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E. Hedón and E. Gley, the Pioneers of the Siscovery of the Antidiabetic Hormone (1892—1900), Antedated Insulin (1922).

The demonstration in Strasbourg by O. Minkowski that pancreatectomy in the dog is a cause of diabetes mellitus (von Mering & Minkowski, 1890) has been the most important discovery in the history of this disease and the impetus for all the subsequent long work aimed at extracting the antidiabetic hormone (ADH) (R. Luft, 1989).

In 1923 the Scottish John James Rickard Macleod and the Canadian Frederick C. Banting received the Nobel Prize in Physiology or Medicine for the discovery of insulin in 1922, a decision that has been the subject of considerable controversy until today.

In 1891 and 1892, Emmanuel Hédon, professor of physiology at the University of Montpellier, described original procedures of two-stage pancreatectomy (partial and total exeresis) and subcutaneous transplantation of pancreatic fragments in the dog to support the basic principles of the theory of experimental diabetes. Influenced by the French Claude Bernard, Hédon injected paraffin into the excretory ducts of the pancreas responsible for acinar atrophy and sclerosis, and demonstrated that „the degenerated pancreas“ did not induce diabetes, reaffirming the idea that the disease only occurred after the complete removal of the gland and that the digestive function of the gland was unrelated to the endocrine dysfunction of diabetes. For Joseph Pratt, professor of history of medicine at Harvard University: “Hedón has asserted that the internal secretion of the pancreas will remain a hypothesis until it is possible to isolate from the gland a substance, the injection of which will check completely the diabetes of a depancreatized dog” (Pratt, 1910).

Between 1890 and 1900, Eugène Gley, professor at the Sorbonne and at the Collège de France, conducted multiple experiments on pancreatectomized dogs, confirming the findings of Minkowski and Hédon on experimental diabetes. In addition, he prepared aqueous extracts of the „sclerosed pancreas“, atrophic, without exocrine activity, that he injected by intravenous, portal and peripheral veins, to pancreatectomized dogs (technique of Hédon) with evidence of experimental diabetes, observing in the urine of these animals reduction of glucose and ketonic bodies, and clinical improvement (1900).

Gley had previously demonstrated that the regulatory function of the „anti-diabetic principle“ of the pancreas extended to the liver: glycosuria by pancreatic removal did not occur if the liver was simultaneously removed (experiments on frog, 1891; furthermore, the injection of pancreatic extract into the pancreatectomized dog increased the liver glycogen content by 20% (1910)). In his book Carbohydrate Metabolism and Insulin (1926), JJR Macleod wrote: “He (E. Gley) prepared extracts from sclerosed remains of pancreas, and found them to diminish considerably the sugar in the urine of depancreatized dogs, and to alleviate all the other diabetic symptoms”.

The discovery of the anti-diabetic hormone and the treatment of isolated clinical cases was the result of successive contributions by European researchers, initiated by Minkowski, Hédon and Gley in the last decade of the 19th century, and continued by others in the first decades of the 20th century. The final purification of the active pancreatic extract (acomatol, pancrein, insulin) made possible the general treatment of diabetes from 1922 onwards.

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