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## Management of diabetes and Unani medicine: A review

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### Abstract

Diabetes Mellitus is a common metabolic disorder. In Unani literature it is described under the caption of *Amraz-e-Gurdah* i.e. Disease of Kidney. Untreatable Diabetic Mellitus may leads to a lot of acute and chronic complications. Chronic complications are mainly arising due to the result of longstanding damage to macro and micro blood vessels. These complications are mainly classified as microvascular due to basement membrane thickening or macrovascular due to accelerated atherosclerosis. The foremost microvascular complications are diabetic nephropathy diabetic retinopathy and diabetic neuropathy. The diabetic foot ulcer is due to the result of longstanding peripheral neuropathy, if untreated it may leads to amputation of affected part. Admirable glycaemic control is challenging for the doctors and patients. Complications of diabetic are totally due to poor glycemic control. Unani System of Medicine is the plunge area of research to control or reduced the diabetes associated complications. Several Unani drugs show evidence of anti-diabetic activity, antioxidant activity, immunomodulator activity, nootropic activity which are commonly used during practiced by Unani Physicians like *Tukhm Methi*, *Gurmar Booti*, *Tukhm Hayat*, *Tukhme Khurfa*, *Darhald*, *Post Kachnal*, *Asgand*, *Dammul Akhwain*, *Aqerqarha*, *Azaraqui*, *Beesh*, *Saadkofi*, *Balchhar*, *Darchini*, etc., and some famed compounds formulations are *Qurs-e-Gulnar*, *Qurs-e-Tabsheer*, *Safoof-e-Ziabetus*, *Qurs-e-Ziabetus*, *Habb-e-Azaraqui*, *Habb-e-Asabi*, *Kushia Zamarrad* etc. Aim of this review article is look at the concealed benefits of Unani drugs on their scientific parameters to reduce the burden of diabetes related complications.

**Keywords:** Diabetes mellitus, ziabetus, *amraz-e-gurdah*, complications of diabetes, unani medicine

### Introduction

International Diabetes Federation has declared that now a day Diabetes is one of the biggest global health problems of the 21<sup>st</sup> century. Every year most of the peoples are prone to this condition, which can result in life-threatening complications [1]. Long-term effects of diabetes includes damage, dysfunction, and failure of various organs. Untreatable diabetes may leads to microvascular (diabetic retinopathy, nephropathy and neuropath) and macrovascular (ischemic heart disease, peripheral vascular diseases and cerebrovascular disease) complications with risk of diabetic foot ulcer, amputation, Charcot joints, and features of autonomic dysfunction, including sexual dysfunction [2, 3]. People with diabetes are at increased risk of cardiovascular, peripheral vascular and cerebrovascular diseases [4].

According to IDF 8<sup>th</sup> edition worldwide prevalence of diabetes is 425 million in the year of 2017 and it is expected by the year of 2045 will be around 629 million [5].

Worldwide prevalence of diabetes was estimated to 415 million and one in two adult with diabetes is undiagnosed in 2015, but in India alone 69.2 million and in China 109.6 million [1]. Currently 146 million people with diabetes living in rural areas and 279 million people with diabetes living in urban areas [5].

The number of people through diabetes is rising in every country, half of the people with diabetes don't know they have it, 80% people with diabetes live in low and middle income countries, half of the people who die from diabetes are under the age of 60. Every six seconds a person dies from diabetes and 5 million deaths occurs in 2015. The cost of diabetes care is high and is escalating worldwide. It is estimated 5 and 20% of their total health expenditure on diabetes [1].

### History of Diabetes

The history of diabetes has its beginnings in antiquity. This ailment has seems that outbreak for man since a long time.

The script from the earliest culture (i.e. Egypt, Asia Minor, China, and India) consign to boils, infections, polydipsia, loss of weight, and excessive honey-sweet urine which frequently drew ants and flies. There is a source to the diabetic status dating back to 1500 BC in *Ebers Papyrus* and revealed by the Egyptologist Georg Ebers in Thebes, during 1872. This suggested that person who afflicted with this malady should go on a diet of beer, fruits, grains, and honey; which diet was reputed to choke the polyuria. Indian script from the same era assigned the disease to over tolerance in food and drink. Later on *Hearst* and *Berlin medical papyrus* also provide recipes against polyuria. The first known clinical explanation regarding diabetes emerge to have been made by Aulus Cornelius Celsus (c.30 BC – 50 AD); but it was also explained by Aretaeus of Cappadocia (81-133AD) who afford a complete and accurate picture and introduced the name “diabetes” from the Greek word for “siphon,” which means run through [6-12].

