

The Level of Glucose in the Blood is Not the Same for Every Individual

Siniša Franjić*

Independent Researcher, Republic of Croatia

***Corresponding author:** Siniša Franjić, Independent Researcher, Republic of Croatia

ARTICLE INFO

Received: 📅 March 08, 2023

Published: 📅 April 06, 2023

Citation: Siniša Franjić*. The Level of Glucose in the Blood is Not the Same for Every Individual. Biomed J Sci & Tech Res 49(4)-2023. BJSTR. MS.ID.007826.

ABSTRACT

Glucose is necessary for all processes in the body, including the work of the brain, and is the most important source of energy. Glucose enters the blood from the digestive organs by breaking down food with the help of the liver, which converts the basic ingredients of food into those needed by the body. Glucose is a derivative of sugar and is an important intermediate product in the conversion of food into energy.

Keywords: Glucose; Blood; Prediabetes; Diabetes; Health

Abbreviations: ATP: Adenosine Triphosphate; GI: Glycemic Index; HDL-chol: HDL-Cholesterol; NEFA: Nonesterified Fatty Acids; SMBG: Self-Tracking of Blood Glucose; ADA: American Diabetes Association; WHO: World Health Organization; IFG: Impaired Fasting Glucose; IGT: Impaired Glucose Tolerance; AD: Alzheimer's disease; IF: Interstitial Fluid; Gox: Glucose Oxidase; GDH: Glucose Dehydrogenase; DKA: Diabetic Ketoacidosis

Introduction

A crucial metabolic fuel glucose is the principle supply of strength in lots of tissues [1]. It is metabolized throughout the method of cellular respiration, which breaks it right all the way down to launch adenosine triphosphate (ATP). It is a monosaccharide, or easy sugar, with the method $C_6H_{12}O_6$. Its six carbon atoms may be organized in open-chain or ring forms. Red blood cells and mind cells use glucose nearly completely for strength production, while different cells withinside the frame can metabolize fat for strength if vital. Most glucose withinside the frame comes from digested carbohydrates, however it could additionally be synthesized withinside the liver.

Glucose

Glucose is a molecule made of six carbons [2]. It is a totally green shape of fuel for the body. When metabolized withinside the presence of oxygen, it's far damaged right all the way down to shape carbon dioxide and water. The mind and apprehensive tissues use glucose because the supply of maximum in their required strength. Other tissues and organ structures use fatty acids and ketones as fuel. The

mind is not able to synthesize or save enough glucose to ultimate for extra than numerous minutes. A chronic glucose deliver from the systemic flow is needed for the cerebrum to characteristic normally. Brain dying may be because of extreme and extended hypoglycemia. Significant mind disorder takes place due to simplest slight hypoglycemia. Glucose is acquired from the flow through tissues. Hypoglycemia is extraordinarily risky in contrast to hyperglycemia. There is inflexible manipulate of blood glucose levels even as fasting, and that they stay among 70 and 99 mg/dL, that is equal to among 4.0 and 5.5 mmol/L. After eating, blood glucose levels upward push. Insulin is launched from the beta cells of the pancreas, permitting glucose to be transported into the body cells. Approximately 66% of the glucose contained in every meal is eliminated from the blood, and saved withinside the liver or skeletal muscle tissues as glycogen. When the liver and skeletal muscle tissues emerge as saturated with glycogen, last glucose is transformed into fatty acids through the liver. These are saved as triglycerides withinside the adipose tissue's fat cells.

Blood glucose levels lower to under ordinary among food. The liver then converts the saved glycogen lower back into glucose thru glycogenolysis. The glucose is launched as a part of a homeostatic mechanism regulating blood glucose inside ordinary ranges. Skeletal muscle tissues comprise saved glycogen, however do now no longer comprise the enzyme glucose-6-phosphatase. This enzyme lets in glucose to be damaged down, allowing it to pass thru cell membranes and input the bloodstream. The enzyme simplest has restricted usefulness in muscle cells. The liver synthesizes extra glucose from amino acids, glycerol, and lactic acid thru gluconeogenesis. Glucose is both immediately launched into the flow or saved as glycogen. The glycemic index is a value this is assigned to meals, primarily based totally on the velocity wherein they motive will increase in blood glucose levels. Foods which are low at the glycemic index (GI) scale typically launch glucose slowly and steadily, even as meals excessive at the glycemic index launch glucose quickly. The decrease GI meals resource in weight reduction, however the ones excessive on the dimensions resource in strength healing after exercising, or to save you hypoglycemia. Therefore, human beings with diabetes or prediabetes need to eat extra of the decrease GI meals. This is due to the fact quicker launch of glucose from the better GI meals outcomes in spikes in blood sugar levels. Good glucose manipulate is maintained through the sluggish and constant launch of glucose from the decrease GI meals.

