

**ROLE OF SOME UNANI SINGLE DRUGS IN THE TREATMENT OF DIABETES
MELLITUS TYPE- 2: A REVIEW**Dr. Reesha Ahmed^{*1}, Naeem Ahmed Khan², B. D. Khan³ and Mohd Waseem¹¹P.G Scholar, Department of Ilmul Advia, Faculty of Unani Medicine, Aligarh Muslim University.²Professor, Department of Ilmul Advia, Faculty of Unani Medicine, Aligarh Muslim University.³Associate Professor, Dept. of Moalejat, AMU, Aligarh.***corresponding author: Dr. Reesha Ahmed**

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ABSTRACT

The term diabetes mellitus (DM) describes a metabolic disorder of multiple aetiology, characterized by chronic hyperglycaemia with disturbance of carbohydrate, fat and protein metabolism; resulting from defects in insulin secretion, insulin action, or both. If the disease condition is left untreated, it causes many complications. It currently affects more than 62 million Indians, which is more than 7.1% of the adult population. Nearly 1 million Indians die due to diabetes and its complication every year. DM is not a new disease, ancient Greeks and Arabic physicians knew it well. According to USM, the cause of DM, are sue-e mizaj wa zaufe of kulliyya, masana and jigar. The treatment of DM in conventional system of medicine causes side effects due to constant intake. In Unani system of medicine there are a number of herbal drugs available known to have hypoglycaemic effects and some drugs rejuvenates pancreatic cells to secrete insulin. In this paper we will discuss concept of DM in USM and plant origin single drugs which can be used in treatment of DM. The detail will be discussed in full length paper.

KEYWORDS: The term diabetes mellitus (DM) describes a metabolic.**INTRODUCTION**

According to World Health Organisation (WHO), chronic lifestyle diseases, also known as non-communicable diseases, are not passed from person to person.^[13] Diabetes mellitus (DM) is rapidly becoming one of the most common non-communicable disease.^[2] It is a metabolic disorder characterized by hyperglycaemia, glycosuria and negative nitrogen balance, and its mainly due to lack of insulin secretion from beta cells of Pancreas and desensitization of insulin receptors for insulin.^[8] The word diabetes is derived from the Greek word "Diabanmo" meaning passing through or to run through or siphon, which is characterized by excessive thirst, excessive urination, presence of sugar in urine, increased appetite, gradual loss of body weight, etc. *Ziabetes* is the nomenclature used for diabetes, in general, and *Ziabetes Shakri* for diabetes mellitus, in particular. Unani physicians considered that *Ziabetes* is a disease of kidney. Arabian physicians described *Ziabetes* by some other names also such as *Moattasha*, *Atsha*, *Zalaqul kulliyya*, *Dolab*, *Dawwarah*, *Barkar*, *Barkarya*, and *Qaramees*.^[39,40]

Prevalance

According to statistical from the International Diabetes Federation (IDF); India has more diabetics than any other nation of the world. Current estimates peg the

number of diabetics in the country at about 62 million - an increase of over 10 million from 2011 when estimates suggested that about 50.8 million people in the country were suffering from the disease. By the year 2030, over 100 million people in India are likely to suffer from diabetes, say researchers.^[37] According to international Diabetes federation (IDF) report diabetes kills one person every seven seconds and kills about 3.2 million every year worldwide.^[17] The prevalence of diabetes for all age groups worldwide was approximated to be 2.8% in 2000 and 4.4% in 2030. The entire number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030.^[38]

Historical Background

In Unani classical text diabetes is described by renowned unani scholars like Zakaria Al Razi, Ali Ibn abbas majoosi, Ibn sina, Ismail jurjani, Ibn zuhar, Ibn Hubal Baghdadi with various names such as *Ziabetes*, *Moattasha*, *Barkarya* Qamamees etc.^[18]

Ancient period

➤ Clinical features similar to diabetes mellitus were described 3000 years ago by ancient Egyptians. They were the first to write papers about this disease, which is proved of Thabes in 1862, written by Georg Eberes about 1550 BC.

