THE GENE BOX

Predictive
DNA REPORT

DISCOVER YOUR TRUE POTENTIAL

Barcode	:	john_doe
Name	:	John Doe
Customer ID	:	

Type of Report: Detailed Report

DISCLAIMER

Our recommendations in DNA Lifestyle report are based on the results of your Genetic Risk Assessment and other related information provided by you. This report does not take into account your existing health condition or any medication that have been prescribed to you. This report being neither a substitute to medical treatment nor physicians visit makes it necessary for you to consult your physician before adapting to its recommendations.

Any assertions or recommendations in the report as to an exercise regime or diet, whether specific or general, are based on the following assumptions.

- That you are in a good state of health and do not have any medical problems that you are aware of;
- That you have not had any recurring illness in the past 12 months;
- That no medical practitioner has ever advised you not to exercise;
- That you are not on any prescribed medication that may affect your ability to exercise safely or your diet;
- That you do not have any food allergies; and
- That there is no other reason why you should not follow the assertions or recommendations in the report.

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The pharmacogenomic panel here refers to your genetic predisposition to the drugs mentioned in the report. This report is for investigational purpose only. It is to be interpreted by a qualified and licensed medical practitioner only. It does not constitute medical advice, diagnosis, or treatment. The assay includes limited set of polymorphisms and may not report for mutations not included in the test panel. This report does not take into account factors like drug-drug interactions, drug food interaction. These assays are carried out by trained individuals and use standard equipment and laboratory designed protocols. Licensed medical practitioners are trained and qualified to make therapeutic decisions pertaining to medications and or dosage based on patient information and medical history, including the pharmacogenetic report.

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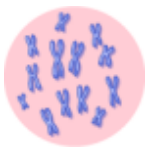
How to Read Your Report

WHAT IS GENETICS?

Human are made up of cells

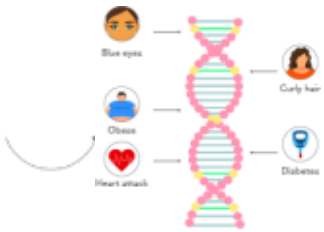
Cells are made up of nucleus



Nucleus is made up of chromosomes

Chromosomes are made up of DNA

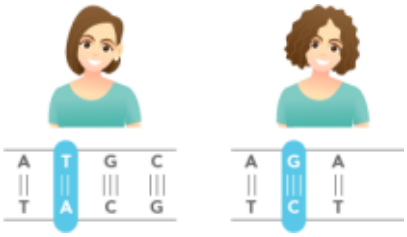
DNA is made up of genes



Genes are coded by nucleotides

Changes in nucleotides lead to genetic variations

Straight hair — Curly hair



WHAT IS PREDICTIVE GENETICS?

Population with predisposition to curly hair

Population with predisposition to blue eyes

Genetic Variations Make Us All Unique

Population with high risk of obesity

Population with high risk of heart attack

SCORE INTERPRETATIONS

SCORE	DEPICTION	INTERPRETATION
0-2	Excellent / Protective	An 'excellent / protective' score indicates a very favorable response or ability for a trait
2.1-4	Good / Lower Risk	A 'good / lower risk' score indicates a favorable response or ability for a trait
4.1-6	Typical	A 'typical' score indicates a typical response or ability for a trait
6.1-8	Poor / Slightly Elevated	A 'poor / slightly elevated' score indicates an unfavorable response or ability for a trait
8.1-10	Very Poor / Highly Elevated	A 'very poor / highly elevated' score indicates a very unfavorable response or ability for a trait

GENERAL GUIDELINES

Genetic risk or predisposition given in the report is based on statistically relevant genomics research studies, which should not be taken as a diagnosis of any health condition or overall wellness.

Traits in the report are not genetically interlinked; their genetic associations are independent of each other. Therefore, every trait score and interpretation are independent of each other.

This report provides information about genetic predispositions only and may not indicate current conditions or characteristics.

The information in the report may provide an understanding of one's genetic risks and may help in making informed decisions regarding one's wellness and goals.

