



# INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

## Paneer Dodi: A Magic Remedy for Diabetes Mellitus

Mohini S. Kangarkar, Revan S. Karodi, Pooja T. Auti

<sup>1</sup>Mohini S. Kangarkar, <sup>2</sup>Dr. Revan S. Karodi, <sup>3</sup>Pooja T. Auti

<sup>1</sup>Student, <sup>2</sup>Head Of Department of Pharmacognosy, <sup>3</sup>Student

<sup>1</sup>M Pharm (Pharmaceutical Quality Assurance),

<sup>1</sup>DR. D Y Patil College of Pharmacy Akurdi, Pune, Maharashtra 411044 India.

### Abstract:

Diabetes mellitus (DM) is one of the severe long-term health issues. It is called "Madhumeha" in ancient India. Diabetes is a common disorder involved in a range of metabolic disorders which cause spikes in blood sugar levels. Ayurvedic medicines are largely used for the treatment of many diseases. Paneer Dodi (WithaniacoagulansDunal) is a tiny bush native to South Asia that belongs to the Solanaceae family. Sedative, emetic, alterative, and diuretic properties have been described for the plant's fruits. They're also good for liver issues, asthma, and biliousness.

keywords: Diabetes Mellitus, Paneer Dodi, Sedative, Diuretic, etc.

### Introduction:

Diabetes mellitus is a chronic metabolic disorder in which prevalence has been rising steadily all over the world. DM (known as non-insulin dependent DM) is the most common form of DM characterized by hyperglycemia, insulin resistance, and relative insulin deficiency. People with type 2 diabetes are more prone to various forms of short- and long-term complications, which often causes premature death. <sup>[1]</sup>

### Overview of Diabetes Mellitus:

Diabetes mellitus refers to the group of diseases that specifically affects the blood sugar level. Glucose is the major source of energy for the body's functioning. Diabetes classified as chronic diabetes conditions includes type 1 and type 2 diabetes and potentially reversible diabetes conditions include prediabetes and gestational diabetes. Prediabetes is often the precursor of diabetes and by early precautional, it can be prevented. Gestational diabetes occurs during pregnancy but may resolve after the baby is delivered. <sup>[2]</sup>

### Causes:

The causes of type 2 diabetes include the first is cells in muscle, fat, and liver become resistant to insulin as these cells don't interact in the normal way with insulin and don't take in enough sugar. The second is the pancreas is unable to produce enough insulin to manage blood sugar levels.

## Symptoms:

Symptoms of type 2 diabetes include fatigue, increase in thirst, increase in hunger, blurred vision, slow wound healing, unintended weight loss, frequent infections, frequent urination, etc. The signs and symptoms of type 2 diabetes develop very slowly and are most common.<sup>[3]</sup>

## Epidemiology:

Except for Type 1 Diabetes, other types of diabetes may feature resistance to the action of insulin and/or insulin deficiency.

Approximately of all diabetes 5% is type1, 90% is type2, and 5% is other subtypes. The incidence and prevalence of diabetes have been increasing across the world over the past 30 years. Diabetes is a chronic disease That affects all groups of people in the world. The changing lifestyle contributes to the increase in the diabetic population. Disordered glucose metabolism causes direct metabolic complications including hyperosmolar syndrome, diabetic ketoacidosis and treatment with oral drugs or insulin can cause hypoglycemia. Diabetes also causes complications in many tissues and organs.<sup>[4]</sup>

## Treatment

Treatment includes insulin supplementation, diet control, and the use of hypoglycemic agents like Metformin.<sup>[5]</sup>

Insulin supplementation is the common mode of treatment in type 1 diabetes while oral drugs like Metformin are used in type 2 diabetes.<sup>[6]</sup>

The disadvantage With Insulin supplementation is that the dose of insulin needed steadily increases with time. The oral anti-diabetics have serious side effects which include Hepatotoxicity and renal damage.

Table no1.: Additional Therapy for Type 2 Diabetes Mellitus•

Sr. No.	Condition	Monotherapy	Additional therapy
1.	Obese	Metformin	Sulfonylurea, Exenatide or insulin or glitazone
2.	Non-obese	Sulfonylurea or metformin	Metformin or sulfonylurea or Exenatide or insulin or glitazone
3.	Elderly	Low dose secretagogue	Switch to simple insulin regimen
4.	Asians	Glitazone	Metformin, sulfonylurea or insulin or exenatide



Figure no. 1: Paneer Dodi plant



Figure no. 2: Paneer Dodi fruit extract

The use of alternative treatment and Ayurvedic treatment is increasing and new research has given promising results with many herbs.<sup>[8]</sup> One of such herbs Which has been showing antidiabetic activity is Paneer Dodi (WithaniaCoagulance).<sup>[9]</sup>

Paneer Dodi has been used for thousands of years to conserve food and treat health disorders and prevent various types of diseases. Ayurveda is the basis of healthy life. Plant-based medicine created much impact in today's society due to its numerous well-proven therapeutic effects and lack of side effects which has provoked humans to go back towards nature for the safer herbal treatment.