Body Weight

In order to enhance blood glucose, manipulate and decrease frame weight and waist circumference, a few research have validated that an in depth nutritional intervention, primarily based totally at the dietary guidelines for human beings with diabetes, is extra powerful than standard care, specially in diabetic sufferers now no longer competently managed regardless of an optimized hypoglycemic drug remedy [3]. However, it's far critical to underline that amongst obese or overweight sufferers with type 2 diabetes and insufficient glycemic, blood pressure, and lipid manipulate and/or different obesity-associated clinical conditions, way of life adjustments that encompass diet, exercising, and day by day/weekly contacts with health experts are the handiest interventions, as validated through the Look AHEAD trial. The Look AHEAD trial is the primary look at that has investigated the outcomes of a slight frame weight loss, acquired through an in depth way of life intervention combining a slight strength restrict with a massive growth of the recurring bodily pastime, on cardiovascular threat elements and the prevalence of cardiovascular activities and mortality in a massive cohort of obese and overweight people with type 2 diabetes.

In relation to the cardiovascular threat elements, this look at has proven that an in depth way of life intervention, in comparison with an standard schooling program, represents a great approach to lessen frame weight, enhance substantially blood pressure and blood

glucose manipulate additionally in lengthy-time period (four years of follow-up). In addition, in a small variety of sufferers, the intervention has been capable of result in a partial or overall remission of diabetes. Particularly great is the impact on HDL-cholesterol (HDL-cholesterol), with an growth extra at four years than at 1 year. More in detail, withinside the way of life organization the HDL-cholesterol become about eight-nine% better at every year than the baseline degrees, while withinside the manipulate organization it remained at 3-6% above baseline. Interestingly, even though significantly overweight individuals did now no longer attain their best frame weight, a massive discount of blood pressure, plasma glucose, HbA1c, and triglycerides become achieved, confirming the advantages of slight weight reduction (7-10% of preliminary frame weight) withinside the control of diabetes.

To date, research demonstrating the advantages of weight loss in human beings with type 2 diabetes are in large part of quick length (up to six months); moreover, it's far acknowledged the attempt to maintain through the years the weight reduction, especially withinside the absence of the in depth aid furnished in a scientific trial. Usually, a success people can lose about 10% of baseline frame weight with a hypocaloric regimen, though many regain one-third of this withinside the following year and all of the weight reduction inside five years. Experience withinside the US National Weight Control Registry shows that maximum individuals who effectively shed pounds and preserve weight reduction have skilled a triggering occasion inclusive of an acute clinical situation, so it's far viable that a brand new analysis of type 2 diabetes may want to assist to encourage an person to shed pounds.

Very low calorie diets, offering simplest 800 kcal/day, produce fast weight reduction however aren't extra powerful of traditional diets withinside the lengthy time period; they need to be reserved for human beings with extreme obesity (BMI 35 kg/m²) as a part of a supervised weight control program. Nowadays, a ten kg weight reduction withinside the first 3-6 months, or 1-2 kg in keeping with month, has been proposed for human beings with diabetes. This weight reduction may be attained with way of life applications that obtain a 500-750 kcal/day strength deficit or offer about 1200-1500 kcal/day for ladies and 1500-1800 kcal/day for men, adjusted for the person's baseline frame weight. In older human beings with diabetes, due to the fact that frame weight has a tendency to growth with age, weight stabilization can be a extra suitable approach.

