

## Concept of Diabetes in Unani System of Medicine: An Overview

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### ABSTRACT

*Diabetes is one of the top killer diseases of mankind. Although it affects all the sect of society, its impact is mainly on affluent society. The today's description of diabetes has almost stabilized, which mainly revolves around the role of pancreas, insulin, and its peripheral resistance along with other causes, to a lesser extent; however, this description needs reconsideration. The accelerating burden of the disease reveals that even the recent remarkable advancement in medical sciences does not have a justifiable answer to tackle and cease its ever-increasing load; therefore, there is a need of time to rethink about the preventive strategies, line of treatment, management, and all aspects of diabetes. However, various complementary and alternative medicine (CAM) therapy claiming attractive concepts and line of management are in vogue. Unani system of medicine (USM) is the oldest among CAM, which has an entirely different and promising concept to understand all aspects of diabetes and offer a range of drugs to counter this disease. Unani physicians and philosophers have an entirely different insight of this disease. Galenus (Galen/131-201 AD) was familiar with both kinds of diabetes, and he described both forms in his two different writings. In this paper, the authors tried to put forth the understanding of diabetes through the history and concept of diabetes described in USM.*

*Keywords: Zibetis; Diabetes Mellitus; Diabetes Insipidus; Unani system of medicine; Avicenna.*

### INTRODUCTION

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. (1-3). Zibetis is the terminology used for diabetes, in general, and Zibetis Shakri for diabetes mellitus, in particular, in Unani system of medicine (USM). These terms are mentioned in most of the Unani literature like Al Qanon, Al Hawi, Kamilus Sanaah, etc. Unani Atibba considered that Zibetis is a disease of kidneys. Arabian physicians described Zibetis by some other terms also such as Moattasha, Atsha, Zalaqul kulliyah, Dolab, Dawwarah, Barkar, Barkarya, and Qaramees (3-7).

Before going to the description of Unani prospect of diabetes, let us see the historical milestones and advances in the understanding of diabetes, which will surely help in making a better understanding of this disease.

#### *Historical Background*

Diabetes mellitus is one of the oldest diseases, with a testimony of 3000 years. Its historical aspect can be divided into the following categories through the history.

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*Ancient Period*

Clinical features similar to diabetes mellitus were described 3000 years ago by ancient Egyptians. They were the first to write documents about this disease, which is proved by the discovery of Eberes papyrus in the graves of Thabes in 1862, written by Georg Eberes about 1550 BC. It contained descriptions of a polyuric state resembling diabetes mellitus (8-11).

Hippocrates (460 BC) mentioned a disease with excessive urinary flow and waste out of the body (12).

The first known clinical description of diabetes appears to have been made by Aulus Cornelius Celsus (30 BC-50 AD), but it was Aretaeus of Cappadocia (second century AD) who provided a detailed and accurate account and introduced the name "diabetes" from the Greek word for "siphon." Aretaeus commented that life does not last very long, for great masses of flesh are liquefied into urine (11, 13).

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, and as he came across only two cases of diabetes, therefore he termed it a rare disease. He believed that the urine of diabetic patients was unchanged drink, which may have accounted for a different aroma (12, 14, 15).

The Chinese (Chang Chung-Ching in 229 AD) and Japanese (Li Hsuan) literature explained a disease with sweet urine, which attracted dogs and insects. Such patients were more prone to develop boils and tuberculosis (14, 15).

During the fifth and sixth centuries, the sweet taste of urine in polyuric patients was also described in the Sanskrit (Indian) literature by Susruta, Charaka, and Vaghbata, and the disease was named Madhumeha. They described that the urine of these patients tasted like honey (madhu), sticky to touch, and ants were strongly attracted to it.

The term "diabetes" was first coined by Aretaeus of Cappadocia (81-133AD). Later, the word mellitus (honey sweet) was added by Thomas Willis (Britain) in 1675 after rediscovering the sweetness of urine and blood of patients (8, 11, 16-18).

*Arab Period*

Ibn Sina/Avicenna (980-1037), who termed the disease al dulab (water wheel) and zalqul Kulliya (diarrhea of the

kidneys) terms that Galenus/Galen and others had used added mental troubles, impotence, gangrene, and tuberculosis as the complications of the disease. Ibn Sina was the first who wrote that the differentiating features of diabetes associated with emaciation form other causes of polyuria (10, 12, 16).