Please consult with your doctor, or other qualified health care professional before making any dietary, fitness, health and wellness related changes.

NUTRIGENOMICS

Category Summary

REGULATION OF EATING

9.0	7.0	5.9
Satiety Response	Emotional Eating Dependance	Snacking Pattern

Satiety Response

What is Satiety Response ?

Satiety means feeling of fullness or suppression of hunger for a period of time after a meal. Certain genetic variations can influence the ability to feel satiated after consumption of a meal, which can lead to overeating for individuals with a poor satiety response. Overeating can lead to an excessive calorie intake, thereby increasing the risk of weight gain.

9.0

Satiety Response

Interpretation

As per your genetics, your Satiety Response is very poor. People with such a genotype tend to not reach the satiety point or a feeling of fullness after a meal, which can lead to excessive calorie intake.

Gene Table

Gene Name: FTO | Your Genotype: AT

The FTO gene is one of the genes that has been associated with obesity risk. It is believed to influence satiety and hunger and regulate energy homeostasis. Studies suggest that the FTO gene may play an important role in regulating food intake; variations of this gene can influence satiety, food choices, and increased energy consumption.

Do's and Don'ts

Do's

- Maintain intervals of 2.5-3 hours between each meal.
- Increase the protein and fiber content in your meals so that excessive intake of simple carbohydrates and fats is avoided.
- Maintain a good lifestyle, exercise regularly, and follow a healthy eating pattern.

Don'ts

- Avoid intake of excessive amounts of simple carbohydrates, deep fried foods, and junk foods.
- Avoid binging on empty calories, snacks with a high salt content, and high calorie meals.
- Avoid improper chewing of food and finishing meals very quickly.

Emotional Eating Dependance

What is Emotional Eating Dependance ?

Emotional eating is a form of disordered eating, and it is defined as an increase in food intake in response to emotions. Some people have a strong emotional connection with food. Such people can turn to food for comfort consciously or subconsciously, when facing a difficult problem, feeling stressed, or even while feeling bored. Emotional eating can lead to excessive calorie intake, thereby damaging any weight loss efforts. Such a response to food can be triggered due to variations in certain genes.

7.0

Emotional Eating Dependance

Interpretation

As per your genotype, your Emotional Eating Dependance is poor. People with such a genotype are quite likely to indulge in high calorie consumption due to excessive snacking during an emotional trigger.

Gene Table

Gene Name: MC4R | Your Genotype: TC

The protein encoded by this gene is a membrane-bound receptor and member of the melanocortin receptor family. The encoded protein interacts with adrenocorticotropic and MSH hormones and is mediated by G proteins. This is an intronless gene. Defects in this gene are a cause of autosomal dominant obesity.

Do's and Don'ts

Do's

- Increase consumption of high protein, high fiber, and low glycemic index foods.
- Find other means to relieve your emotional distress, such as engaging in hobbies, watching a movie, or talking to a friend.

Don'ts

- Avoid overeating and binging on calories.
- Avoid indulging in excessive calorie dense foods, simple carbohydrates, fried foods, and salty snacks.
- Avoid keeping hard-to-resist comfort foods in your home.

Snacking Pattern

What is Snacking Pattern ?

Eating behavior is a complex interplay of physiological, psychological, social, and genetic factors that influence meal timing, quantity of food intake, food preference, and food selection. Even after a meal, some individuals tend to look for snacks or more meals. Such people have an increased urge to snack on foods throughout the day even though they feel full. Variations in certain genes are involved in poor snacking pattern, resulting in overeating.

5.9

Snacking Pattern

Interpretation

As per your genotype, your Snacking Pattern is typical. People with such a genetic makeup tend to snack at proper intervals between meals.

Gene Table

Gene Name: MC4R | Your Genotype: TC

The protein encoded by this gene is a membrane-bound receptor and member of the melanocortin receptor family. The encoded protein interacts with adrenocorticotropic and MSH hormones and is mediated by G proteins. This is an intronless gene. Defects in this gene are a cause of autosomal dominant obesity.

