulated anti diabetic ayurvedic tablets are the combining of natural herbs like turmeric, fenugreek, neem, amla, and karela which helps to manage blood sugar levels. These formulations often combine natural herbs and ingredients known for their blood sugar-regulating properties, promoting better glycemic control, enhancing insulin sensitivity, and supporting overall health.

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