*Diagnostic period*

In 1674, Dr. Thomas Willis, personal physician to the late English King Charles II, described the sweet taste of urine from diabetic patients "as if imbued with honey and sugar," hence, the name "mellitus" is Latin for honey. In 1766 Mathew Dobson proved that the sweet taste of urine from diabetic patients was due to sugar. He made the crucial observation of the excess of sugar in blood (8, 19).

It was only in 1776 that Dobson (Britain) first confirmed the presence of excess sugar in urine and blood as a cause of their sweetness. In modern time, the history of diabetes coincided with the emergence of experimental medicine.

An important milestone in the history of diabetes is the establishment of the role of the liver in glycogenesis, and Claude Bernard (France) in 1857 pointed out that diabetes is basically caused by excess glucose production (14).

## CONCEPTS OF ZIABETUS (DIABETES) IN USM

According to Unani medicine, Ziabetus 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 Zalqul Meda wal Ama (irritable bowel syndrome) in which the food passes rapidly through the stomach and intestine without proper digestion (8). In this disease, the patient feels excessive thirst and takes plenty of water and passes all the water he consumed without any metabolic change (20).

The Unani philosophy of disease causation is based on mizaji (temperamental) and saakhti (structural) deviation. Any imbalance between mizaj and saakht (structure) results in disease. In this disease the mizaj (temperament) of kidneys becomes Haar (Hot), so they absorb water from blood circulation and send to the urinary bladder immediately due to weakness in Quwate Masika (retentive power). It has also been described that kidneys attract the watery substance of blood, but the urinary bladder does not attract any thing. So kidneys attract water from the circulation, liver, stomach, and intestines because of which patients feel the immoderate thirst (polydipsia) (4, 5, 7, 21).

*Atiology (22, 23)*

The concept of Quwa (power/faculties) is unique in USM. The Quwa is a property of the body with which the phenomenon of the life is manifested. The Quwa provides the basis for different bodily functions. Each and every organ is furnished with a power through which specific physiological functions are performed by that particular organ. The Quwa is specific for a particular tissue or organ on which the specific functions of that organ depend. The organ is the seat of Quwa, and the Quwa give rise to functions.

There are three major divisions of the Quwa of the body.

- Al Quwa at Tabiyah (natural faculties).
- Al Quwa at Nafsaniya (psychic or mental faculties).
- Al Quwa at Haiwaniya (vital faculties).

Al Quwa at Tabiyah are responsible for ingestion, digestion, absorption transformation (metabolism), assimilation of ghiza (food), excretion of waste products, and preservation of the race. According to the function, Quwa at Tabiyah have been divided by Ali Ibn Abbas Majusi (930-994AD) into three faculties: Quwate Ghaziya (nutritive faculty), Quwate Namya (growth faculty), and Quwate Muwallida (reproductive faculty).

Quwate ghaziya (nutritive faculty) is responsible for ingestion, digestion, absorption transformation (metabolism), assimilation of ghiza (food), and excretion of waste products. According to the function, this faculty is divided into four types: Quwate Jaziba (power of absorption), Quwate masika (power of retention), Quwate hazima (power of digestion) or Quwate mughayira (power of transformation), and Quwate dafia (power of propulsion and excretion).

- *Quwate Jaziba*: This is the power that absorbs the Akhlat (humors) and runs into the cells with the help of various enzymes, hormones, or simply through natural forces.
- *Quwate Masika*: This is the power that retains the Akhlat (humors) inside the cells for their Istahalah (metabolism).
- *Quwate Mughayira*: This is the power that transforms the materials (such as phosphorylation of glucose after entering the cells) either into energy or/and makes it to assimilate.
- *Quwate Dafia*: This is the power that helps the cells and tissues expel out the waste products (by-product) produced in the course of istahala.

Each and every organ is furnished with a Quwa, as previously discussed, through which specific physiological functions are performed. The organs of digestive faculty (Azae Hazm) include Banqaras (pancreas) along with oral cavity, salivary glands, esophagus, stomach, intestines, liver, and spleen. Liver is considered the main center of Quwate Tabiyah. According to Abu Sahl Masihi (Died 1010 AD), each of the above four Quwa are found in two folds: one is found in the gastrointestinal tract (GIT) and liver and the other in all the cells of the body. So the Quwa of all the cells of the body absorb food materials and Ruh (pneuma), and metabolize and transform them into various compounds and replace the wear and tear by producing the energy for the proper functioning of the body (22-26).