Gene Name: Near LEP | Your Genotype: AA

This gene encodes for Leptin. Also knows as the hormone of energy expenditure, it is predominantly made by adipose cells that helps to regulate energy balance by inhibiting hunger.

Do's and Don'ts

Do's

- Eat meals at regular intervals.
- Opt for meals high in fiber and protein, and less in fats and simple carbohydrates, when you have an urge.
- Satisfy any snack cravings with a small portion of a relatively healthy snack, high in fiber and protein.

Don'ts

- Avoid simple carbohydrates, deep fried foods, and junk foods.
- Avoid binging on calories, consuming empty calories, and snacks high on salt.
- Avoid keeping hard-to-resist comfort foods in your home.
- Avoid skipping meals.

Category Summary

TASTE PERCEPTION

8.0

Sweet Taste Perception

6.6

Fatty Food Preference

5.5

Bitter Taste Perception

Sweet Taste Perception

What is Sweet Taste Perception ?

Sweet taste perception is the ability of our taste buds to sense sweet foods. Taste perception explains the individual food preferences and the impact of eating behavior and nutritional intake. Generally, the less sensitive ones are likely to consume more of that food and tend to overeat. Taste buds for sweet taste perception are usually found at the back of the tongue and the roof of the mouth. Genetic variations in the genes encoding taste receptors influence the inter-individual differences observed in sweet taste perception. People with certain variants are poor sweet taste perceivers, and therefore tend to consume sugars in higher amounts.

8.0

Sweet Taste Perception

Interpretation

As per your genotype, your Sweet Taste Perception is poor. People with such a genetic profile have a slightly lower sensitivity towards sweet foods, and hence might be unable to satisfy their sweet cravings easily. Therefore, they may indulge in higher amounts of sugary foods, resulting in intake of empty calories.

Gene Table

Gene Name: TAS1R3 | Your Genotype: TT

There are differences in the sensitivity, perception, and preference for tastes. Taste sensitivity can be attributed to the threshold of activated taste cells. The sweet taste perception is primarily mediated by the TAS1R2 (taste receptor type 1 member 2) and TAS1R3 (taste receptor type 1 member 3) genes, which encode the major carbohydrate sweet taste receptor. Variations in the TAS1R3 gene have been associated with the taste sensitivity to sucrose, thereby influencing differences in the sensitivity to sweet-tasting compounds.

Gene Name: TAS1R2

Your Genotype: CC

There are differences in the sensitivity, perception, and preference for tastes. Taste sensitivity can be attributed to the threshold of activated taste cells. The sweet taste perception is primarily mediated by the TAS1R2 (taste receptor type 1 member 2) and TAS1R3 (taste receptor type 1 member 3) genes, which encode the major carbohydrate sweet taste receptor. Variations in the TAS1R2 gene may affect one's sugar sensitivity and thereby can contribute to the risk of cardiometabolic diseases. Studies have established an association between variations of this gene, and one's carbohydrate intake, the risk of hypertriglyceridemia and the consumption of sugar.

Do's and Don'ts

Do's

- Indulge in sweet foods occasionally to satisfy your sweet tooth.
- Control portion size of sweet foods.

Don'ts

- Avoid excessive consumption of sugary foods.

Fatty Food Preference

What is Fatty Food Preference ?

Fatty food preference tells us about our taste-based preference for foods rich in fats, such as deep fried foods, nuts, cheese, and red meats. How an individual perceives the taste of foods dictates the individual food preferences, eating behavior, and nutritional intake. Preference for fatty foods is governed by certain genetic variations which can largely influence our fatty food intake.

6.6

Fatty Food Preference

Interpretation

Your genotype for Fatty Food Preference is poor. People with such a genetic profile have a higher preference for fatty foods, which may predispose them to develop lifestyle diseases.

