MEDICAL PHILATELY-31

Diabetes Mellitus: Tasting to Testing and Treatment – Part 1

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Diabetes mellitus (DM) is a metabolic disease, involving inappropriately elevated blood glucose levels. Globally, 1 in 11 adults has DM. Diabetes occurs when the pancreas is no longer able to make insulin, or when the body cannot make good use of the insulin it produces.

Scientists and physicians have been documenting the condition now known as diabetes for thousands of years. From the origins of its discovery to the dramatic breakthroughs in its treatment, many brilliant minds have played a part in the fascinating history of diabetes.

ANCIENT TIMES

The first reference to diabetes mellitus is attributed to the **Ebers Papyrus,** which mentions remedies for the treatment of excessive urination. Commemorative stamp issued by Egypt in 1971 for the World Health Day features a section of the Ebers Papyrus and a portrait of the Egyptian physician **Hesy re.** In 1981 Germany also issued a stamp on Ebeyr's Papyrus.

Although the Greek physician **Hippocrates,** (460 – 377 BCE)"the father of medicine," though he did not

specifically mention diabetes in his writings, there are accounts in the Hippocratic writings that are consistent with the signs and symptoms of diabetes. There are references to excessive urinary flow with wasting of the body. **Galen,** (129-200 CE), the most influential medical writer of all time, discussed diabetes in a number of his works. He stressed that diabetes was a disease of the kidneys and affirmed its rarity, as he had only seen two cases. He referred the disease as "diarrhea of the urine" and "the thirsty disease."

Muhammad al-Razi, (865 925), or Rhazes was the greatest clinician of the Islamic world, and author of more than 230 books. He described diabetes and its treatment in his books. Rhazes' method for the detection of sugar in urine was to have the patient urinate on the ground, then watch for ants to gather.

Aretaeus (130-200 CE) provided the first accurate description of the symptoms of diabetes notably excessive thirst, weight loss as a 'melting down of flesh and limbs' into urine. He named diabetes from Greek

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'siphon' and 'flowing out'. The stamp issued by Trankei shows Aretaeus and a section of his classic description on diabetes.

Sushruta (500 BCE) the Ayurvedic physician, described the sweet taste of diabetic urine. He termed it 'madhumeha' or honey urine. It was common practice to taste urine if diabetes is suspected. He also observed that ants were attracted to the urine of diabetics. Ayurveda described two different forms of presentation, younger thinner patients and older and more obese patients. **God Dhwanantari, Susrutha and Patanjali** are featured in stamps from Nepal, Srilanka and India.

MIDDLE AGES

Avicenna (980–1037) or Ibn Sina is the most famous and influential of the philosopher-scientists of the medieval Islamic world. Avicenna provided a detailed account of diabetes in ""The Canon of Medicine". He described abnormal appetite and the decline of sexual functions along with sweet urine. He also identified diabetic gangrene. The Austrian stamp issued in 1982 shows a picture of Avicenna holding up a flask specially made to examine urine.

Maimonides (1135-1204) was a renowned medieval physician, and philosopher. Although Galen wrote that diabetes was rare and that he had seen only two cases of this illness, Maimonides claimed to have seen more than 20 cases. He proposed that diabetes was caused by the sweet waters of the Nile and the prevailing heat that spreads over the kidneys.

RENNAISSANCE PERIOD

Renaissance physician Paracelsus challenged the medical doctrine of the time and attempted to reform medical thinking. Paracelsus obtained a white residue on evaporation of urine which he believed as salt and theorized that salt in the urine caused diabetes. **Andreas Vesalius** (1514 –1564) Renaissance physician who revolutionized the study of biology and the practice of medicine by his careful dissection and description of the anatomy of the human body. Although he described the structure of pancreas, its function was not known at that time.

PERIOD OF EXPERIMENTS

The Experimental Period in the history of diabetes began with the experiments of **Claude Bernard** (1813–1878). He discovered that the liver releases a starch-like substance that he called "glycogen," which was the precursor of glucose, This observation established the liver's role as a vital organ in diabetes. Claud Bernard is featured in a Transkei stamp which also shows a picture of liver and the chemical structure of glucose. German scientist **Oscar Minkowski** (1858–1931), demonstrated conclusively that removal of the pancreas from a dog results in the production of fatal diabetes. This was the turning point in determining the endocrine function of the pancreas. The Lietuva stamp

features apart from Minkowski his thesis and a picture of pancreas.

American scientist **Stanley Benedict,** (1884-1936) discovered a chemical test that can be used to check for the presence of reducing sugars in urine. The test is still very popular. The 1971 Belgium stamp depicts the Benedict's test.

In 1869, while still a medical student involved in histological research, **Paul Langerhans** (1847-1888) discovered little heaps of cells in the **pancreas** of the rabbit. Their distinctive arrangement suggested the presence of islands, but their central role in diabetes was only recognized later, in the progressive work of other researchers.

THE DISCOVERY OF INSULIN

The discovery of insulin has been a milestone that has truly revolutionized both the therapy and the prognosis of the diabetes. In 1920 **Frederick Banting** (1891-1941) began research work at University of Toronto under **John Macleod** (featured in Guyana stamp) (1876-1935). Banting and **Charles Best** (1899-1978) using laboratory dogs, excised pancreas and prepared pancreatic extracts and injected it to depancreatised dogs. James Collip (1892-1965) joined research in late 1921 to help improve quality and purity of extracts. Together they found that daily administration of pancreatic extract could extend the life of diabetic dogs.

First recorded use of insulin on humans happened in January 1922; a pancreatic extract prepared by Banting and Best was given to 14 year old L. Thompson who was in coma with severe diabetes, and a fall in blood sugar was noticed. Repeated later with a purified extract prepared by Collip an even more significant reduction in blood sugar occurred.. Subsequently many patients in the hospital were treated with insulin.

The first living subject to demonstrate a desired effect from the pancreatic extract that Banting and Best discovered, was the dog usually identified as Marjorie or Dog number 33. **Marjorie** is featured in many stamps along with Banting and Best.

END NOTE

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Conflict of Interest: None declared

To be continued…