

### ***What is Insulin?***

Insulin is a hormone in the human body that keeps your blood sugar from being too high or too low. Insulin is also used to treat people with type 1 diabetes.

### ***Developing Insulin for medical usage.***

In 1921 Canadian physician Frederick Banting and medical student Charles Best discovered a hormone in a dog's pancreatic extract. On July 31, 1921 they decided to inject the hormone into a diabetic dog and found out that it lowered the blood sugar levels in the dog to normal. But extracting insulin from dogs was time consuming so they looked elsewhere to extract insulin from. Banting suggested that they extract it from fetal calf pancreas but in the end, they successfully extracted insulin from an adult cow's pancreas. So, with the help of Canadian biochemist James B. Collip and Scottish physiologist J.J.R. Macleod they managed to purify the insulin and were ready for a clinical test. In January 11, 1922 a 14-year old diabetic boy named Leonard Thompson lies dying at the Toronto General Hospital and was given the first injection of insulin. However, the extract was still impure, so it triggered a severe allergic reaction from Thompson and further injections were cancelled. For the next 12 days Collip further purified the extract and was ready for another test. On the second dose it eliminated glycosuria (Urinating glucose) that was common in people with diabetes with no harmful side effects. After developing techniques to mass produce insulin and purifying it further it was ready to be distributed to the public in 1922.

### ***Insulin Today***

Insulin people use today are mostly synthesized examples including Synthesized Bovine Insulin, and Genetically synthetic human insulin using E. Coli.

### ***Insulin of the future***

In the future I believe that there will be more ways to synthesize insulin maybe faster ways or more cost effective. The use of insulin will probably stay the same. The price of insulin should probably decrease as more people with diabetes need insulin especially in America. I think that the future of insulin is pretty good it isn't as good as electric cars or something like that but insulin being more accessible is probably as important as electric cars.