Gene Table

Gene Name: RGS6 | Your Genotype: GA

The RGS6 gene is a member of the G7 superfamily; it plays a role in the regulation of G-protein signaling and is believed to have an interplay with opioid receptors (G-protein coupled receptors). While under stress, there is an increase in the cortisol levels which triggers inflammatory responses and promotes negative feedback. Usually, opioid receptors are part of this negative feedback, owing to their ability to promote feelings of well-being and the inhibition of cortisol secretion. RGS6 acts to promote tachyphylaxis (rapid desensitization) and tolerance; it slows the formation of G-protein coupled receptors. Thus, modulating the opioid response to any stimulus. Fatty and sugary foods are also known to trigger an opioid response and a lower preference for such foods under chronic stress. Variations in the RGS6 gene variation may be associated with eating or addictive behaviors.

Gene Name: CD36 | Your Genotype: GG

The CD36 gene encodes for a membrane-bound protein; CD36 is expressed in several cell types, including fat cells, muscle cells, and on certain taste bud cells where it is believed to mediate the perception of fatty acid. CD36 plays a major role in the oro-sensory perception of dietary fats, as long-chain fatty acids may be primarily responsible for fat taste perception. It has been suggested that reduced expression of CD36 may decrease ones' sensitivity to fat taste, which can lead to increased fatty food intake as a compensatory reaction.

Do's and Don'ts

Do's

- Eat a balanced diet, keeping a check on the total fat intake.
- Increase protein and fiber intake in your meals.
- Regular checkups of lipid levels could be beneficial.
- Eliminate trans fat consumption.

Don'ts

- Avoid eliminating fats altogether from the diet, which can affect the normal functioning of the body.

Bitter Taste Perception

What is Bitter Taste Perception ?

Bitter taste perception is the ability of our taste buds to sense bitter foods. Taste perception explains the individual food preferences and the impact of eating behavior and nutritional intake. Generally, the less sensitive ones are more likely to consume that food and tend to overeat. Lower perception of bitter taste is generally associated with increased consumption of bitter foods, which could possibly lead to toxicity in the body under adverse conditions. Genetic variations in the genes encoding taste receptors are responsible for differences in bitter taste perception.

5.5

Bitter Taste Perception

Interpretation

As per your genotype, your Bitter Taste Perception is typical. People with such a genetic profile tend to perceive bitter tasting foods as neither extremely bitter nor less bitter.

Gene Table

Gene Name: TAS2R38 | Your Genotype: GC

The TAS2R38 gene encodes a G protein-coupled receptor, which acts as a taste receptor, and is mediated by certain chemicals like PROP and phenylthiocarbamide; these chemicals bind to the receptor and signal taste perception. Vegetables like broccoli, cabbage, kale, and Brussels sprouts, contain glucosinolates and isothiocyanates, which resemble PROP. Therefore, the perceived bitterness of these vegetables is mediated through the TAS2R38 gene.

Do's and Don'ts

Do's

- Have bitter tasting foods in moderation. If the taste is not acceptable, mask it with some preferred flavour (spices/sauces/seasoning).

Don'ts

- Bitter tasting foods should not be completely avoided as some of them contain beneficial phytonutrients.

Category Summary

MACRONUTRIENT REQUIREMENTS

6.8

Response to Saturated Fats

7.1

Response to Monounsaturated Fats

5.5

Response to Carbohydrates

6.2

Response to Polyunsaturated Fats

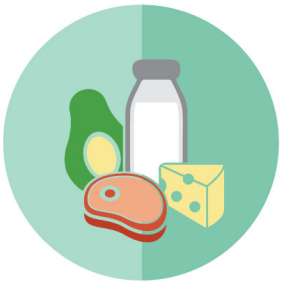
2.0

Response to Protein

2.0

Response to Fiber

Response To Saturated Fats



What is Response to Saturated Fats ?