The above description of Quwa and its function is described in Umoore Tabiyah (basic physiology), specially, in the context of digestion and absorption of food materials from the GIT and transportation of these toward the tissues; absorption and retention of materials by the help of different Quwa into the cells can be clearly understood.

*Classification of Zibetus (27-29)*

1. According to the presence or absence of sugar in the urine, Zibetus is divided into two types:

- Zibetus Sada (diabetes insipidus), which is also called Zibetus gair shakari. It is characterized by excessive thirst and excessive urination, but there is no sugar in the urine.
- Zibetus Shakari (diabetes mellitus), which is characterized by excessive thirst and urination and the presence of sugar in the urine.

2. According to the khiffat and shiddat (intensity) of the sign and symptom, Zibetus is also divided into two types:

- Zibetus Haar in which acute symptoms of the Zibetus with abrupt onset occur, such as excessive thirst (polydipsia) and increase urination (polyuria), with the symptom and sign of other sue mizaj haar, such as heat in flanks and dryness of the body, due to sue mizaj haar sada (excess of heat) of kidneys.
- Zibetus Barid in which the thirst and frequency of urine are comparatively less.

*Etiopathogenesis*

Unani physicians Majoosi, Ibn Sina (980-1037AD), and Samarqandi (Died 1222AD) described some underline

etiopathogenesis in detail. It was supposed that the disease is related to kidney. The important etiological factors mentioned in USM are the following:

*Zofe Gurda (Weakness of Kidneys)*

Water cannot be retained properly due to the weakness of kidneys and their Quwate masika (retentive faculty), and kidneys are unable to metabolize the water that is coming from liver (1,4,5,30).

*Ittesae Gurda wa Majrae Bole (Dilatation of Kidneys and Tubules)*

Water cannot be retained for long/required time due to dilatation of Gurda wa Majrae Baul (Dilatation of Kidneys and Tubules),so it is passed out rapidly (polyuria) (2,5,31).

*Baroodate Badan, Jigar wa Gurda*

Sometime Ziaabetes develops due to the excessive exposure of the whole body or liver or kidneys to cold, which leads to sue mizaj barid (cold derangement in temperament) (2, 5,28,32).

*Sue Mizaj Haar Gurda (Hot derangement in the temperament of kidneys)*

Kidneys absorb water in an excess amount from circulation due to excessive hotness or derangement in temperament,so they cannot retain much amount of fluid and pass in the form of urine frequently (polyuria) and the patient drinks water frequently (polydipsia) to overcome his thirst (4,29,31).

Sue Mizaj Barid Gurda (Cold Derangement in Temperament of Kidney) Sometimes, Ziaabetes develops due to excessive exposure of cold to kidneys that may lead to sue mizaj barid (cold derangement in temperament) (1,5).

We can summarize the etiopathogenesis as follows: the nutritive capacity of all the organ and body as a whole performs three functions,such as Tehseel (acceptance),Ilsaaq (adherence),and Tashbia (assimilation). These three functions are served by four other capacities Masika (retentive),Dafia (eliminative),Jaziba (absorptive),and Hazima (digestive). And these functions are mediated by four Kaifiate (quality) of Mizaj, i.e.,Hararat,Burudat,Ratubat,and Yabusat.

So, deviation in these mizaji Kaifiat (temperamental quality) by any cause hampers the function of Quwwate Ghazia and thereby results into Badal ma yatahallal (assimilation), which is essential for the maintenance and growth of the body and its members.

*Treatment modules (1-6)*

According to Unani physicians,the drugs that correct the Mizaj of kidney and liver or restore the quwwat-e-mashika (retentive power) of kidney are used to manage Ziaabetes har.

*Diabetes Type-I*

Cause: Sue Mizaj-Har Yabis Khilqi (hot and dry in temperament)

Due to increase in heat and dryness,energy (innate heat) dissolute that further dissolutes Ratubat Gharizia (innate body fluid) and material needed for growth results in Asthenia. Increased heat further interferes with nutritive function, but it does not alter the power of Tehseel (acceptance) and Ilsaaq (adherence) because both power depends on Yabusat (dryness), and in this case dryness is extra enough to potentiate both. Unused material (metabolic by-product) fills up the interstices of organs and interferes with acceptance, but delivery remains continuous from the liver. Vessels fail to deliver their material; this nutrition-loaded blood when reaches the kidney,excess is spilled out because of enhanced Quwwate Jaziba (power of absorption) and inability to utilize all material

Heat and dryness potentiate Quwwate Masika (power of retentive), thus vessels cannot expel their contents and (unused metabolic by-product) contents start to adhere to the wall of vessels.