Importance

The significance of glucose is meditated withinside the strict manipulate of blood glucose levels (homeostasis) [1]. This contrasts with the relative laxity of regulation of different circulating metabolic fuels inclusive of ketone our bodies and nonesterified fatty acids (NEFA) (additionally called loose fatty acids [FFA])- the shape wherein saved frame fats is transported from adipose tissue to sites of usage. Of all of the hormones acknowledged to persuade blood

glucose awareness, insulin is the simplest one capable of decrease it. Glucagon, on the alternative hand, is a hormone that counteracts the outcomes of glucose. Glucagon stimulates the liver to interrupt down glycogen to launch glucose into the blood (glycogenolysis), and additionally to transform amino acids into glucose (gluconeogenesis). Glucose is likewise critical withinside the formation of glycoproteins, making up the carbohydrate organizations on proteins which play key roles withinside the ordinary functioning of enzymes and in protein binding.

Glycemic Control

The modern intention of remedy is to obtain manipulate of blood glucose (glycemic manipulate) this is as near as viable to ordinary, as near manipulate of hyperglycemia reduces the lengthy-time period headaches due to diabetes [4]. It is apparent that such stringent control of hyperglycemia is related to decrease threat, expanded existence expectancy, and decreased vascular complications. Two strategies are used to evaluate the degree of glycemic manipulate (i.e., the extent of blood glucose). Self-tracking of blood glucose through the affected person (SMBG) is done through the affected person the usage of finger-stick blood and transportable semiautomated devices. This is typically accomplished earlier than and after eating, earlier than strain (inclusive of exercising), and if the affected person acknowledges the signs of low blood glucose (that could bring about confusion and fainting). Insulin dosage (while used) is cautiously tailor-made to assist obtain as close to ordinary blood glucose levels as viable. Recently the FDA accepted devices that constantly screen interstitial blood glucose levels the usage of a small sensor inserted beneathneath the skin. The devices are prepared with an alarm to suggest hypo- or hyperglycemia. These devices are being coupled to glucose pumps to obtain what is probably taken into consideration an "synthetic pancreas." The benefits of non-stop glucose tracking are unclear, however this does assist a few sufferers obtain higher lengthy-time period manipulate.

Tests for the extent of glycated hemoglobin (additionally known as hemoglobin A1c and frequently abbreviated as HbA1c) as an index of lengthy-time period manipulate of hyperglycemia are typically accomplished two times a year, or extra regularly while remedy is changed. These exams are beneficial predictors of diabetic complications. Urine exams can be utilized in unique occasions to test for ketone our bodies as a demonstration of diabetic ketosis in human beings with type 1 diabetes. The intention of common in-domestic blood glucose testing (or non-stop glucose tracking) is to screen and manipulate insulin dosage to obtain an most excellent level of blood glucose with minimum version withinside the face of various nutrients and strain.

Critically Ill Patient

First robust proof towards the conventional idea of enduring glucose levels as much as as excessive as 200 mg/dl got here from

the landmark prospective, randomized, managed look at on in depth insulin remedy in surgical significantly unwell sufferers [5]. In the traditional method, sufferers acquired insulin simplest if glucose concentrations passed 215 mg/dl with the intention of maintaining concentrations among 180 and two hundred mg/dl, ensuing in suggest blood glucose levels of 150-160 mg/dl (hyperglycemia). Insulin become administered to the sufferers withinside the in depth insulin remedy organization to preserve blood glucose degrees among 80 and 110 mg/dl, which ended in suggest blood glucose levels of 90-one hundred mg/dl (normoglycemia). Tight blood glucose manipulate with insulin strikingly diminished ICU (in depth care unit) mortality from 8.0 to 4.6% (43% discount). The advantage become especially attributed to the organization of sufferers who required in depth take care of extra than five days with a 48% mortality discount from 20.2 to 10.6%. Besides saving lives, in depth insulin remedy in large part averted numerous CI-related headaches. The prevalence of CI (important illness) polyneuropathy become decreased through 44%, the improvement of blood circulate infections through 46%, and acute renal failure requiring dialysis or hemofiltration through 41%. The variety of sufferers who received liver disorder with hyperbilirubinemia become diminished through 16%. Furthermore, anemia much less regularly evolved as illustrated through the 50% discount withinside the median variety of red blood cell transfusions needed. Finally, sufferers had been additionally much less depending on extended mechanical air flow and in-depth care. A massive variety of sufferers had been blanketed withinside the look at after complex cardiac surgery. Nevertheless, the scientific advantages of this remedy had been similarly found in maximum different diagnostic subgroups. Particularly withinside the organization of sufferers with remoted mind damage, in depth insulin remedy become capable of shield the valuable and peripheral apprehensive system from secondary insults and progressed lengthy-time period rehabilitation.