Saturated fats are a class of macronutrients which are used for energy generation by the body. Saturated fats are found in butter, ghee, margarine, and in animal fats. They differ from other types of fats with respect to the number of double bonds in their backbone, with saturated fats having none. They tend to have higher melting points compared to unsaturated fats, which are generally liquid at room temperature. Saturated fats, when consumed in higher amounts compared to other fats are known to increase LDL cholesterol, which leads to deposition of plaques along the walls of the blood vessels, causing narrowing of blood vessels. This directly leads to an increase in the risk of developing cardiovascular diseases. Genetic variations can influence how the body responds to saturated fat intake, in terms of developing abnormal lipid profiles and obesity.

6.8

Response to Saturated Fats

Interpretation

As per your genotype, your Saturated Fat Response is poor. People with such a genotype tend to have a slightly elevated risk of being obese or of having abnormal lipid levels post consumption of saturated fats, which in turn elevates the risk of adverse health conditions such as stroke or cardiovascular diseases.

Gene Table

Gene Name: APOA2 | Your Genotype: TT

The APOA2 gene encodes for a protein, apolipoprotein (apo-) A-II, which is the second most abundant protein of the high-density lipoprotein particles. Saturated fat can stimulate the production for APOA2 production in the postprandial phase (after eating a meal). Certain variations of the gene may result in a higher level of postprandial hypertriglyceridemia (increased triglyceride level) in the blood.

Gene Name: LRP1 | Your Genotype: CC

The LRP1 gene encodes a protein, which is involved in the formation of a mature receptor. This receptor is involved in many cellular processes including intracellular signaling, lipid homeostasis, and clearance of apoptotic cells (biochemical events leading to cell changes and death).

Gene Name: FTO | Your Genotype: AT

The FTO gene has strong associations with conditions such as obesity and type II diabetes. It is known to contribute to the regulation of body size and body fat accumulation, specifically, thermogenesis (heat production), and adipocyte (fat cell) differentiation into brown or white fat cells. It is also involved in the regulation of the global metabolic rate, energy expenditure, and energy homeostasis.

Gene Name: THRA | Your Genotype: AA

The THRA gene encodes for a protein which is a nuclear hormone receptor for triiodothyronine (T3 thyroid hormone). It is shown to mediate certain activities of the thyroid hormone. Thyroid hormones, Triiodothyronine (T3) and tetraiodothyronine (T4) hormones play a key role in the regulation of energy metabolism and thermogenesis (body heat production), along with having significant roles in the process of glucose and lipid metabolism, food intake, and fatty acid oxidation. Variations in functions of the thyroid hormones can be a factor in differences in body mass index (BMI) and weight gain.

Gene Name: PPARA | Your Genotype: TC

The PPARA gene plays a key role in lipid homeostasis. The activation of PPARA contributes to the clearance of triglyceride-rich lipoproteins, improves HDL cholesterol concentrations, and reduces the oxidation of LDL cholesterol, thus influencing the activity of key players in lipid metabolism and the induction of enzymes related to fatty acid oxidation.

Gene Name: AHSG | Your Genotype: TT

The AHSG gene is involved in the regulation of body fat and insulin sensitivity. Variations in the AHSG gene has been shown to be associated with reduced plasma levels as well as lower body fat.

Gene Name: PCSK1 | Your Genotype: CG

The PCSK1 gene encodes for a protein that has been associated with the cleavage of proteins that play a role in the hypothalamic regulation of appetite. Variations in the PCSK1 gene have been associated with the modulation of fasting fat oxidation.

Gene Name: LTA | Your Genotype: TA

Variations that influence the function of the gene have been identified in several genes, including the lymphotoxin-α (LTA) gene, which affects the cytokine production. The variations may interact with dietary fatty acids to regulate the production and secretion of cytokines which may predispose an individual to inflammation and altering obesity.

Gene Name: CD36 | Your Genotype: AA

The CD36 gene encodes for a membrane-bound protein; CD36 is expressed in several cell types, including fat cells and muscle cells. The primary function of this protein is in the uptake of fatty acids into cells for energy generation. CD36 and FA signaling coordinate fat utilization based on newly identified CD36 actions that involve oral fat perception, intestinal fat absorption, regulation of hepatic lipoprotein output, activation of beta-oxidation by muscle, and regulation of the production of the fatty acid-derived bioactive eicosanoids. Thus, abnormalities of fat metabolism and the associated pathology might involve dysfunction of CD36-mediated signal transduction in addition to the changes of FA uptake.