Paneer Dodi grows as a short shrub (35-75 cm) with a central stem. This shrub is common in East India, Afghanistan & Nepal. In India, it occurs in Punjab, Rajasthan, Shimla, Kumauni, and Garhwal. It is commonly known as 'Indian cheese maker' or 'vegetable rennet' due to the coagulant property of leaves and fruits.

### Chemical constituents-

The berries contain two esterase's, free amino acids, fatty oil, essential oil, and alkaloids. The amino acids present are proline, hydroxyproline, valine, tyrosine, glycine, aspartic acid, asparagine, cysteine, and glutamic acid. A variety of withanolides have been found in the plant which is responsible for its therapeutic properties. It is widely used in treating diabetes mellitus, nervous exhaustion, disability, insomnia, wasting diseases, and failure to thrive in children.

The anti-diabetic patients are advised by the traditional Vaidya's that to soak the flower in a cup of water overnight and then take the extract orally the next morning. Although the traditional Vaidya's are in favor of their long-term use by looking at initial progress, they fix the duration of medication.

According to traditional health workers, the paneer plants are collected on special days after performing worship and uttering mantras. As per the traditional healers, the worship makes the plan medicinally rich.

**Synonyms-** Paneer Dodi, Vegetable Rennet, Indian-Cheese-maker, Ammukkura, etc.

### Taxonomy-

- Kingdom- Plantae
- Sub-kingdom- Tracheobionta
- Division- Angiospermae
- Class- Dicotyledons
- Order- Solanales
- Family- Solanaceae
- Genus- Withania
- Species- coagulants

- Botanical name- WithaniaCoagulansDunal

### Morphology-

- Colour- Yellowish-brown
- Shape- Seeds are rounded
- Size- Shrub 2-3m in length, ridges, and furrows are present
- Flowering Period- January to April

### Chemical Components-

- The enzymes present in pulp and husk of the berry. The main component of berries are esterases, fatty oil, amino acids such as glycines, asparagine, cysteine, and glutamic acid and alkaloids are the phytoconstituents. Most of the activities of the plant are due to the presence of an active constituent as 'withanolide'. Withanolides are steroidal lactones with an ergostane skeleton the fruits are hypolipidemic diuretic.
- Structure withanolides of ergo stand steroids are four ring triterpenes. The plant steroids are derived from comprising steroid saponin, steroid alkaloids, pregnanes, androstanes, estranges, ecdysteroid, withanolides, and cardiac glycosides, withanolides represent the term for the c-28 skeleton 22-hydroxyergostan-26-oic acid-22,26-olide, this gamma- lactones residue containing the structure is theoretical.<sup>[10]</sup>