*Diabetes Taype-II*

Cause: Sue Mizaj- Barid Ratab (Excess of coldness and wet)

Above both qualities (Barid and Ratab) interfere with Quwae Ghazia, Masika, and Jaziba and favor the production of fat. Hence we can say that both causative factors and material are present here for the production of fat, resulting in excess fat deposit. These above qualities make the Quwa Dafiah (power of eliminative) hyperactive. So organ interstices become full of unused material,and thereby blood becomes loaded with nutrients that start to appear in urine.

Burudat (coldness) causes Kasafat (hardness),Lazuzat (sticky), and Ghilzat (Viscous) in humors,so humor starts adhering to the walls of vessels. Unused material being Barid Ratab (cold and wet) calm down Hararat Gharizia making the person prone to infection,which further exaggerates loss of H. Gharizia and its weakness. Hence H. Ghariba tends to overpower the H. Gharizia,and the condition becomes more favorable to infection. Vascular Sudda (obstruction) is formed

by Ghaleez (viscous) Humor, which cuts off the delivery of Ruhe Haiwani (pneuma).

In the end, we can say there are so many factors that tend to deviate the mizaj toward Burudat and Rutubat; these factors belong to Asbab Sitta Zaroorya (six essential factors) and Ghair Zaroorya (non-essential) Ghair Muzadda such as excess diet, sedentary mode life, bathing after diet, excess of sleep, use of cold drinks, avoidance of sun exposure, and excess of mental stress.

Once Barid Ratab Mizaj becomes established, its obligations start to appear. Organs with Barid Mizaj are affected most. This Burudat-e-Mizaj interferes with capacities of hot-tampered organs. So the most affected organs in diabetes are brain, nerve, glands, and Heart

### CONCLUSION

In spite of tremendous advancement in medical science, we are still in the dark as we were few decades ago regarding preventive and curative aspects of diabetes. Lots of epidemiological work have been carried out and so many risk and related factors have come to our knowledge, but we are unable to get effective treatment. We will have to think about and follow alternative therapies. The holistic Unani concept of medicine is a ray of hope for the suffering. In Ziaabetes, the maximum damage is prone to vessels and vascular organs. So the Unani insight of correcting organs may be effective managing strategy, Correction of Sue Mizaj (in temperament) and ultimately faculties may be best preventive and curative steps to halt the progress of disease because in the Unani prospect, iabetes is nothing but a disturbance of vascular and organic digestion.

### METHOD

The classic and relevant books of USM were studied; the literature and claims in support of this article were taken from these books. Authors visited the library of National Institute of Unani Medicine (NIUM), Bangalore, India, for collecting valid literature. The databases utilized for obtaining information are scientific research publications from journals indexed/available through Google Scholar, Scopus, PubMed, and Science Direct. Relevant facts were also obtained from general databases such as Google.

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### REFERENCES

1. Ibn Sina, Al Qanoon Fil Tib. (Urdu translation by Kantoori GH). Vol. II. New Delhi: Idara Kitabul Shifa, 1031-33,353-54, 2007.
2. Ibne Sina. Al Qanoon Fit Tib (Arabic). 1st ed. Vol. III, Part 2. New Delhi: Jamia Hamdard, 263-64, 783-85, 1408Hijri.
3. Khan M Ajmal. Haziq. New Delhi: Jasem Book Depot, 387-90, 1983.
4. Majoosi AA. Kamilus Sana'ah, (Urdu translation by Kantoori GH). 1st ed. New Delhi: Idara Kitabus Shifa, 154,467,472,527, 2010.
5. Jurjani AHI. Zakhira Khawarzaam Shahi (Urdu translation by Khan HH) Vol. II, Part 6. New Delhi: Idara Kitabul Shifa, 540-41,1996.
6. Ibne Zohar. Kitabut Taiseer (Urdu translation by CCRUM). New Delhi: CCRUM, 160-63,1986.
7. Ibne Hubal B. Kitabul Mukhtarat Fil Tib (Urdu translation by CCRUM). Vol. III. New Delhi: CCRUM, 326-8, 2005.
8. Jani DK, Nesari MT, Vijayakumar D, Loriaux, Lynn D. Diabetes and the Ebers 33 Papyrus: 1552 BC. *The Endocrinologist*, 16(2): 55-6, 2006.
9. Barthold SW. Unsung heroes in the battle against diabetes. *ILA* 2004;45:227-30.
10. Srinivasan K, Ramarao P. Animal models in Type 2 diabetes research: An overview. *Indian J Med Res* 2007;125: 451-472.
11. Savona-Ventura C. The History of Diabetes Mellitus, A Maltese perspective. e-book, 1-7, 2003.
12. Sanders LJ. From Thebes to Toronto and the 21st century: An incredible journey. *Diabetes Spectrum* 2002;15:56-60.
13. Gemmill CL. The Greek Concept of Diabetes. *Bull. N. Y. Acad. Med* September 1972;48(8): 1033-1036.
14. Singh M, Kumar N, Sood S, Makkar B, Arora V. Historical Milestones in Diabetes. *Australasian Medical Journal* 2010; 3(13): 860-864.