- Hippocrates (460 BC) mentioned a disease with excessive urinary flow and waste out of the body.
- The first cognized clinical description of diabetes appears to have been made by Aulus Cornelius Celsus (30 BC-50AD), but it was Aretus of Cappadocia, who plied a detailed and accurate account and introduced the name “diabetes” from the Greek word for “siphon”.
- Galen (131-201 AD) defined diabetes as Diarrhea Urinosa (diarrhea of urine) and dipsakos (thirsty disease). He described it as a disease specific to kidneys because of weakness in their retentive ability.
- The Chinese (Chang chung-Ching in 229 AD) and Japanese (Li Hsuan) literature explained a disease with sweet urine, which attracted dogs and insects.
- During the 5th and 6th centuries, the sweet taste of urine in polyuric patients was also described in the Sanskrit (Indian) literature by Susruta, Charaka, and Vaghabata, and the disease was named Madhumeha.

Arab Period

Ibn Sina/Avicenna (980-1037) who termed the disease as *Dulab*, *Zalqul Kulliya* terms that *Jalinus/Galen*. Ibn Sina was the first who wrote that the differentiating features of diabetes associated with emaciation form other causes polyuria.

Ziabetes in Unani System of Medicine

Ziabetes is mentioned in most of the Unani literature like Al Qanoon, Al Hawi, Kamil Sana'ah etc.^[9] In unani literature it is attributed to be the disease of kidney.^[7] According to unani medicine, *Ziabetes shakri* is a disease in which the consumed water is passed out through the kidney immediately after intake by the patient. It is like the *Zalaqul Meda wa Ama* (irritable bowel syndrome) in which the food passes rapidly through the stomach and intestine without proper digestion. The Unani philosophy of disease causation is based on *Mizaj* (temperament) and *Saakht* (structure) deviation.^[39]

Classification of Ziabetes According To Classical Unani Literature

Allama Hakeem Kabeeruddin classified Ziabetes in two types

- ❖ *Ziabetes Haar* (Shakari)
- ❖ *Ziabetes Barid* (Sada)

On the basis of presence of sugar in urine Ziabetes is divided into two types

- ❖ *Ziabetes shakari* (Diabetes Mellitus)
- ❖ *Ziabetes sada* (Diabetes Insipidus)^[8,36,11]

Etiopathogenesis Described in the Classical Unani Literature

Unani physicians Majoosi, Ibn Sina and Samarqandi described some underline etiopathogenesis in detail. The important etiological features mentioned in USM are following:

1. *Zaufe Gurda* (Weakness of Kidney)

2. *Ittesae Gurda wa Majrae Baul* (Dilatation of Kidney and Tubule).
3. *Buroodate Badan, Jigar wa Gurda*.
4. *Sue Mizaj Haar Gurda* (Hot derangement in temperament of kidney).
5. *Sue Mizaj Barid Gurda* (Cold derangement in temperature in kidney)^[39,40]

Usool-E-ILAJ (Line of Management)

- According to Hippocrate it is a disease of *Sue Mizaj Haar Yabis* so use of *Barid Ratab* and *Muqawwi-e-Gurda Advia wa Aghzia* are beneficial like *Ma'al-Sha'ir*. According to Jalinoos use of alkalizer and Tabreed kulliya is the sole of treatment. In *Makool wa Mashroob* use *Qabizat wa Hamizat* foods.^[8]
- Weight reduction with calorie restricted diets and increased physical activity are the first line therapy of DM.^[4]

Modern Concept

Diabetes Mellitus (DM) refers to a group of common metabolic disorders that share the phenotype of hyperglycaemia. Type 2 DM is a non-autoimmune, complex, heterogeneous and polygenic metabolic disease condition in which the body fails to produce enough insulin, characterized by abnormal glucose homeostasis.^[5] It is classified on the basis of pathogenic process that leads to hyperglycaemia.

- ❖ Type 1DM or insulin dependent DM (IDDM) or Juvenile onset DM³. (Due to *Sue Mizaj-Har Yabis Khilqi* / hot and dry in temperament).^[40]
- ❖ Type 2DM or non-insulin dependent DM (NIDDM) or Adult Onset DM³. (Due to *Sue Mizaj-Barid Ratab* /Excess of coldness and wet).^[10,40]

Role of Unani Medicine in Diabetes

More than 400 traditional plants have been reported so far, to possess hypoglycaemic activity. However, very few of them could yield confirmed activity after fractionation.^[7] The use of medicinal plants and herbal drugs have been in practice since the ancient times.

