

# The History Diabetes Mellitus of The Reflection of Collection Tools

Konstantin Anatolyevich Bugaevsky \*

The Petro Mohyla Black Sea State University, Nikolaev, Ukraine.

\*Corresponding Author: Konstantin Anatolyevich Bugaevsky, The Petro Mohyla Black Sea State University, Nikolaev, Ukraine.

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## Abstract

The article presents the materials of a study devoted to the reflection in the means of collecting the memory of the history of the study of the emergence, development and treatment of diabetes in children and adults (type I and II), as well as about the scientists who left their significant scientific and practical contribution to the problem of combating diabetes mellitus.

**Key words:** type i and ii diabetes; insulin and insulin therapy; philately; stamps; postal envelopes; thematic postal blocks; numismatics; commemorative and table medals and coins

## Introduction

Today, it is statistically established that millions of people - children, adolescents, adults and the elderly - have diabetes throughout the world. This disease, known to people - doctors and researchers since antiquity, is still a challenge to humanity, worsening the quality of life, leading to disability and even death, hundreds of thousands of people every year. All this leads not only to persistent impairment of health, but also to multibillion losses in the economic sphere, leading to the fall of the economy and the standard of living on the planet. Therefore, not by chance, the problem of diabetes in millions of children, young people and adults, has found a worthy reflection in such means of collecting the world, as philately, faleristics, numismatics. In this article, with the help of these types and means of collecting, used as a way to illustrate the text of the author's research article, an interesting and exclusive information is presented, for the interested reader.

## Aim

The purpose of this article is to present, for the judgment of the esteemed reader, the results of the study conducted by the author, thematically related to the reflection in a number of collecting instruments, in particular in philately and numismatics, collecting materials directly related to the problem of diabetes as in children, teenagers and young people, as well as in adults.

## Methods and means of research

When writing this article, the authors made a search, selection and analysis of all available sources of information concerning the display of information about diabetes mellitus, its history, diagnosis, treatment and prevention, in the reflection of such means of collecting as philately and numismatics. First of all, Internet pages and sites belonging to collectors - philatelists and numismatists, interested and engaged in this problem were used. These were articles and selections of illustrative material devoted to various aspects of diabetes mellitus. All the illustrative material presented in the article was made in the form of screenshots, with full and obligatory observance of copyrights.

## Results of the study and discussion

Speaking of diabetes mellitus, it should be noted that it was known about it as a serious disease, and attempts to diagnose and treat it were made in ancient times, in ancient Greece (Areteus and Hippocrates), the Middle East (Avicenna, Maimonides and several Arab physicians), China and Asia. Rather actively studied this problem, scientists were engaged in the nineteenth and twentieth centuries. Figure 1, shows a small philatelic selection, about scientists who have actively studied the problem of diabetes, in the past [1-5].



**Figure 1:** Famous scientists who have dealt with the problem of diabetes mellitus

Scientists were quite actively studying this problem in the nineteenth and twentieth centuries. I would like to begin my story with the presentation of brief data concerning the life and scientific activities of the Romanian scientist, who first began to study the issues of insulin isolation from pancreatic tissues - Nicolae Paulescu (1869-1931). In 1921, Nicolae Paulescu isolated a substance from pancreatic islets ("pancrein") and found that its injection caused hypoglycemia in dogs [1-5,29]. Nicolae Paulescu is the real pioneer of insulin, who developed the substance in 1916 and experimented with it on the dog. Paulescu was forced to interrupt his work because of World War I, and he did not publish his work entitled "A Study of the Role of the Pancreas in Food Absorption" in Archives Internationales de Physiologie until August 1921, and filed a patent 6254 for his invention on April 10, 1922 to the Romanian Ministry of Industry and Trade [1-5,29]. In 1916 he succeeded in developing an aqueous pancreatic extract which, when administered to an adiabetic dog, had a normalizing effect on blood sugar levels. After a break, during World War I, he resumed his research.

