

Lizard Spit

By Philip R Nicol MD

One of the undesirable side effects of using diabetic medicines that has plagued us for years, has been weight gain. It is unfortunate to do all of the things that are asked of you, such as multiple fingersticks, taking multiple medicines, dieting and exercising and then gain weight for all your efforts. Unfortunately, it is all too common. Insulin usually causes weight gain. Actos (pioglitazone) and Avandia (rosiglitazone) frequently cause weight gain. Drugs in the same family as Glucotrol (glipizide) and Amaryl (glimepiride) sometimes cause weight gain. The one widely used drug that does not cause weight gain is Glucophage (metformin).

Finally, we have a drug available that, not only doesn't cause weight gain, but actively promotes weight loss. Byetta, given by injection only, arrived in 2005 and diabetes specialists all over the country have been gaining experience with the drug to see if the reality is as good as the hype preceding the launch. I'm happy to say that, at least in my practice, expectations are being fulfilled.

A recent article in our local newspaper mentioned the scientific origin of Byetta with the above entertaining reference to Gila Monster saliva. A natural substance identified in the saliva of the Gila Monster was found to have properties of interest to diabetics. The substance that has emerged from that research has been manipulated by the scientists, to give it properties suitable for pharmaceutical use in humans. For the squeamish you can relax, it is a synthetically made drug. You are not receiving injections of saliva.

So what are the properties of Exenatide, the correct pharmaceutical name of Byetta, that make it attractive as a medication? The drug mimics the effects of a hormone produced by the lining of the upper intestine in response to a meal. That hormone is called GLP-1. When GLP-1 is released in people it has a number of effects that assist in the handling and disposal of a glucose (sugar) load.

Firstly, insulin output is increased. This helps dispose of the blood sugar by promoting storage of the glucose in muscle, liver and fat, thereby reducing the post meal sugar spike that many researchers believe is so harmful.

Secondly, production of the hormone glucagon is reduced. Glucagon can be thought of having the opposite effects to those of insulin. It can raise blood sugar by causing excess release of glucose from the liver. Clearly this is not a desirable thing if you are diabetic. In diabetics there is often excessive production of glucagon. Having the ability to switch off the glucagon production is a real plus and that is exactly what Exenatide does.

Thirdly, gastric emptying is delayed. Gastric emptying is the rate at which the stomach empties after a meal. Now the relevance of that may not be immediately obvious, but if you can slow down the rate of gastric emptying, then you slow down the rate at which glucose is presented to the first part of the intestine where it is absorbed. This once again contributes to reduction in the post meal spike of sugar.

Fourth and finally, there is felt to be a central effect in the brain causing a reduction in appetite. This is obviously a valuable property, as so many diabetic drugs tend to stimulate appetite.

In the real world of my practice, we have been using Byetta frequently over the past 18 months. No two patients are going to have exactly the same response, but I feel comfortable making the following generalizations. Blood sugar responses have been impressive. Many patients are seeing readings that they have not seen for years. We have often been able to decrease doses of, or discontinue, other diabetic medications. This means that we have been removing the agents that have been promoting weight gain. And the weight loss is real, sometimes just a few pounds, sometimes as many as 10 or 20 pounds. The major side effect associated with the drug, which is nausea, has not proven to be too troublesome, although I have had some patients who had to discontinue using it.

So, medicine can be strange. From a scientist messing around with Gila Monster saliva, to a new drug with remarkably useful actions. Who would have guessed?

Dr Philip Nicol is the Director of The Diabetes Center, the only medical practice in the region devoted solely to the care of diabetics. Dr Nicol has received recognition from The Diabetes Physician Recognition Program, a joint program of the NCQA and the

ADA, for the period March 2005 through February 2008, for providing quality care to diabetic patients. The Center offers free, no obligation screening for diabetes and pre-diabetes Monday-Friday. To contact Dr Nicol, or to schedule a free screening, call 843-293-8400.