

GenBio Addresses Maintaining Glucose Homeostasis

Hormonal and neural regulatory mechanisms that maintain blood glucose levels within a very narrow range

ALISO VIEJO, CA, UNITED STATES, June 16, 2025 /EINPresswire.com/ -- Glucose from a diet is the major energy source for humans and other mammals. Blood glucose concentrations increase rapidly after food intake and then decline as glucose is

used or stored. Since nutrient intake is irregular but energy requirement is continuous, the

body needs to store glucose, usually as glycogen, mainly in the muscles and liver. Two peptides produced by the pancreas, [insulin](#) and glucagon, control glucose storage by

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Science is fun. Science is curiosity. We all have natural curiosity. Science is a process of investigating. It's posing questions and coming up with a method. It's delving in.”

Sally Ride

enhancing glucose uptake and glycogen breakdown, respectively. Persistent high blood glucose concentrations result from diminished insulin production as in type 1 diabetes or insulin resistance, a decreased cellular response to insulin as in [type 2 diabetes](#).

Type 2 diabetes is a chronic disease defined by hyperglycemia leading to microvascular and macrovascular damage. The prevalence of diabetes has been increasing globally since

1990, attributed to living environments and lifestyle leading to poorer nutrition and increased sedentary behaviour. The International Diabetes Federation estimates that 11.1% of the world's adult population aged 20-79 years, around 452 million people, is living with diabetes, with 4 in 10 of these people unaware that they have the disease. Diabetes is more prevalent in people aged 65 years and older, including 122 million of this population of 652 million, or around 19%; further, prediabetes affects 48% of the 26 million older adults in the USA. The risk to these patients is increased by multiple comorbidities, increased incidence of hypoglycemia, increased dependence on care and worsening frailty.



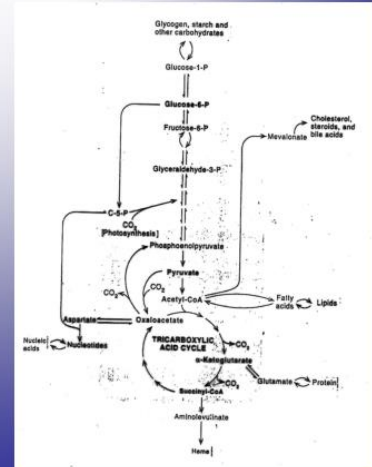
Cardiovascular disease remains the leading cause of death in type 2 diabetics, even though a marked decrease in all-cause mortality of 30–35% in diabetics in the USA and England has been related to decreases in mortality from cardiovascular disease. Cancer rates have remained unchanged in diabetes patients, but this is now an increased percentage of deaths while mortality rates from dementia and liver disease have increased.

Lifestyle modifications, including nutrition and exercise, are the foundation for the management of type 2 diabetes. Drug treatment of diabetes now includes metformin, which lowers liver production of glucose, sulphonylureas such as glyburide, which stimulate insulin production, thiazolidinediones such as pioglitazone which increase glucose uptake into tissues, prompting insulin secretion and decreasing appetite with glucagon-like peptide-1 receptor agonists, including semaglutide, combined glucose-dependent insulinotropic polypeptide and glucagon-like peptide-1 receptor agonists such as tirzepatide and preventing the reabsorption of glucose in the kidneys by sodium-glucose cotransporter-2 inhibitors such as dapagliflozin and empagliflozin. Research is continuing, so potential clinical use of adiponectin and fibroblast growth factor 21 could allow personalized approaches to lower blood glucose concentrations.

Blood glucose homeostasis

Glycogenolysis

- The process by which glucose is released from the liver (phosphorylase the key regulatory enzyme)



Blood glucose homeostasis is the process by which the levels of blood sugar are maintained by the body within a narrow range.



Sally Kristen Ride (May 26, 1951 – July 23, 2012) was an American astronaut and physicist. Born in Los Angeles, she joined NASA in 1978, and in 1983 became the first American woman and the third woman to fly in space

Healthy eating plans are essential for long-term control of diabetes. Preclinical trials with anthocyanin-containing foods have shown regulation of blood glucose concentrations, improved gut microbiota, reduced insulin resistance and inflammation, and changed adipocyte function. Large prospective cohort trials in people in the USA have shown an inverse relationship between a healthy plant-based diet and the risk of developing diabetes. Dietary anthocyanin intake was linked to a 15% lower incidence of type 2 diabetes in 8 cohort studies involving 394,913 participants. In a summary of 18 human trials in type 2 diabetes from the last 5 years, anthocyanins reduced blood glucose and HbA1c concentrations and improved insulin secretion and resistance, especially in at-risk groups. Further, diets containing polyphenols such as anthocyanins may reduce the risk of developing diabetes. The incidence of type 2 diabetes decreased by 5% when the intake of anthocyanins increased by 7.5 mg/day. As examples, plums such as the Queen Garnet, Illawarra and Davidson's varieties may contain 250-500 mg anthocyanins per 100g fruit.

Other important dietary sources of anthocyanins include raspberries, bilberries, chokeberries, mulberries, and saskatoon berries. These clinical investigations support the preclinical studies that anthocyanins simultaneously affect many targets associated with type 2 diabetes. These studies reinforce that improving nutritional status in people with diabetes by adding anthocyanin-containing fruit to current treatment regimens is likely to improve clinical outcomes. Nutrition, exercise, and treatment with antidiabetic medications remain the key approaches to the treatment of type 2 diabetes.

Todd D. Sonoga

GenBio Inc.

+1 949-705-8021

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