From April 24 to June 23, 1921, N. Paulescu published four articles in the Romanian branch of the Society of Biology in Paris: "The effect of pancreatic extract injected into an animal with diabetes by injection," "The effect of time elapsed from intravenous injection of the pancreas into an animal with diabetes," "The effect of pancreatic extract injected into a normal animal through blood." An extensive article on this subject, "A Study of the Role of the Pancreas in Food Assimilation," was submitted by N. Paulescu on June 22, in Archives Internationales de Physiologie in Liège, Belgium, and was published in the August 1921 issue of that journal. [1-5,29]. This Romanian scientist did much in the study of insulin and the pathogenesis of diabetes mellitus and quite deserved to become a Nobel Prize winner, but, alas, he never became one! Unfortunately, there are not many philatelic materials devoted to N. Paulescu. Fig. 2, presents philatelic materials from Romania and Ukraine (postage stamps and first-day envelopes) devoted to this great Romanian scientist [1-5, 64].



**Figure 2:** A selection of philatelic materials dedicated to Nicolae Paulescu

A separate, small selection, in Figure. 3, presented, in obverse and reverse, two commemorative bronze medals dedicated to the contribution of N. Paulescu, in the study of insulin, with his portraits on the obverses [6-9,29]. In 2021, the great Romanian scientist will celebrate his 90th birthday. The

National Bank of Romania issued two commemorative coins, gold and silver, dedicated to the memory of Nicolae Paulescu, with his portraits on the obverse and the insulin formula on the reverse [6-9,29, 64].



**Figure 3:** Commemorative medals dedicated to Nicolae Paulescu

Next, I would like to briefly describe Oskar Minkowski's contribution to the study of insulin and diabetes mellitus. Oskar Minkowski (1858-1931) was born in Alexothen, Russia. He studied medicine in Strasbourg and received his doctorate in Königsberg from the famous Bernard Naunin. He was looking for practical conclusions from the experimental study of metabolic disorders. O. Minkowski was curious to know if a dog could survive after removal of the pancreas, and if so, what effect this would have on the digestion of fats and proteins. This pivotal study of the pancreas proved to be one of the most important and unexpected experimental observations in the history of diabetes. It was performed with Joseph von Mering while he was working as an assistant to Naunin, in 1889. The development of massive

glucosuria within 24 hours after pancreatectomy was a new finding. Oskar Minkowski performed additional studies to see if other lesions or injuries caused by the surgery were the cause of the glucosuria. Diabetes did not develop when the pancreas was removed from a site with intact vascular connections to the duodenum or when only partially removed. Thus, Oskar Minkowski provided convincing evidence that only after total pancreatectomy did glucosuria appear, followed by death in an animal whose liver was extremely low in glycogen. His name remains one of the first among those who contributed to the understanding of the pathogenesis of diabetes mellitus and the involvement of insulin in this process [10]. Fig. 4, presents philatelic materials (postage stamps and a small sheet) of Lithuania and Transkei country dedicated to this scientist [10, 11, 64].