An critical affirmation of the scientific advantages of in depth insulin remedy become currently acquired with the demonstration, through a massive randomized managed trial, that the Leuven protocol of glycemic manipulate with insulin in grownup surgical significantly unwell sufferers become further powerful in a strictly clinical ICU affected person populace. Indeed, clinic mortality become decreased from 40.0 to 37.3% withinside the intention-to-deal with populace (now no longer massive) and from 52.5 to 43.0% withinside the goal organization of lengthy-live sufferers wanting at the least a 3rd day of in-depth care, for which the look at have been powered primarily based totally at the outcomes of the surgical look at. Intensive insulin remedy substantially decreased morbidity withinside the intention-to-deal with organization, with decrease occurrence of latest improvement of kidney damage and hyperbilirubinemia, in advance weaning from mechanical air flow and in advance discharge from the ICU and from the clinic. The discount in morbidity become even extra placing withinside the goal organization of sufferers last in ICU for at the least a 3rd day. These sufferers had been discharged from the

clinic alive on common 10 days in advance than on traditional insulin remedy. The variety of lengthy-live sufferers with hyperinflammation become additionally decreased. Blood glucose manipulate become really much less strict and ended in suggest glucose levels of 131 mg/dl withinside the protocol period, in comparison with 152 mg/dl withinside the baseline period. In contrast with the historic manipulate organization, sufferers did clinically higher after the implementation of the glucose manipulate protocol, with a 29% decrease in clinic mortality, period of ICU live reduced through 11%, 75% much less sufferers evolved new renal failure, and 19% much less sufferers required red blood cell transfusion. No impact become visible in regards to prevention of extreme infections, however the prevalence of this problem become already low withinside the baseline period. In a predominantly standard surgical affected person populace, but, some other prospective, randomized, managed look at, albeit a small one, showed the findings of a reduced prevalence of overall nosocomial infections (which includes intravascular device, blood circulate, intravascular device-associated blood circulate, and surgical site infections) with in depth insulin remedy concentrated on glucose levels among 80 and 120 mg/dl. This intervention ended in suggest day by day glucose levels of 125 as opposed to 179 mg/dl withinside the wellknown glycemic manipulate organization. In an observational look at of sufferers with diabetes mellitus present process cardiac surgery, intravenous insulin infusion to take away hyperglycemia additionally diminished in-clinic mortality in comparison with the historic manipulate organization, with fewer deep sternal wound infections and shorter period of clinic live.

Prediabetes

We can without a doubt outline the prediabetic sufferers as whose blood sugar levels are neither on the ordinary degree nor on the diabetic degree consistent with the ADA/WHO (World Health Organization/American Diabetes Association) standards for diabetes [6]. According to the ADA, analysis of prediabetes is primarily based totally at the presence of impaired fasting glucose (IFG) (calculated fasting plasma glucose level is among 100 mg/dl and 125 mg/dl) or impaired glucose tolerance (IGT) (calculated 2nd hour plasma glucose degree is among 140 mg/dl and 199 mg/dl) throughout a 75-gram oral glucose tolerance take a look at or hemoglobin A1c level among 5.7% and 6.4%. The growing incidence of prediabetes is a primary public health hassle this is drawing interest all around the world. However, there's nevertheless a debate among WHO and ADA for the precise definition of this time period. WHO advices intermediate hyperglycemia time period in preference to prediabetes, however ADA shows prediabetes time period along side declining pinnacle reference level of ordinary FPG level to the 100 mg/dl.