Gene Name: IL6 | Your Genotype: GG

The IL6 gene encodes for a protein that has a wide variety of biological functions. Following muscle contraction, it functions to increase the breakdown of fats and to improve insulin resistance.

Do's and Don'ts

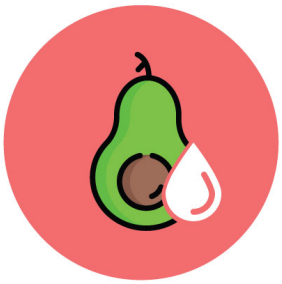
Do's

- Consume a balanced diet.
- Keep saturated fat intake strictly below 10% of the daily calorie intake.
- Try to replace saturated fats with unsaturated fats as much as possible.

Don'ts

- Avoid consuming excessive calories since fats are very calorie dense.

Response To Monounsaturated Fats



What is Response to Monounsaturated Fats ?

Monounsaturated fatty acids (MUFA) are a type of fat which contain one double bond in their backbone. These fats are usually liquid at room temperature. Monounsaturated fats also play a critical role in regulating the body's immune function. Eating monounsaturated fats instead of saturated fats and trans fats can lower cholesterol levels and reduce the risk of heart disease and stroke. Monounsaturated fats are also high in vitamin E, an antioxidant vitamin that keeps the body healthy by protecting cells from damage. Foods like avocados, peanut butter, nuts, seeds, olive oil, peanut oil, canola oil, sesame oil, and sunflower oil are particularly high in monounsaturated fats. Genetic variations can influence the degree of health benefits observed with MUFA intake.

7.1

Response to Monounsaturated Fats

Interpretation

As per your genotype, your Monounsaturated Fatty Acid (MUFA) Response is poor. People with such a genotype tend to benefit less from MUFA rich diets as compared to the typical population.

Gene Table

Gene Name: APOA1 | Your Genotype: GG

The APOA1 gene encodes for a protein, apolipoprotein A-I (ApoA-1), which is the major protein component of high-density lipoprotein (HDL) in the plasma. High levels of HDL can reduce the risk of developing cardiovascular conditions. HDL transports cholesterol and some fats through the tissues to the liver, from where these compounds are either redistributed to other tissues or eliminated from the body. ApoA-1 facilitates the movement of cholesterol and phospholipids to the outer surface of the cells, where these substances combine with apoA-I and form HDL. Elimination of excess cholesterol from cells is important for controlling blood cholesterol levels and maintaining cardiovascular health.

Gene Name: APOB | Your Genotype: AG

The APOB gene encodes for a protein, apolipoprotein B, which is the main apolipoprotein of chylomicrons and low-density lipoproteins. This protein is involved in transporting fat molecules, including cholesterol in the bloodstream.

Gene Name: ADIPOQ | Your Genotype: GG

The ADIPOQ gene encodes for a protein, adiponectin, which is a plasma protein secreted by the visceral adipose tissue. Adiponectin increases insulin sensitivity and tissue fat oxidation, resulting in reduced circulating fatty acid levels. Therefore, variants in the ADIPOQ gene may influence the serum cholesterol and low-density lipoprotein (LDL) cholesterol levels, and serum lipid levels; these factors are further dependent on the composition of dietary fatty acids.

Do's and Don'ts

Do's

- Consume a balanced diet.
- Replace sources high in saturated fats with sources high in unsaturated fats.

Don'ts

- Avoid consuming excessive calories since fats are very calorie dense.
- Avoid consuming excessive MUFAs.

Response To Carbohydrates

What is Response to Carbohydrates ?