*Jalinoos* (Galen 119-200 AD): records the diverse, descriptive names for diabetes: dropsy into the pot, diarrhoea of the urine, and the thirsty disease. He also mentioned the polydipsia, and the patients passed in the urine as much liquid as they had drunk in terms of polyuria. Galen stresses that the site of action was in the kidneys because of a weakness in their retentive faculties and not in the stomach [13, 14]. The treatment of diabetes during ancient times, if indeed there was one, did not contribute to improve the quality of life. Aetius Amidinus during 6<sup>th</sup> century AD prescribed a cooling temperament diet, diluted wine, and cooling appliance to the loins as a treatment for diabetes and lastly he also used opiates and mandragors [15].

Paul of Aegina (c.650 AD) evaluate the diagnosis of “*dypsacus*” (causing thirst), linked with the fault of the kidneys and overload moisture from the body, leads to dehydration of fluids. He prescribed a therapy of pot-herbs, endive, lettuce, rock-fishes, juices of knotgrass, elecampane in dark coloured wine and decoctions of dates and myrtle to drink in the first stage of the ailment, followed by cataplasms to the hypochondrium over the kidneys consisting of *Sirka* (vinegar), *Roghan Gul* (rose oil) and navel-wort. He apprised against the use of *mudirrat* (diuretics), but *Fas'd* (venesection) was permitted [9, 16].

*Ibn Sina* (Avicenna, 980-1037), who depicted in his *Al-Qanoon* about *Ziabetus* as “*Al-dulab* (Dulabiyya)” or wheel of water and “*zalaqul kulya*” or diarrhea of the kidneys, *Mu'attisha*, *Dawwariyya*, *Parkariyya* and complications of the diabetes, impotence (sexual problem), gangrene (*Ghangharana*), and furunculosis [17, 18].

In present scenario due to resemblance in clinical features of the disease, *Ziabetus Shakri* has been correlated with diabetes mellitus. Diabetes is a group of metabolic diseases characterized by hyperglycaemia resulting from defects in insulin secretion, insulin action, or both. The chronic condition of diabetes is linked with organ dysfunction [19].

### Types of Diabetes

Basically there are four types of diabetes such as; Type-1 (IDDM), Tpe-2 (NIDDM), other specific & gestational diabetes mellitus. Type-2 DM is the most common form of diabetes, affecting 90-95% cases in which the body does not produce enough insulin or properly use it in the body [20].

Diabetes Mellitus is usually linked with progress ageing, high fat diet, and obesity, lack of physical activity or sedentary life style. It is characterized by impaired insulin

secretion, peripheral insulin resistance and excessive hepatic glucose production [21].

### Complication of diabetes and their management

Diabetes Mellitus leads to complications like blindness, renal failure, coronary artery disease, gangrene and coma. Due to these dreadful complications, Diabetes has become a global problem despite tremendous advances in modern sciences [13, 14]. Diabetes remains a challenge for the treating physicians today despite all the advances in pharmacotherapy and treating devices and the increasing emphasis on the preventive measures [22]. Owing to awful complications of Diabetes Mellitus and lack of quite safe and effectual drug for its management, seek for better and secure curative agent becomes a thrust area for research, in every field of medical science [23].

In Unani system of medicine Diabetes Mellitus is being treated since Greco-Arab period. Unani physicians depicted many safe and effective drugs as mentioned in their classical text and standard *Qarabadeen*, but most of the medicament have not been evaluated on the basis of surrogate markers. However, lifestyle changing measures may be inadequate or patient fulfillment, difficult, providing conventional drug therapies necessary in many patients. As an alternative approach, Unani drugs (*Mufradat* and *Murakkabat*) with hypoglycemic activities are increasingly sought by diabetic patient and physicians. These medicaments should have an alike degree of value without the worrying side effects associated with these treatments. Hence, Alternative therapy for diabetes have become increasing globally for the last few years. Presently, there is rising awareness towards herbal medicine, due to the harmful effects associated with the oral anti-hyperglycemic agents (Biguanides and Sulphonylureas) for the management of diabetes mellitus. So the alternative herbal remedies especially Unani medicines are used which are obtained mainly from plants, play an important role in the management of diabetes mellitus [3, 21].