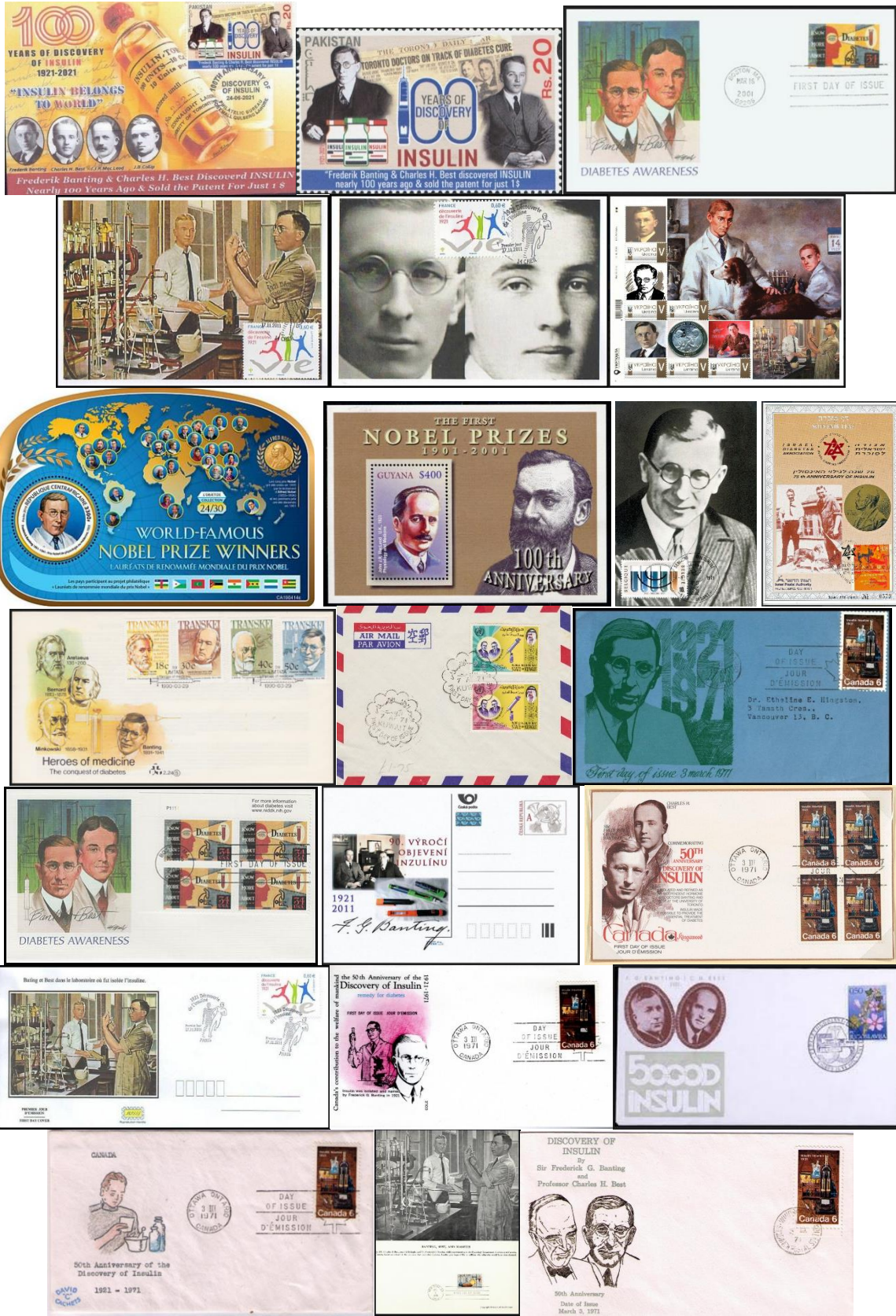


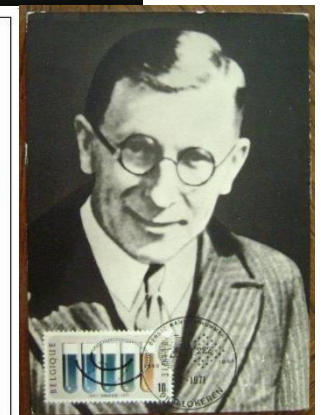
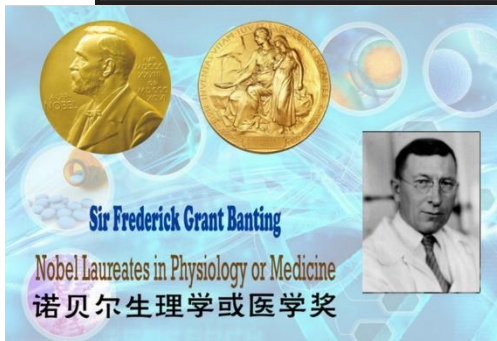
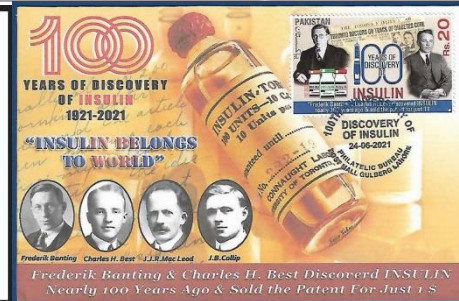
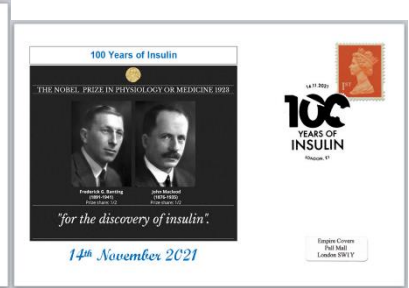
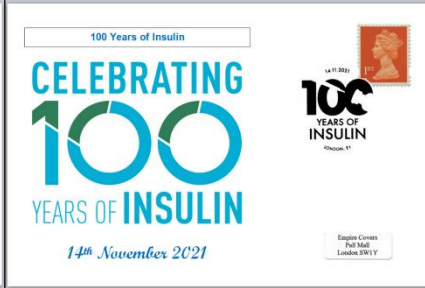
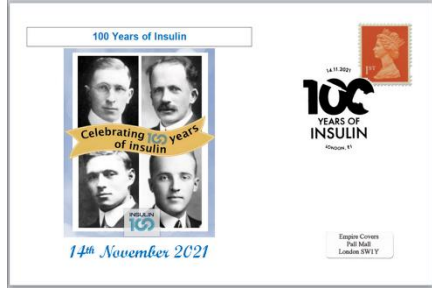
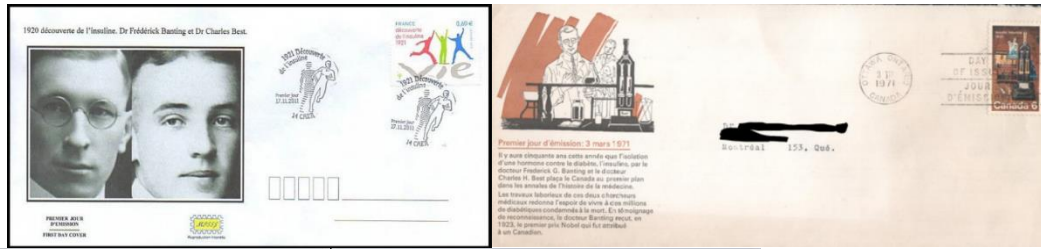
**Figure 4:** Philatelic materials devoted to Oskar Minkowski

