

Hormone Dependency: Insulin and Type 1 Diabetes

"Research using non-human primates has played a major role in improving human and animal health, and this continues to be the case" - Dr. Mark Walport

It was a late night when my mom received an urgent phone call from back home. My great grandmother had been admitted into the hospital. She had fallen down a flight of stairs due to sudden blurred vision. The doctors' diagnoses: type 1 diabetes. The doctors said that she had genetically acquired it, although very sudden. It was escalating quite rapidly, which is what caused the blurred vision to unexpectedly occur. The doctors mentioned that if her illness wasn't treated urgently, she had a very high chance of losing her vision completely. Our family was devastated to hear the effects of type 1 diabetes. However, that night it wasn't only my great grandmother who was diagnosed with such a discouraging disease. That night my grandmother and mother were also diagnosed with diabetes. Our lives were changed forever.

It was a drastic change to see that the three most significant women in my life were now dependent on a hormone. Both of my grandmothers were losing weight drastically and had severe fatigue. Without a daily dose of insulin, their health would begin to deteriorate once again. Fortunately, that night, the doctors were able to treat my great grandmother and give her the right medications to cease the development of sight loss. My mother and grandmothers were confused as to what insulin did and why they needed it. Why is insulin so crucial to diabetics, and why can't they live healthy lifestyles without it?

Insulin is a hormone that is produced by the pancreas to maintain the glucose levels of individuals in a homeostatic balance. The glucose that is broken down is used for and often stored as an energy source, which is why many diabetics often feel in a state of constant fatigue. My grandmother's and mother's pancreas, however, wasn't producing

the insulin it needed to store and break down sugar. Their beta cells were damaged, thus causing them to have hyperglycemia. Hyperglycemia is when the blood has elevated levels of glucose that go above the reference range. Hyperglycemia can cause ketoacidosis and eventually lead into coma. However, one of the most innovative treatments for type 1 diabetes is insulin therapy or injections.

Insulin injections were first discovered by Frederick Banting and Charles H. Best. They noticed that the main source of diabetic symptoms came from the pancreas when they removed it from a dog. Soon after, they began to extract insulin from other animals, including dogs, and injected it in a diabetic dog. The outcomes were revolutionary. The symptoms and glucose levels were minimized after the dog received insulin injections. A year after their discovery, they injected insulin they had extracted from a dog into a young boy with diabetes. This was a metamorphic finding. Diabetics all around the world would finally have a treatment that would help them live longer and healthier lives. Before insulin injections were discovered as a treatment, diabetics didn't live long, and their only treatments available were strict diets. These diets often consisted of minimal caloric intake (less than 500 calories a day). This treatment just made even more diabetics die, due to starvation.

Without animal testing, the treatment for diabetes would not have been discovered. Dogs as well as cats, cattle, pigs and rats have all been used as research to find treatments and cures for diseases such as diabetes. A lack of animal testing would drive scientists to experiment and conduct research on humans, or even worse, not have any medications, treatments or cures for any illness or existing diseases. The composition of these animals allow for scientists and engineers to develop safe medications and treatments. Millions of people die each year due to the complications that are acquired from diabetes. Many die from strokes, hypertension, heart attacks,

blindness and complications of amputations- all caused by diabetes. This disease has immense counter effects on the lives of many.

My grandmothers and my mother would not be living at this moment if it weren't for the discovery of insulin injections, thanks to animal testing and research. Millions of people wouldn't be living, and millions would continue to die. Testing on animals has helped not only humans, but animals as well in developing medications and treatments. I would not be the student and individual I am today without the most important women in my life. Animal testing saves us; it does not burden.

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