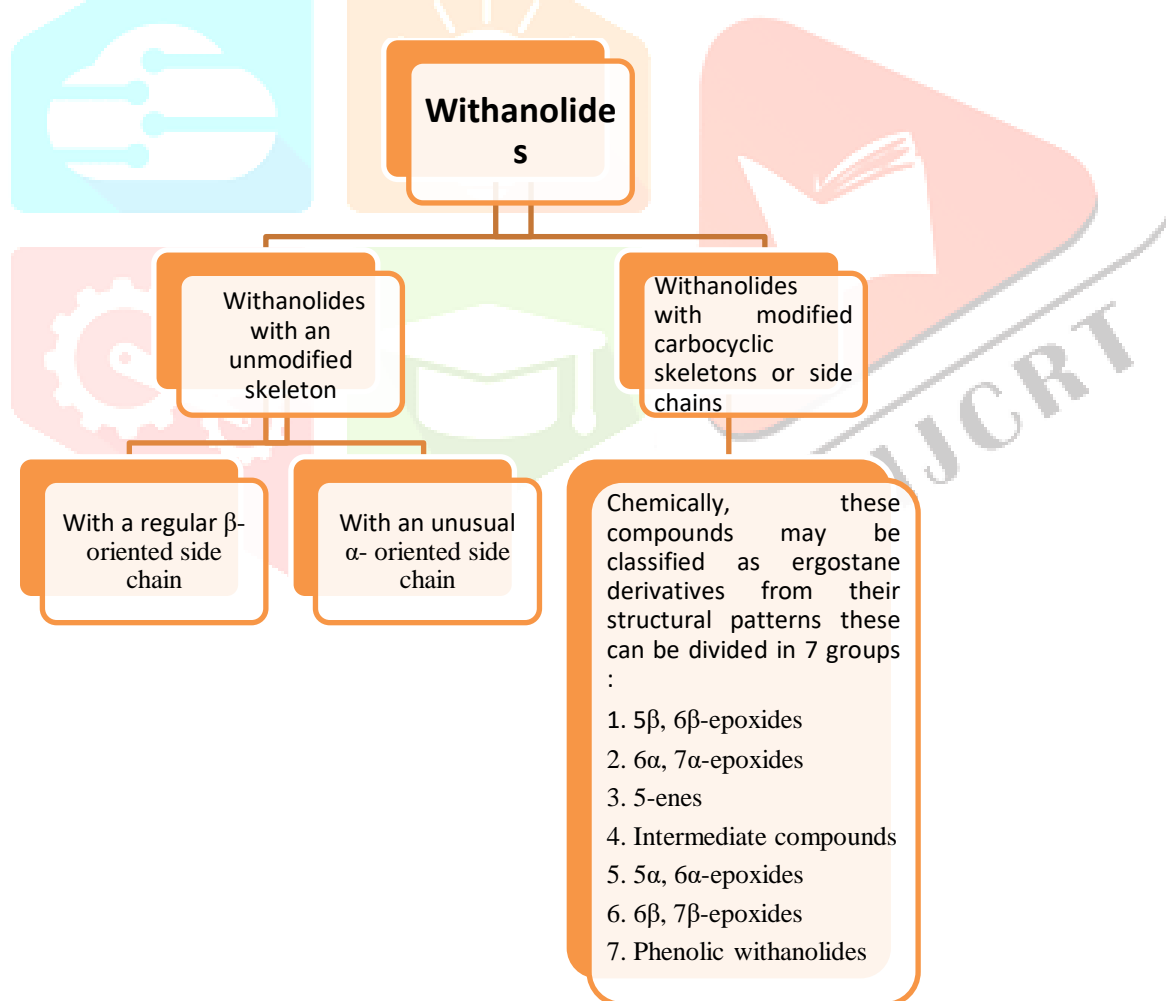


Figure no. 3: Classification of Withanolides.[10]

Among these, the most common are 5 betas, 6 beta-epoxides.

### **Mode of action of paneer Dodi as an antidiabetic agent-**

The regular use of paneer Dodi has proven antidiabetic activity. Paneer Dodi not only uses blood sugar but also repairs pancreatic beta cells, which are responsible for insulin production. By enhancing glucose use and carbohydrate metabolism, the plant aids in blood sugar depletion. It reduces the hyperglycemia complication. Nowadays patients with diabetes prefer paneer Dodi rather than antidiabetic drugs as it is a safer and most effective way to manage diabetes mellitus over synthetic medicines.<sup>[11]</sup>

### **The direction of use-**

Soak about 8-10 seeds of paneer Dodi in a glass of water overnight. After that filter them and take out the extract and drink in the next morning empty stomach. But while taking it you may take physician advice if you are also taking the prescribed medicines with it as your sugar level may get lower than the required amount. So, regularly check your blood sugar level and accordingly adjust the dose.

### **Medicinal uses of Paneer Dodi-**

In Ayurvedic literature, Charak Samhita under BrihaniyaMahakashaya and Madhur Skandhadravya, traditional healers use dried fruits of Withaniacoagulans in the treatment of Diabetes.<sup>[12]</sup>

- Paneer Doda has been used since the old days in Indian Ayurveda.
- Paneer Doda is also used in chronic liver disorders. A composite herbal hepatoprotective medicine 'Liv-52' contains extract of withaniacoagulance and withaniasomnifera. They are also used in dyspepsia, flatulent colic, and other intestinal interactions.
- The berries are used for the purpose of blood purifier.
- The twigs are chewed for cleaning of teeth and smoke of the plant is inhaled for relief from toothache.
- Flowers of coagulance used in the treatment of diabetes.
- The root is harvested in autumn and dried for later use; some caution should be taken while using this plant since it is toxic.
- Paneer Doda stocks are used to treat nervous exhaustion, disability, insomnia, wasting disease, failure to thrive in children, impotence.<sup>[13]</sup>
- The plant has been shown to have antimicrobial, antiinflammatory, hepatoprotective, antihyperglycemic, cardiovascular, immunosuppressive, free radical scavenging, and central nervous system depressant properties.
- Paneer doda acts as a diuretic as it increases urinary potassium level and alters urinary Na<sup>+</sup>/K<sup>+</sup> output.
- Hypolipidemic activity.