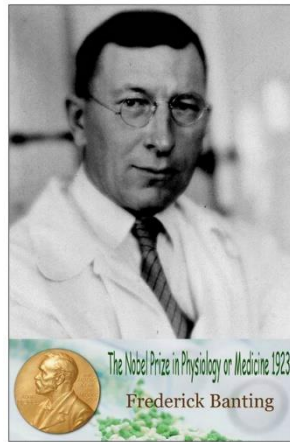
A great contribution to the study of insulin and the understanding of the pathogenesis of diabetes mellitus was made by such scientists as the Canadians Frederick Grant Bunting and Charles Herbert Best, as well as the Scottish scientist John McLeod. After the work of N. Paulescu in 1921 on the isolation of insulin, a year later, in 1922, Frederick Grant Bunting (1891-1941), Charles Herbert Best (1899-1978) and John James Richard McLeod (1876-1935) isolated the same substance and called it "isletin" - islet. Later its name was changed to "insulin". For the first time, this substance, was administered to L. Thompson, a 14-year-old diabetic patient, in Toronto

General Hospital in 1922. Lilly pharmaceuticals (Figure 6) began commercial production and sale in 1923; the same year, F.G. Bunting and C.G. Best received the Nobel Prize in Medicine for their discovery [12-25]. There is a considerable amount of collection material devoted to these scientists. First, in Fig. 5, there will be philatelic materials dedicated to them. These include postage stamps, first-day envelopes, postal blocks, cartomaxims, and postal cards from various countries of the world [12-25, 64].









**Figure 5:** Philatelic materials devoted to F.G. Bunting, C.G. Best, and J. McLeod

A separate selection, in Fig. 6, are commemorative medals dedicated to Nobel Prize winners, in the field of physiology and medicine, F.G. Bunting, C.G. Best and J. McLeod [3, 26-31,64].



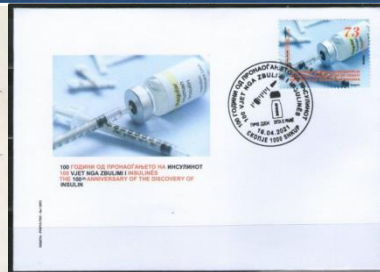
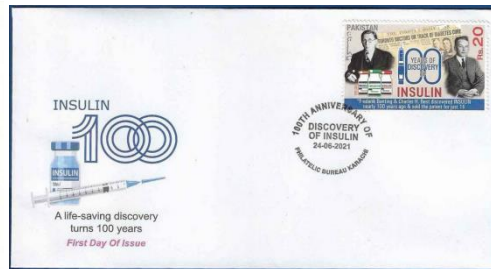
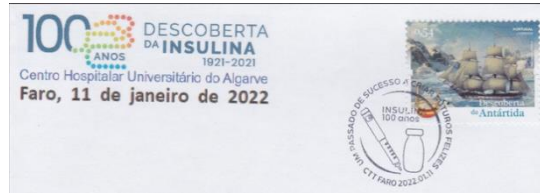
**Figure 6:** Commemorative medals dedicated to F.G. Bunting, C.G. Best, and J. McLeod