Unani treasures possess a lot of natural origin anti-diabetic agents which are not only effective and potent to control glucose level but also they are equally safe and less harmful as compare to their modern counterparts. Unani physicians are prescribing various *Mufrad* (single) and *Murakkab* (compound) drugs successfully in the management of diabetes mellitus particularly type II. As it was previously thought that the causes of diabetes lie in the kidneys, so all drugs in the management of diabetes are mentioned in the old Unani literatures to cool down the hotness of kidney and protect the kidney. The first principle of the treatment of diabetes according to old Unani literatures is to quench the thirst, for this purpose, *Arq-e-Gulab* or *Usara-e-Gulab* should be given. Other drugs reported to control the diabetes mellitus are *Ma-us-Shayeer* (Barley water), *Ashreba Mauttiya Mubarrida* (Cold syrup), *Qurs-e-Kafoor*, *Qurs-e-Tabasheer*, *Qurs-e-Ziabetes*.^[6]

Many plants have been Reported to Possess Hypoglycaemic and Anti-Hyperglycaemic Properties in Different Journal/Studies

- Tukh-e-hayaat (*Withania coagulans* Dunal)
- Hulba (*Trigonella foenum-graecum*)
- Maghz-e-neem (*Azadirachta indica*)
- Darchini (*Cinnamomum zeylanicum*)
- Chiraita (*Swertia chirata*)
- Tukhm-e-konch (*Mucuna pruniens*)
- Karela khushk (*Momorda charantia*)
- Asghand (*Withania somnifera*)
- Jamun (*Syzygium cuminu*)
- Bael (*Aegle marmelos* Correa)
- Kishneez-e-khushk (*Coriandrum sativum* Linn)
- Shooneez (*Nigella sativa*)
- Sat-e-Gilo(*Tinospora cordifolia* Meirs)
- Gurmar booti (*Gymnema Sylvestre*)

Commonly used single drug in the treatment of Diabetes

S. No.	Plant Names	Botanical Names	Vernacular Names	Family	Temperament	Part Used	Actions
1.	Tukhm-e-Hayaat	<i>Withania coagulans</i> Dunal	Habbul kakange, Asvagandha, Akri, Punir	Solanaceae	Hot ² & Dry ²	Fruit	Nafe zibetus, Diuretic, Nafe Fart-e-Tadassum Fi dam
2.	Hulba	<i>Trigonella foenum-graecum</i> Linn	Fenugreek, Methi, Bazr-ul-Hulba, Qarnus-Saur,	Fabaceae	Hot ² & Dry ^{2,9,23}	Seeds	Daf-e-zibetus, Muqqawwi, Muhallil-e-Warm, Mudirr-e-Bol
3.	Maghz-e-neem	<i>Azadirachta indica</i>	Azad Darakhte-e-Hind, Neeb, Neem,	Meliaceae	Hot ¹ & Dry ²	Fruits, Flowers, Barks, Seeds and Leaves	Nafe Ziabetus, Musakkin-e-A'tish, Hazim
4.	Asghand	<i>Withania somnifera</i> Dunal	Kaknajehindi, Mehernanbarari, Ashvagandha, Punir	Solanaceae	Hot ³ & Dry ³	Root	Muhallil, Moqawwi-e-jism, Mudir, Qabiz ^{9,33}



Trigonella foenum-graecum Linn.



Withania coagulans Dunal.



Withania somniferum.



Azadirachta indica.

