

Diabetes Mellitus: Tasting to Testing and Treatment - Part 2

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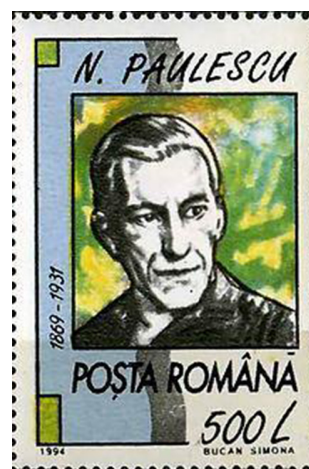
The discovery of insulin stands as a remarkable milestone, not only in medicine but also in the history of humanity. For children with type 1 diabetes, who are unable to produce insulin, survival was once limited to mere weeks or months. For them, insulin is far more than just a medication—it is a lifeline.

Anniversaries of the discovery of insulin are celebrated on postage stamps around the world. To commemorate the 50th year, a stamp issued by Canada in 1971 depicts the laboratory materials used by Banting and Best.



One hundred years of discovery of insulin by Banting and Best was commemorated by their native country Canada with a stamp, displaying the image of a vial of Insulin-Toronto, produced by Connaught Lab in 1924;

and of an excerpt of Banting's handwritten memoir. The newspaper report of the momentous day can be seen on the Pakistani stamp along with the picture of Banting and Best.



Unfortunately, the work of Romanian scientist Nicolae Paulescu (1869-1931) in the discovery of insulin is not well recognised. In 1921 Paulescu (1869-1931) isolated a substance from pancreatic islets which he called 'pancreine' and discovered that its injection induced hypoglycaemia in dogs. Despite the fact that Paulescu published his findings, he failed to get adequate recognition.

MAS PRODUCTION OF INSULIN



In the next year itself Lilly's Pharmaceuticals started its industrial production and marketing of insulin. Lilly's insulin was made from pork pancreas and was called

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iletin. For many years slaughterhouse pigs were the only source of insulin.



Nobel laureate, **August Krogh** (1874-1949), who had met with Banting and Macleod in Toronto, became actively involved in the ongoing development of insulin.

August Krogh and his wife Marie brought insulin to Denmark. Together with Hans Hagedorn the Kroghs founded Nordisk Insulin laboratorium in 1923. Hans Hagedorn later developed the long acting NPH insulin.

THE STRUCTURE OF INSULIN



The primary structure of insulin, which consisted of two amino acid chains linked by two disulfide bonds, was only established in the early 1950's by the British biochemist **Frederick Sanger**. His work on insulin enabled chemists to synthesize insulin artificially.



British chemist, **Dorothy Hodgkin** (1910-1994) developed X-ray crystallography at Oxford, the technique she then used in 1969 for defining the complete three-dimensional structure of insulin. American **Rosalyn Yalow**(1921-2011) developed the radioimmunoassay method, using insulin, which, at that time, was the only purified and adequately characterized protein available. She also found that patients treated with insulin developed insulin antibodies.



Insulin crystals are depicted on stamps issued by Denmark as part of the 50th anniversary of the Danish Diabetic Association and on Japanese stamp as part of the 15th International Diabetic Congress.



Gerty Radnitz Cori (1896-1957) and her husband **Carl Cori** (1896-1984) clarified the biochemical reactions involved in the glucose-glycogen inter conversion now known as the Cori cycle. The treatment of diabetes is based partly on understanding the disposition of stored liver glycogen the source of glucose.

GLUCOMETERS

A blood glucose meter is a small, portable machine that's used to measure the blood glucose level. People



with diabetes often use a blood glucose meter to help them manage their condition.



PREVENTION OF COMPLICATIONS

Diabetes is a growing threat to human health, affecting around 463 million people worldwide. A normal life expectancy is possible for any diabetic if diagnosed early and treated properly. But if diagnosed too late or not treated properly, it can lead to serious complications. Dominican Republic 1974 Anti Diabetes stamps depict an eye, a heart and a kidney which are the organs commonly affected in diabetes.



Diabetes is one of the leading causes of heart attack and stroke. Diabetes affects the blood vessels in the eyes and causes loss of vision. Austria 1979 stamp on World Congress of Diabetes Federation features diabetic retinopathy and the Aruba stamp has a patient having stroke.



Diabetes complications can include nerve damage and poor blood circulation. These problems make the feet vulnerable to skin ulcers that can worsen quickly. Good diabetes management and regular foot care help prevent severe foot sores that are difficult to treat and may require amputation.



Bernardo Houssay was an Argentinean physiologist who showed that pituitary ablation in dog normalized its blood glucose. He won a Nobel Prize for this finding. Before the advent of laser, pituitary ablation was used in selected patients to treat proliferative diabetic retinopathy.

WORLD DIABETES DAY



World Diabetes Day is the primary global awareness campaign focusing on diabetes mellitus and is held on 14 November each year. The day itself marks the birthday of Frederick Banting.



World Diabetes Day provides an opportunity to raise awareness of diabetes as a global public health issue and what needs to be done, collectively and individually, for better prevention, diagnosis and management of the condition. The World Diabetes Day logo is the blue circle – the global symbol for diabetes as seen in the Uruguay stamp.



Brazil marked World Diabetes Day in 1992 with a stamp displaying a stylized hummingbird, with a tail that represents Clinistix.

Keeping weight in check, being active, eating a healthy diet and taking the right treatment can help prevent most of the com-



plications of diabetes. All these steps are depicted in the two stamps issued by Cabo Verde.

END NOTE

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Conflict of Interest: None declared

To be continued...