There are quite a lot of philatelic materials devoted to insulin, its discovery, crystal form and structural volumetric formula, presented on postage stamps, PACs, and postal blocks, of different countries of the world. A selection of philatelic materials, including postage stamps, KPD, postcard and postal

blocks, devoted to insulin (its production and use), which is very actively used in patients, all age groups, in treatment of type I and II diabetes, are presented in Fig. 7 [50-54, 64]. In the same figure, also represented, philatelic materials, with the image of insulin formula.









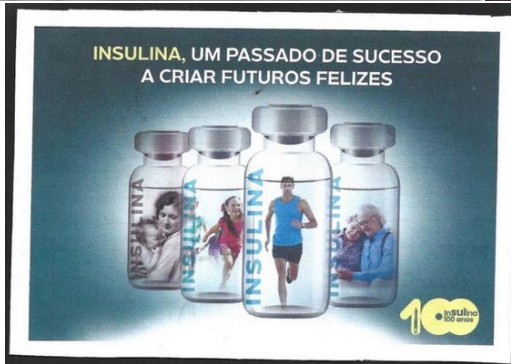
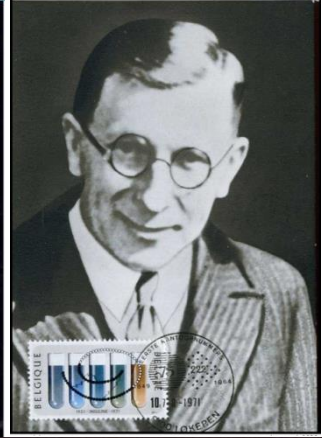
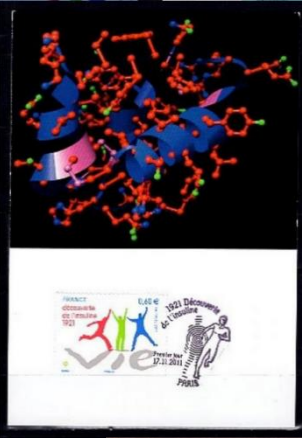




Figure 7: philatelic materials devoted to the discovery, production and use of insulin

Figure 8, shows a small numismatic and bonistic selection (a number of commemorative British coins), and a Canadian \$100 bill and a lottery ticket commemorating the discovery of insulin [50-54, 64].



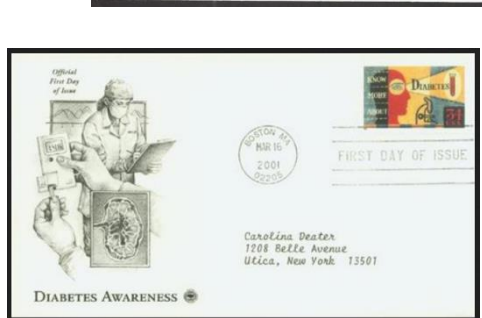
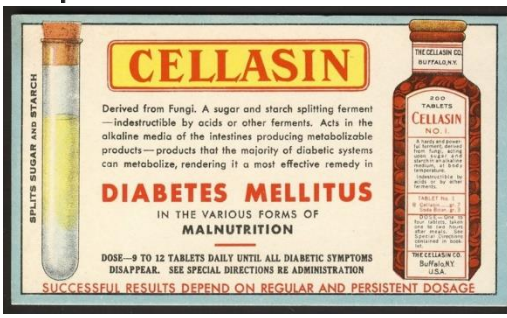
Figure 8: A selection of collector's materials and a bill dedicated to the 100th anniversary of insulin discovery

Also, there are philatelic materials that tell about the use of insulin by people of different age groups, including children and adolescents, with type I diabetes, in their daily lives, including physical training and sports, the use of dietary food. Also, in the same figure, there are philatelic materials

presenting the process of determining blood glucose levels and using a glucose meter. Educational programs, on an ongoing basis, are held during World Diabetes Day. These materials are presented in Figure 9 [54-57, 64].



