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Editorial

Recent findings related to Nutrition and Diabetes Mellitus

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Roux-en-Y Gastric Bypass surgery is superior to medical treatment for short- to medium-term remission of Type 2 diabetes (T2DM) [1]. Recent research indicates that the improvements in insulin sensitivity following bariatric surgery are associated with elevated circulating bile acid concentration and remodeling of gut microbiota [2]. Gut microbiome can be considered as a target of dietary interventions or medicines to prevention/treatment of hyperglycemia in T2DM. Since, the glucose-lowering effects of metformin are mediated by changes in the composition and function of gut microbiota [3,4].

Branched Chain Amino Acids (BCAA) might not only elevate insulin resistance but also considered as useful biomarkers for early detection of IR; moreover, genes related to BCAA catabolism might serve as potential targets for the treatment of IR associated metabolic disorders [5]. Kevin et al. in 2016, claimed that dietary protein source is correlated with glucoregulatory markers and type 2 diabetes. For example, plant protein foods (with fibers and numerous phytochemicals) are beneficial, while processed meats (sodium, nitrites, and heme-iron) are unfavorable, but dairy foods with matrix rich in high quality proteins, calcium, magnesium, potassium, trans-palmitoleic fatty acids, low-glycemic-index sugars, and oligosaccharides have beneficial effects on aspects of glucose control, insulin secretion, insulin sensitivity, and/or T2DM risk [6]. With this regards, nuts favorably influence glucose homeostasis, weight control and vascular health through its unique nutrient composition and bioactive compounds such as: Unsaturated Fatty Acids, fiber, polyphenols, Arginine and magnesium [7]. Mediate-intake of Oat β-Glucan (OBG) for 3–8 weeks favored the glycemic control of T2DM patients but did not improve their insulin sensitivity [82]. Furthermore, compared with widely consumed common wheat (*Triticum aestivum* L.) spelt with bioactive compounds, fiber, phytochemicals (phytic acid and alkylresorcinols), and antioxidant compounds is beneficial for glycemic control, insulin sensitivity and hyperinsulinemia [9].

Regarding dietary patterns, vegetarian diet or Mediterranean diet with plant-based (whole grains, vegetables, fruits, legumes, nuts, fish, and olive oil) is inversely associated with diabetes risk; however, the duration of the adherence to these diets, and type of vegetarian needs further research [10,11]. Meta-analyses of prospective cohort studies and interventional studies using hydrogencarbonate and magnesium supplements suggest a probable positive effect of drinking water and mineral water on glycemic parameters especially those substituting diet beverages or caloric beverages with water, bicarbonate/magnesium-rich water [12].

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A recent review highlights the potential protective effects of 4 non-provitamin A carotenoids (lutein, zeaxanthin, lycopene, and astaxanthin) in the development and progression of diabetic micro-vascular complications via scavenging reactive oxygen species, modulating gene expression, and reducing inflammation [13]. A meta-analysis on 14 eligible studies indicated that Co-Q10 supplementation slightly but significantly reduced fasting plasma glucose, but not fasting plasma insulin and HbA1C [14]. Costello et al. concluded that Cinnamon supplements added to standard hypoglycemic medications and other lifestyle therapies had modest effects on FPG and HbA1c via its bioactive ingredients; however, only 4 studies reached the ADA treatment goals of FPG <130 mg/dL/7.2 mmol/L or HbA1c <7.0% [15]. Moreover, he observed that chromium supplements have limited effectiveness, and there is little rationale to recommend their use for glycemic control in T2DM patients [16]. McNally et al. work highlighted the fact that obesity, type 2 diabetes and the metabolic syndrome are associated with a decrease in NO bioavailability; besides, dietary inorganic nitrate can be a beneficial agent with both anti-obesity and anti-diabetic effects, as well as improving vascular function [17].

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