Numerous drugs such as sulfonylureas, biguanides and DPP-4 inhibitors are being approved to reduce blood sugar level. But these drugs develop some serious side effects and quite expensive therefore, long term use of these drugs could not be possible. In Unani literature especially in *Al-Qanoon fil Tib*, *Kamil us Sana*, *Zakheera Khwarzam Shahi*, *Al-Mukhtar Fit Tibb*, *Sharahe Asbab wal Alamat*, there are enough evidence regarding the effective use of various herbal drugs for diabetes mellitus since long, whereas holistic approach of treatment is described below.

### Existing treatment in unani system of medicine

Treatment in Unani system of medicine is entirely based on Black Box Design approach i.e. provided in the form of package such as specific regimes, dietotherapies and pharmacotherapies (Single & compound drugs).

#### Tadabeer

There are various forms of regiemes accessible in the system of Unani Medicine Unani physicians for all kinds of sickness including Riyazat (exercise), Dalk (Massage), Hijama (Cupping), Taleeq (Leeching), Abzan (Sitz Bath), Takmeed (Fomentation) etc. [4, 24, 25].

#### Ziabetus Haar

*Tabreed wa Tarteeb*, Stay in cold and wet air, Cold *Aabzan*, Refrigment *Zimad wa Tila* Aabe Mako wa Kasni, Aabe Hayyul Alam, Tahlab, Kishneez Sabz etc. [4, 24, 25].

**Ziabetus Barid**

*Hammame Garm, Stade Basilique, Dalk with Gharm Roghniyat* like Roghan Qust, Roghan Gule, Roghan Habbul Ghar, Roghan Malkanghi [4, 24, 25].

**Mufradat**

Many single drugs are available for the treatment from all sources of origin like plants, animals and minerals. Some of them are: Gudmar Booti (*Gymnema sylvestri*), Tukhm Karela (*Momordica charantia*), Kachnal (*Bauhinia variegata*), Darhald (*Berberis aristata*), Tukhm Hulba (*Trigonella foenum-graecum*), Satte Gilo (*Tinospora cordifolia*), Tukhm Hammaj (*Rumex vesicarius*), Tukhm Shoneez (*Nigella sativa*), Tukhm Hayat (*Withania coagulans*), Tukhm Khurfa (*Portulaca oleracea*), Maghz Tukhm Jamun (*Syzygium cumini*) Sumaq (*Rhus glabra*), Qust (*Saussurea lappa*), Khulanjan (*Alpinia galanga*) Kundru (*Coccoloba indica*), Kundur (*Boswellia serrata*), Dammul Akhwain (*Pterocarpus marsupium*), Sandal (*Santalum album*), Aqaqiya (*Acacia arabica*), Sumbulutib (*Nardostachys jatamansi*), Tukhm Kahu (*Lactuca sativa*), Gule Surkh (*Rosa damascena*), Samag Arabi (*Acacia Arabica*), Gile Armani (*Armenian bole*), Sharipha (*Annona squamosa*), Gulnar (*Punica granatum*), Muql (*Commiphora mukul*), Tabasheer (*Bambusa arundinacea*), Baloot (*Quercus baloot* Sadaf Daryai (*Turbinella rapa*), Mosli Siyah (*Curculigo orchoides*), Tukhme Khaskhas (*Papaver somniferum*), Maghz Chilgoza (*Pinus gerardiana*), Shilajeet (*Momiyai*), Pakhan Baid (*Berginia ligulata*), Rubbe Anaar (*Punica granatum*), Arqe Gulab (*Rosa damascena*), Tahlab (*Spirulina maxima*), Arade Jao (*Hordeum vulgare*), Aabe Kaddu Biriyan (*Cucurbita maxima*), Aabe Khayar (*Cucumis sativa*) with Isabgol (*Plantago ovata*), Aabe Toot (*Morus nigra*), Aabe Anaar Tursh (*Punica granatum*), Aabe Aalubukhara (*Prunus domestica*) [26-36, 37-42].

**Murakkabat**

Compound formulations which are used since ancient times by renowned Unani Scholars for *Ziabetus* are as follows: *Qurs-e-Gulnar, Safoof Ziabetus, Qurse Ziabetus, Kushta Marjan, Kushta Zamarrud, Qurs Tabasheer, Qurse Kafoor, Kushta Qalai Safoof Hindi, Qurse Tabasheer, Spirulina* etc. [26-36, 37-42].

**Conclusion**

Diabetes Mellitus is a common metabolic disease that can be prevented through lifestyle modification, diet control, and control of overweight. Education of the populace is still key to the control of this emerging epidemic. Novel drugs are being developed, yet no cure is available in sight for the disease, despite new insight into the pathophysiology of the disease. Management should be adapted to improve the quality of life of individuals with Unani medicine.

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