Tukhm-E- Hayat: Withania coagulans Dunal

There are two species of *Withania* viz. *Withania somniferum* and *Withania coagulans* which is distributed in east of the Mediterranean region extending to south asia, also found in India.^[19] It is commonly known as “Indian cheese maker” or “vegetable rennet because fruits and leaves of this plant are used as coagulant.^[21] It is rigid grey-tomentose undershrub 60-120cm high.^[9] Dried fruits used in dyspepsia and flatulent colic. Ripe fruits are beneficial in chronic liver complaints. Seeds are useful in lumbago. Ophthalmia and inflammatory piles.^[8] The active principle named “*Withania*” residing in the numerous small seed contained within the capsule. It contain enzyme, amino acid (proline, valine, tyrosine), fatty oil (oleic, linoleic, saturated F.A) and alkaloid (14 alkaloid fractions have been isolated from the alcoholic extract of the fruit, but they have not yet been characterized.^[6,7,20] *Withania coagulans* exhibited hypoglycaemic activity which is an effective and safe alternative treatment of diabetes.^[20] The hot aqueous extract of fruit of *W. coagulans* has been reported to possess hypoglycemic effect in normal and severely diabetic animals after 7 days of treatment.^[21]

Hulba: Trigonella Foenum Graecum

Hulba is an important medicinal crop of India which is found in North India and mostly cultivated in Punjab H.P and Kashmir.^[23] It is a herbaceous annual plant of height 60cm, grown for its leaves and seed. The two fairly separate types of plants are recognized, the dwarf type grown for cooking purpose and tall type growing type known as methi,^[6,23] The herb has also been known to be able to increase ovarian libido and used in treating certain reproductive and hormonal disorders.^[25] Chemical constituents are alkaloids (Neurin, trimethylamine, trigonella), amino acids (Isoleucine, Histidine, leucine), saponin (Graecunins, Fenugrin B). It has several pharmacological attributes such as hypoglycemic, hypercholesterolemia and antioxidant.^[24] Postprandial blood glucose response has reduced by soluble fiber, Galactomannan. It is isolated from Canadian grown fenugreek seeds. Foenum seed powder treatment to Diabetic rats for 21 days brought down the high F.B.G levels to control levels.^[26]

Maghz-e- neem: Azadirachta indica

Neem tree, which is also known as *Azadirachta indica*, is one of the best known tree in India, which is known for its medicinal properties.^[27] Neem is a tropical, large size is about 12-18 mt in height. Two species of *azadirachta* have been reported, *Azadirachta indica* A. Juss -native to Indian subcontinent and *Azadirachta excelsa* kack-confined to Philippines and Indonesia.^[29] In Sanskrit it is called as ‘*Arishtha*’ which carries the meaning as the reliever of sickness.^[27] Biological active principle include *azadirachtin*, *meliacin*, *nimbin* and *gedunin*.^[29] It is therapeutically used in various disease like acne, amenorrhoea, eczema.^[31] With its extremely bitter properties, neem has been used in disorders caused by over eating sweets.^[29] The dried flower is taken orally for

diabetes.^[30] Pharmacological hypoglycaemic action of *azadirachta indica* has examined in diabetic rat. After 24 hrs *azadirachta indica* 250mg/kg reduced glucose (18%).^[28,30]

Asghand: Withania coagulans Dunal

Ashwagandha is known Indian Ginseng. Out of *withania* genus 3 species are found in India *w.somniferum*, *W. coagulans*, *W. obtusifolia*.^[35] Two varieties of Asgand have been mentioned in classical Unani literature Asgand Nagori and Asgand Dakani.^[14] *Withania* is a small, erect, ever green woody under shrub and 30-50 cm in height.^[32] It is distributed in tropical and sub-tropical region.^[35] Root of *withania somniferum* used for the treatment and contain several alkaloids.^[33] The main active constituents are alkaloids(*withanine*, *somniferine*, *somnine* etc) & steroid as lactones (*tropine* & *cuscohygrine*).^[33,35] A clinical trial concluded that it was efficient in reducing higher sugar level, potentiating the immune system & improving the antioxidant status of diabetic patient.^[33] A pharmacological study concluded that *W. somnifera* enhance the learning and memory potential in rat.^[34]

CONCLUSION

Diabetes Mellitus is becoming most prevalent and fastest considerable disease in the world and effects millions of people. Unani physicians have described and discussed in detail about the different aspects of diabetes mellitus. In USM there are many plants possess varying degrees of hypoglycaemic and antihyperglycaemic activity, which are used in the prevention, treatment and control of diabetes and its complication. By reviewing Unani literature it was concluded that there are lot of herbal drugs having anti diabetic property are being used for treatment of diabetes mellitus.

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