Detecting prediabetic human beings could be very critical, due to the fact like diabetic sufferers, there are near relationships among prediabetes and most important public health sicknesses. In a

preceding ADA professional panel, the prediabetic people' expected charge for development to the diabetes become stated as 70%. In addition, human beings on the prediabetic stage have excessive threat of growing cardiovascular pathologies while in comparison to the normoglycemic populace. Myocardial infarction, congestive heart failure, and different coronary issues along side hypertension, obesity, and dyslipidemia prevalence is sort of threefold excessive in prediabetic populace than normoglycemic populace. Also, some other main motive of overall deaths round the sector is cancer, that is carefully associated with the prediabetes. Another critical sickness organization associated with the prediabetic is neurological problems. The actual pathophysiology among hyperglycemia and most important neurological problems has now no longer but been absolutely clarified; there are such a lot of papers in literature which have proven the linkage among them indisputably. Especially dementia, Alzheimer's disease (AD), and despair are related to hyperglycemic conditions. A current look at performed on diet-triggered prediabetic Sprague Dawley rats stated that HPA axis pastime and reaction to strain become diminished, which will increase the threat of despair improvement.

AD is a modern mind disorder, happening with advancing age. Main signs are lack of reminiscence and cognition. Underlying mechanism isn't apparent but, however neuronal dying because of the buildup of poisonous amyloid plaques and tau tangles might be the reason. Which elements are affecting the neurons and triggering the formation of those plaques isn't acknowledged, but excessive blood glucose-associated expanded oxidative strain and corrupted blood-mind barrier are at the front line. A current look at validated how AD, type 1 DM, type 2 DM, and prediabetes are interlinked. Both AD and hyperglycemia amplified the mind tissue cytokine levels, which growth the neuronal damage, amyloid plaques, and tau tangles, and disturb the blood-mind barrier. Catching those sufferers at prediabetic level is crucial. Just like diabetes, prediabetes too is a massive public health pandemic round the sector. However, we're fortunate due to the fact if we are able to become aware of prediabetic human beings withinside the populace with accurate technique as quickly as viable, we are able to save you maximum of the chronic sicknesses like diabetes, AD, cardiovascular sicknesses, and we are able to lower the health expenses of nations along side deaths associated with those pathologies.

Levels

Diabetes is described through an growth in blood glucose levels above ordinary values [1]. To recognize how hyperglycemia can also additionally arise, we need to don't forget elements that preserve blood glucose inside a strict range. In wholesome human beings, blood glucose concentrations are maintained inside very near limits, with a strictly maintained postabsorptive (e.g. fasted overnight) blood glucose awareness of 4.5–5.2 mmol/L (81-94 mg/dL). Inter-

person coefficients of variation (assuming comparable instances due to the fact that preceding meal, meal composition, levels of pastime, etc.) are <5%, so a fasting glucose of 6.0 mmol/L (108 mg/dL) is 4-5 wellknown deviations above the suggest in maximum wholesome populations. Glucose concentrations growth after food, however usual food will now no longer boost blood glucose above ~8 mmol/L (one hundred forty four mg/dL), and normoglycemia is typically restored inside 2-4 hours in wholesome human beings. Reductions in glycemia may be produced through extreme, sudden, unaccustomed exercising or extended fasting (or each), through numerous pathological conditions (typically hepatic or gastroenterological), and through pharmacological means, however aren't typically encountered in wholesome adults in evolved countries. Strict avoidance of low blood sugars is vital to keep away from the neurological and different effects of hypoglycemia. Neuroglycopenia (glucose depletion in neural tissue) begins offevolved at concentrations round 3.0-3.5 mmol/L (54-63 mg/dL) and counterregulatory mechanisms are set to reply to preserve glycemia effectively above this level. Prior to accomplishing neuroglycopenia, insulin secretion decreases at plasma glucose levels of round 4.4-4.7mmol/L (80-85 m/dL) and glucagon levels growth at plasma glucose levels of 3.6-3.9 mmol/L (65-70 mg/dL).