15. Kirchhof M, Popat N, Malowany J. A historical perspective of the diagnosis of diabetes. *UWOMJ* 2008;78(1): 7-11.
16. Eknoyan G, Nagy J. A history of diabetes mellitus or how a disease of the kidneys evolved into a kidney disease. *Advances in Chronic Kidney Disease* 2005;12(2): 223-229.
17. Henschen F. On the term diabetes in the works of Aretaeus and Galen. *Med Hist* 1969;13(2): 190-2.
18. Ahmed AM. History of diabetes mellitus. *Saudi Medical Journal* 2002;23(4): 373-8.
19. Rengachary SS, Xavier A, Manjila S, Smerdon U, Parker B, Hadwan S. et al. The legendary contributions of Thomas Willis (1621–1675): the arterial circle and beyond. *J Neurosurg* 2008; 109:765-75.
20. Razi MZ. *Kitabul Havi*. (Urdu translation by CCRUM). Vol. 10. New Delhi: CCRUM 2002;181-87.
21. Anzar MA, Shamim A, Nafis H, Tanwir MA. Drugs Indicated for The Management of Ziaabetes Shakri (Diabetes Mellitus) in Unani Medicine-An Overview. *International Journal of Pharmamedix India* 2013;1(3):460-74.
22. Kirmani NBA. *Kulliyate Nafeesi* (Urdu translation by Kabeeruddin) Vol. I. New Delhi: Idara Kitabul Shifa, 103, 106-8, 114-18, YNM.
23. Ahmed SI. *Introduction to Al Umur Attabiyah*. 1st ed. New Delhi: Saini Printers, 146, 162-72, 1980.
24. Azmi AA. *Basic Concepts of Unani Medicine*. 1st ed. New Delhi: Jamia Hamdard, 131, 1995.
25. Maseehi AS. *Kitabul Miya (Fit Tib)* (Urdu Translation by CCRUM). New Delhi: CCRUM,127-133, 2008.
26. Zulkifle M, Ansari AH, Shakir M, Zahid K, Tanwir MA. Management of non healing leg ulcers in Unani system of medicine. *Int Wound J*, doi: 10.1111/j.1742-481X.2012.01099.x, 2012.
27. Qarshi MH, Jameul Hikmat. Vol. II. New Delhi: Idara Kitabul Shifa, 864-70, 2011.
28. Khan MA. *Romooze Aazm (Farsi)*. Vol. I. New Delhi: CCRUM, 139-41, 2006.
29. Nazamuddin M. Evaluation of hypoglycemic activity of Qurs Tabasheer in experimentally induced diabetes in animal model [dissertation]. Dept. of Ilmul Advia (Pharmacology), NIUM, Rajiv Gandhi University of Health Sciences (RGUHS), Bangalore, Karnataka, India, 2013.
30. Davies A, Blakeley AGH, Kidd C. *Human Physiology*. 1st ed. London: Harcourt Puplicher, 451-56, 2001.
31. Khan AM, Rzaq MA, Ahad MA. *Mojizul Mahsha (Arabi)*. New Delhi: Mujtabai, 387-78. 1415 Hijri.
32. Samarqandi N. *Sharah Asbab* (Urdu translation by Ayyub M.). Vol. III. New Delhi: Aijaz Pulishing House, 38-48, YNM.