## Side Effects of paneer Dodi

- Paneer doda has immuno-suppressive properties, which could be beneficial during organ transplantation when the immune system rejects the new organ because it perceives it as a threat.
- Paneer doda might render a person sensitive to infection or other ailments under regular circumstances.
- It should be avoided during pregnancy.<sup>[14]</sup>

## Acknowledgment

- As There is continuously increase in the number of the diabetic patients, the medicines also costly for the treatment, besides all; the treatment also not sure to give satisfactory results and there are quite increasing trust issue of patients towards the modern system of medicines. In spite of all the traditional ayurvedic medicines can provide better effectiveness and also are cost effective. In the ayurvedic treatment for diabetes mellitus the paneer doda (withaniacoagulance) may be used as hypoglycemic agent. Paneer doda is the potent, natural, non-toxic, less expensive, easily available, hypoglycemic agent for treatment of diabetes. The active components in the paneer doda may be extracted and by using the extract we can prepare the plant based convenient and effective medicines.

## References:

1. Kharroubi AT. Diabetes mellitus: The epidemic of the century. *World J Diabetes*. 2015;6(6):850.
2. Mustafa SB, Mehmood Z, Akhter N, Kauser A, Hussain I, Rashid A, et al. Review-Medicinal plants and management of Diabetes Mellitus: A review. *Pak J Pharm Sci*. 2016;29(5):1885–91.
3. Hanif Mughal M. Spices: A Review on Diabetes Mellitus. *Biomed J Sci Tech Res*. 2019;15(5).
4. HariPriya NSN, Singh R, Tewari D. Diabetes Mellitus ( Madhumeha ) and Ayurvedic Management : an Evidence Based Approach. 2015;4(08):881–92.
5. Nyenwe EA, Jerkins TW, Umpierrez GE, Kitabchi AE. Management of type 2 diabetes: Evolving strategies for the treatment of patients with type 2 diabetes. *Metabolism*. 2011;60(1):1–23.
6. Sapra A BPD [Updated 2021 S 18]. IS [Internet]. TI (FL): SP 2021 J-. Diabetes mellitus. In: StatPearls [Internet] Treasure Island (FL): StatPearls Publishing; 2021 Jan-. 2021. p. 1–35.
7. Kochar Kaur K, Allahbadia G, Singh M. Importance of Simultaneous Treatment of Obesity and Diabetes Mellitus: A Sequelae to the Understanding of Diabetes-A Review. *Obes Res – Open J*. 2019;6(1):1–10.
8. Kumar S, Mishra PK, Soni A, Sharma B. An ayurvedic approach to Diabetes mellitus - A review article. *Int Ayurvedic Med J*. 2016;4(3):419–24.
9. Datta A, Bagchi C, Das S, Mitra A, De Pati A, Tripathi SK. Antidiabetic and antihyperlipidemic activity of hydroalcoholic extract of Withania coagulans Dunal dried fruit in experimental rat models. *J Ayurveda Integr Med*. 2013;4(2):99–106.
10. Maurya R. Chemistry and pharmacology of Withania coagulans: an Ayurvedic remedy . *J Pharm Pharmacol*. 2010;62(2):153–60.
11. Sampathkumar K, Riyajan S, Tan CK, Demokritou P, Chudapongse N, Loo SCJ. Small-Intestine-Specific Delivery of Antidiabetic Extracts from Withania coagulans Using Polysaccharide-Based Enteric-Coated Nanoparticles. *ACS Omega*. 2019;4(7):12049–57.
12. Kumar A, Sharma NK, Krishnan S. Antidiabetic effect of aqueous extract of Withania coagulans flower in Poloxamer-407 induced type 2 diabetic rats. *J Med Plants Res*. 2012;6(45):5706–13.
13. Hemalatha V, Vignasini N. Effect of supplementation of withania coagulans fruit on the fasting plasma glucose levels of type 2 diabetic subjects. *Asian J Pharm Clin Res*. 2018;11(12):448–51.
14. Gupta P, Singh P. Wethania cogulance - A miracle for diabetes. 2018;203–7.