DKA

DKA (diabetic ketoacidosis) is a probably existence-threatening clinical emergency [7]. It takes place predominantly in type 1 diabetics and bills for the preliminary presentation of glucose-associated issues in approximately 25% of diabetics. Despite advances in remedy, the mortality charge for this situation stays 2-4%. DKA is a syndrome characterised through hyperglycemia, ketonemia, and metabolic acidosis due to both relative or absolute insulin deficiency. The remedy includes fluid and electrolyte replacement, collectively with non-stop low-dose insulin infusion. Precipitating reasons for DKA encompass infection, MI, trauma, pregnancy, or strain. In many cases, there isn't an intercurrent sickness method, and noncompliance with insulin remedy is identified as a massive precipitant of DKA. Errors of insulin dosage can also additionally on occasion be a contributing factor. The number one abnormality in DKA is an absolute or relative insulin deficiency. This results in a upward push withinside the counter-regulatory hormones (catecholamines, glucagon, boom hormone, and cortisol). Changes in those hormone levels produce 3 most important outcomes:

1. Hyperglycemia because of reduced glucose usage and expanded hepatic gluconeogenesis;
2. Increased lipolysis main to ketone frame formation;
3. Increased metabolism of protein and discount in protein synthesis.

Hyperglycemia reasons a profound osmotic diuresis ensuing in modern dehydration. Ketonemia and acidosis can also additionally cause nausea and vomiting, which exacerbates fluid and electrolyte losses.

Profiles

Assessment through insulin-dealt with sufferers of the day-by-day fluctuations in their blood glucose values offers a miles extra knowledge through sufferers and docs of each diabetic manipulate and the outcomes of various insulin arrangements [8]. Indeed, domestic blood glucose dimension gives an critical instructional exercising for all significantly influenced diabetic sufferers in addition to being the important device to obtain tight blood glucose manipulate. Reproducible blood glucose profiles are important for making rational changes to remedy. They can display now no longer simplest the instances of the peaks and troughs of blood glucose awareness however additionally the length of motion of various insulin arrangements in an person affected person. Unfortunately, the ones whose existence are chaotic additionally produce chaotic blood glucose profiles. Home blood glucose tracking through the perfect technique, mixed with the cappotential to recognize the actual importance of the readings, represents on the only hand a totally critical factor of diabetes care. On the alternative hand, obsessional sufferers who carry out exams too frequently with common changes of insulin dose, motive themselves protracted distress and frequently disabling hypoglycaemia. While this method every so often evolves because of the affected person's personality, such strategies are all too frequently endorsed through clinical attendants. Patients need to now no longer reply to remoted excessive blood glucose readings through taking greater insulin: this reasons worsening of blood glucose oscillations in place of an development of their blood glucose profile.

Interpretation

Before adjusting insulin remedy, it's far important to recognize the reasons of fluctuating styles of the blood glucose profile thru 24 hours [8]. The following factors are crucial.

- Blood glucose rises as insulin motion declines, even if no meals is taken, due to hepatic gluconeogenesis. This bills specially for the fast growth in blood glucose which takes place withinside the small hours of the morning earlier than breakfast.
- These fast adjustments in blood glucose additionally provide an explanation for why such a lot of sufferers report one of a kind blood glucose readings every day, due to the fact that even a half to at least one hour distinction in timing can supply a totally one of a kind result.
- Troughs withinside the blood glucose profile-this is,

representing a bent to hypoglycaemia-nearly constantly arise round midday and among 3 and 5 am at top insulin pastime, in order that measures want to be taken to keep away from hypoglycaemia specially previous those instances.

- When sufferers carry out 3 or 4 remoted blood glucose readings over 24 hours, it's far important for them and their advisers to recognize what occurs to the blood glucose profile among the single readings.

Monitoring

Since a non-invasive technique of tracking blood glucose might gift most important benefits over current invasive strategies, many studies organizations have tried to advocate severa appealing options in phrases of non- or minimally invasive glucose-sensing strategies withinside the physiological glucose concentrations (18- 450 mg/dl) in human blood [9]. These tactics have validated promising outcomes thru in/ex vivo and in vitro experimental/scientific glucose evaluations. Through our preceding look at, we tried to check the variety of rising non- or minimally invasive strategies and strategies and furnished a complete listing in phrases of making use of opportunity physiological body fluids in preference to blood. Physiological body fluids are exceptionally complicated combos of a variable awareness of cells, proteins, macromolecules, metabolites, small molecules, which includes glucose. Although blood is the maximum typically studied body fluid and is taken into consideration because the gold well known medium for detecting glucose awareness, different rising organic body fluids inclusive of interstitial fluid (IF), urine, sweat, saliva, or ocular fluids, are extra handy because of the massive develop of nanotechnology. The quantity of glucose contained withinside the organic body is proportional to its awareness withinside the blood. These fluids had been applied as appealing opportunity pattern media for non-invasive non-stop tracking. The glucose level in those frame fluids is same to the glucose awareness withinside the blood plasma.

