Incretins and Diabetes Mellitus

Dr. Balwant Singh, MBBS, Ex Capt AMC

The discovery of incretins can change the entire concept of diabetes mellitus for medical professionals and endocrinologists around the world. It was believed that diabetes type 2 was related to dysfunction of pancreas and beta cells of islets of Langerhans. The insulin is not produced in sufficient quantity to control the level of sugar in blood of the diabetics or the body gets resistant to the effects of insulin. The diabetes is controlled very effectively by the use of oral anti diabetic drugs initially but in many cases the drugs used to fail to control the sugar to the desired level and then we have to switch on to use the insulin injections in different forms so as to have desired immediate, intermediate or long time effect of the insulin. The impact of incretins- the hormones produced by intestines has come to be realized in recent times. There are two hormones in this group, GIP-Gastric Inhibitory peptide also known as glucose -dependent insulinotropic polypeptides and GLP-1-Glucagon like peptide -1. The impact of hormones on pancreas is much stronger than the raised blood sugar to stimulate insulin production. So incretins play a key role in control of blood sugar in all people.

The incretins help the body to control the better level of blood glucose through different means: increase the insulin production by pancreas; slow the rate of absorption of nutrients from stomach and delays the gastric emptying and thus directly reduce the food intake; these hormones also inhibit the production of glucagon by the alpha cells of islets of Langerhans. Glucagon stimulates the production of glucose in the body. The incretin production can be promoted or inhibited by certain agents produced in the body. The body produces DPP-4, [Dipeptidyl dipeptidase -4] that rapidly inactivates the GIP and GLP -1. So drugs which inhibit the production of DPP-4 or promote the production of GLP-1 are being used to help the diabetics.

My main objective of writing this article is to share with you the effects of very low glycemic index commonly used food items on glucose control or I would say on production of incretins or blocking the actions of incretins. The exact mode of action is yet to be identified but the impact is immense which could be beyond the imagination of any sensible diabetic patient. So there is all the more need, for all diabetics to work out the details of all such foods. The best way is to have blood sugar done before taking any food item then note the changes in blood glucose level after two hours of the food. One may not alter the schedule of medication that may be continued at the set timings as suitable to the patients. And the patient should try to take different foods on different days or the same day at different times. The foods could be as, bitter gourd[karela], lady finger, peanuts, walnuts, pistachio, sabat masar, masar di daal, moongi, peas, lentils, water melons, the leaves used

for saag, sesame, broccoli, cauliflowers, saunf, fish, meat, chicken, grapes, almonds and nuts, sprouted daals, black pepper,

Once you know the unexpected effects of these food items then you can have much better and stable control of blood sugar level, may be able to reduce the quantity of drugs. And even the need for injectable form of insulin or GLP-1 agonist like exenatide may not be there.

I had the worst effect of these food items like, saag, lady finger, Karela, sprouted moongi di daal, masar, peanuts, walnuts, grapes, broccoli, cauliflower, peas, sesame, black pepper. And I have avoided these food items from my diet. I have reduced my medication and the blood sugar is now under better control.

There is a need to monitor your blood sugar levels more frequently. The previous notion if fasting blood sugar is good then no need to worry. But it has been found there are cases when fasting blood sugar is good but the blood sugar remains high throughout the day then becomes normal at fasting time. In order to prevent that situation to happen with you it is better to do blood sugar level any time in day also. The blood sugar should remain within the prescribed limits throughout the day. That is why the need to monitor blood glucose level 24 hours a day. The implements are available which can record the blood sugar level throughout the day.

The better control of glycated haemoglobin-A1C is rewarding. The evidence that lowering A1c levels results in lower microvascular risk is substantial. The Diabetes Control and Complications Trial (DCCT) demonstrated a clear association between retinopathy, neuropathy, nephropathy, and high A1c levels. The study also demonstrated that, for the same A1c level, intensive glucose control using short-acting insulin premeals with reduced postprandial excursions was associated with reduced complications (compared with conventional treatment without short-acting insulin). The DCCT/EDIC trial reported a macrovascular benefit in the original intensively controlled group despite subsequent loss of A1c control equivalent to the post DCCT conventionally treated group. This important concept, termed “metabolic memory,” provides evidence supporting the importance of early, aggressive control of diabetes. Additionally, evidence from the Kumamoto Study and the United Kingdom Prospective Diabetes Study confirm reduced microvascular complications with lower A1c levels.