

Plant-food polyphenols

Inhibit α -glucosidase and α -amylase

Inhibit intestinal Na^+ dependent glucose transporters (SGLT1 & SGLT2)

↓ Gluconeogenesis and glucose output of the liver

↑ Glycogenesis and glycogen content of the liver

↑ Glycolysis and glucose oxidation

↑ Insulin-dependent glucose uptake via GLUT4

Activate signaling pathways; AMP-activated protein kinase & Phosphatidylinositide 3-kinase

Protect pancreatic β cells against oxidative damage and Inhibit β cells apoptosis

Alleviate imposed pressure on β cell

Regulate production and secretion of insulin

↓ Digestion and intestinal absorption of dietary carbohydrate

Regulate carbohydrate metabolism

Improve glucose uptake in muscle cell and adipocytes

Improve β cell function and insulin action

Improve glucose homeostasis and insulin resistance