Blood has been the gold-standard medium for glucose tracking due to the fact that measurements performed on this fluid had been first delivered in 1953. Blood is complicated plasma containing metabolites and electrolytes (sodium, potassium, chloride, calcium, bicarbonate, glucose, urea, and creatinine). The sensor the usage of electrochemical/amperometric enzyme electrodes and transducers, hired the nonor enzyme glucose oxidase (GOx) and glucose dehydrogenase (GDH) utilising the biochemical reaction, has emerge as the maximum famous and commercially to be had blood glucose tracking technique withinside the marketplace due to its appropriate sensitivity, huge selectivity, suitable reproducibility, and

smooth manufacturability at exceptionally low cost, even though it is an invasive technique. Several non-invasive strategies are used to locate and screen the glucose level withinside the blood, which includes Absorbance spectroscopy inclusive of Near and Mid Infrared spectroscopy, Raman spectroscopy, Photoacoustic spectroscopy, Fluorescence spectrophotometry, Bio-impedance spectroscopy, Optical coherence tomography, and Thermal emission spectroscopy.

Conclusion

The level of glucose in the blood of each individual depends on physical activity and the time that has passed since eating. These values are additionally increased in numerous pathological conditions in which the level of glucose in the blood can be increased (hyperglycemia) or decreased (hypoglycemia). Glucose is needed for all processes in the body, which means that it is the most important source of energy.

References

1. Lansang M C, Leslie R D, Chowdhury T A, Zhou K (2023) Diabetes - Clinician's Desk Reference. (2nd Edn.), CRC Press, Taylor & Francis Group, LLC, Boca Raton, USA, p. 12-14.
2. Moini J, Adams M, LoGalbo A (2022) Complications of Diabetes Mellitus - A Global Perspective. CRC Press, Taylor & Francis Group, LLC, Boca Raton, USA, p. 2-3.
3. Riccardi G, Vitale M, Giacco R (2018) Treatment of Diabetes with Lifestyle Changes: Diet. In: Bonora E, DeFronzo RA (Eds.), Diabetes - Epidemiology, Genetics, Pathogenesis, Diagnosis, Prevention, and Treatment. Springer Nature Switzerland AG, Cham, Switzerland, pp. 499-500.
4. Reiser E, Reiser H (2017) Crowley's An Introduction To Human Disease - Pathology and Pathophysiology Correlations, (10th Edn.), Jones & Bartlett Learning, LLC, Burlington, USA, pp. 597-598.
5. Vanhorebeek I, Van den Berghe G (2008) Intensive Insulin Therapy for the Critically Ill Patient. In: LeRoith D, Vinik A I (Eds.), Controversies in Treating Diabetes - Clinical and Research Aspects", Humana Press, Springer Science+Business Media, LLC, Totowa, USA, pp. 162-163.
6. Üstüünsoy S (2023) Resistin as a Biomarker and Applications to Prediabetes. In: Patel V B, Preedy V R (Eds.), Biomarkers in Diabetes, Springer Nature Switzerland AG, Cham, Switzerland, p. 70-71.
7. Newton C R H (2005) Diabetes-related emergencies. In: Mahadevan S V, Garmel G M (Eds.), An Introduction to Clinical Emergency Medicine. Cambridge University Press, Cambridge, UK, pp. 223.
8. Watkins P J (2003) ABC of Diabetes (5th Edn.), BMJ Publishing Group Ltd, London, UK, p. 26-28.
9. Jang S, Wang Y, Jang A (2022) Review of Emerging Approaches Utilizing Alternative Physiological Human Body Fluids in Nonor Minimally Invasive Glucose Monitoring". In: Sadasivuni K K, Cabibihan J J, Al-Ali, A K A M, Malik R A (Eds.), Advanced Bioscience and Biosystems for Detection and Management of Diabetes, Springer Nature Switzerland AG, Cham, Switzerland, p.11-12.

ISSN: 2574-1241

DOI: 10.26717/BJSTR.2023.49.007826

Siniša Franjić. Biomed J Sci & Tech Res



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