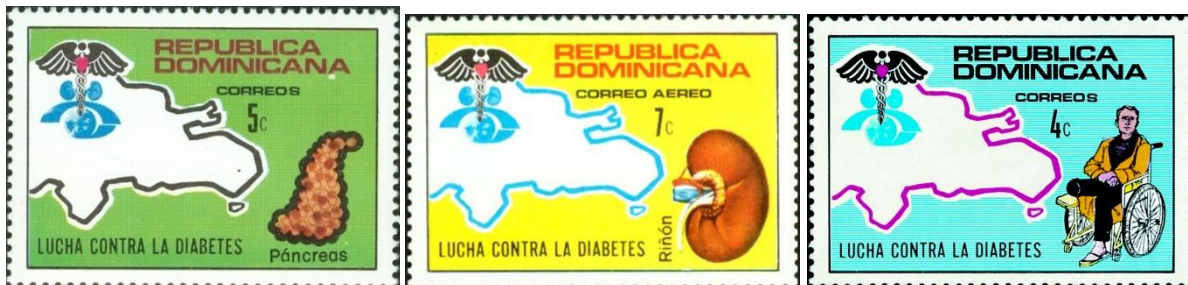






**Figure 9:** Diabetes Days and Learning to Live with Diabetes for both children and youth and adults

Figure 10, shows a small selection of postage stamps devoted to complications of diabetes mellitus, in patients of different age groups [54-57, 64].







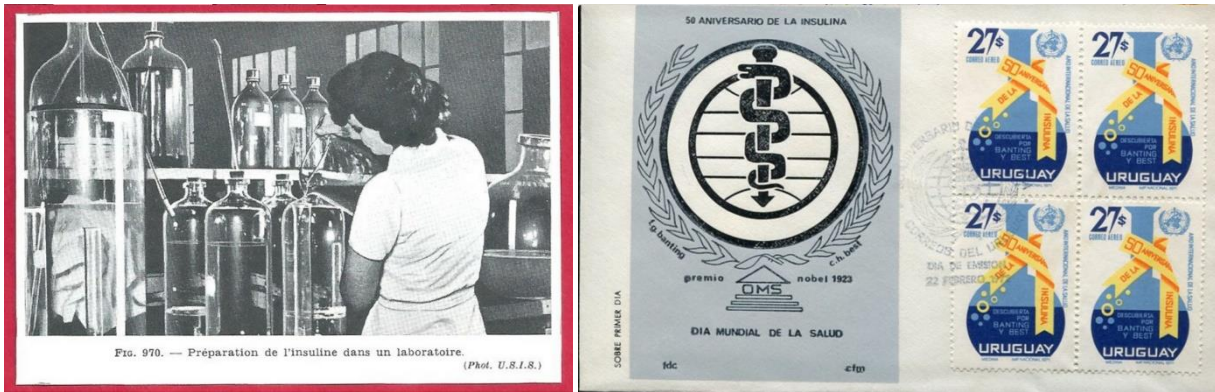


Figure 10: Philatelic selection devoted to complications of diabetes mellitus

Figure 11, at the conclusion of this article, presents a small selection of faleristic materials - commemorative badges and medals-amulets, and coins Canada, dedicated to diabetes and the patron saint for people of all ages with diabetes - "Patron saint of diabetes - Josemaria Escriva [64].











**Figure 11: Numismatics and Bonistics Materials on Diabetes Mellitus**

This article, is one, of a series of articles devoted to diabetes mellitus and various diseases in children.

### Conclusions

1. This article, in a creative, non-standard way, presents interesting information about diabetes in children, young people and adults (type I and II), as well as the 100th anniversary of the creation of insulin, illustrated, with the presentation of different means of collecting - philately, numismatics, faleristics and bonistics, in all their completeness and the variety of presented illustrative materials.

2. Materials of this article, can be used for classes on the history of medicine, endocrinology and several other disciplines in medical and biomedical universities.

3. The data presented in the article, including extensive illustrative (collection) material, can be of interest not only for collectors, but also for teachers, students of universities, as well as for all interested readers.

**The author denies any conflict of interest in writing this article.**

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