Carbohydrates are important macronutrients and the primary source of energy and calories for the body. Carbohydrates are primarily divided into simple carbohydrate and complex carbohydrate groups. Simple carbohydrates are quickly broken down and absorbed by the body, which leads to a spike in the blood sugar levels and insulin secretion. Increased consumption of simple carbohydrates such as refined flour, table sugar, syrups, and fruit drinks could increase the risk of developing diabetes and obesity. Complex carbohydrates, due to their complex structure, cannot be quickly broken down, causing slow and sustained release of sugar and insulin into the bloodstream. Complex carbohydrate sources include oats, quinoa, brown rice, barley, and legumes. Genetic variations can influence the risk of developing insulin resistance and obesity in response to carbohydrate consumption.

5.5

Response to Carbohydrates

Interpretation

As per your genotype, your Carbohydrate Response is typical. People with such a genetic profile tend to metabolize carbohydrates in a typical manner, thereby not affecting their risk of developing insulin resistance or obesity in response to carbohydrate consumption.

Gene Table

Gene Name: TCF7L2 | Your Genotype: AA

The TCF7L2 gene encodes a protein that influences the secretion of a hormone (glucagon-like peptide-1) which has insulinotropic effects (stimulates insulin secretion) and plays a role in regulating blood glucose homeostasis. Carbohydrate digestion causes the release of glucose into the bloodstream, which triggers the production of insulin by the pancreatic β-cells. Variations in the TCF7L2 gene can hinder glucose tolerance which may be responsible for impaired β-cell responsiveness and may increase the risk for developing type II diabetes.

Gene Name: MMAB | Your Genotype: CC

The MMAB gene encodes an enzyme that aids in the production of adenosylcobalamin, which is important for the breakdown of cholesterol. The MMAB gene may play a role in modulating concentrations of HDL-C which can affect the risk of developing dyslipidemia and coronary heart disease. The involvement of MMAB in cholesterol synthesis may explain its role in carbohydrate intake.

Gene Name: FTO | Your Genotype: CA

The expression of the FTO gene in the hypothalamus is indicative of its potential role in regulating energy homeostasis by modifying the appetite. Carbohydrates influence various aspects such as body weight, appetite, and endocrinology. Carbohydrates intake affects fat tissues via glycolysis (glucose breakdown), synthesis of triglycerides, and hormonal changes brought on by carbohydrate intake.

Gene Name: SREBP1C | Your Genotype: TT

Sterol regulatory element-binding protein-1c (SREBP-1c) plays a key role in the regulation of lipid and glucose metabolism. Overexpression of SREBP can lead to an increased glucose oxidation rate and glycogen synthesis. Thus, SREBP-1c is found to be involved in conditions like type II diabetes, obesity, and insulin resistance syndromes.

Gene Name: PPARA | Your Genotype: GG

The shift between glucose storage and synthesis during fasting and feeding is essential for maintaining blood glucose levels. PPARA contributes to the adaptation of hepatic carbohydrate metabolism during the fasting-to-fed and fed-to-fasting transition. Hepatic carbohydrate metabolism undergoes a shift from glucose storage during feeding towards glucose production during fasting.

Gene Name: PPARG | Your Genotype: CC

PPAR (peroxisome proliferator-activated receptor) is involved in regulating the carbohydrate and lipid homeostasis, adipogenesis, fatty acid storage, and maintaining energy balance. The PPARG gene encodes a protein (PPAR-gamma) which plays a role in the regulation of fat cell differentiation, storage of fatty acid, and glucose metabolism.

Do's and Don'ts

Do's

- Maintain a balanced diet.
- Keep the total carbohydrate intake between 45%-65% of the total calorie intake.
- Increase consumption of slow absorbing carbohydrates, while decreasing consumption of fast absorbing carbohydrates.

Don'ts

- Avoid consuming excessive high-calorie junk foods.

Response To Polyunsaturated Fats

What is Response to Polyunsaturated Fats ?

Polyunsaturated Fatty Acids (PUFA) are a type of fat which contain more than one double bond in their backbone. PUFA rich sources include olive oil, soybean oil, corn oil, and sunflower oil. