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Glycemic Index and Load: Key Dietary Factors in the Pathogenesis of Insulin Resistance

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Insulin resistance is the key parameter in development of type 2 diabetes and also leads to various metabolic disorders globally. Recent evidences demonstrate the vital role of glycemic index (GI) and glycemic load (GL) in glucose metabolism and insulin sensitivity.

The glycemic index determines how quickly carbohydrates-rich food elevate the glucose levels in the blood. While Glycemic load represents both quality and quantity of carbohydrates which are consumed. Actually, these factors are directly involved in glucose spike in the blood that is further responsible of insulin secretions. An increased demand of insulin can increase the secretions of insulin from pancreatic beta cells. Increased level of insulin (hyperinsulinemia) can cause insulin resistance. It happens when cells in the body, specifically in muscle, fat, and liver tissues show less response to insulin's signal to take up glucose from the bloodstream.

Recent studies has demonstrated through various randomized clinical trials that there is an important link between GI and insulin resistance. They showed that low GI-index foods can reduce the spike of blood glucose level which further can reduce the insulin secretions that can reduce the insulin resistance. A high GI-index diet can cause metabolic dysfunctions in non-diabetic adults [1]. Another research linked higher dietary GI and GL with increased pancreatic steatosis risk, describing the metabolic burden that high GI-index diet affect the pancreatic health [2]. Furthermore, some investigations have suggested that diets with high GI and GL could exacerbate insulin resistance, potentially very serious outcomes in inflammatory conditions such as COVID-19 [3].

All these studies recommend dietary modifications to control or reverse the type 2 diabetes. The use of low GI and low GL based diet can protect individuals from type 2 diabetes. Specifically, we have to modify our daily diet like grain flour, white rice, starchy vegetables, and sugary food. All these foods are high in GI and GL. More concerning for type 2 diabetes patients if they are taking medications but don't want to modify their diet, they are just suppressing their type 2 diabetes with medicines not cutting the roots of this dietary disorder. People got this disorder from their dining tables but for cure they rely on clinics only, it is better if they first change their food placed dining tables. May be this modification can protect them from continuous visits of clinics and pharmacies. Public health policies and clinical guidelines should incorporate the GI and GL considerations to reduce the growing burden of insulin resistance and its complications effectively.

In conclusion, understanding about GI and GL is very important in both diabetes management and prevention. These factors will open new strategies to cope the type 2 diabetes and other metabolic disorders as well. Future research should continue to design the low GI and low GL based personalized nutritional approaches for reducing the insulin resistance.



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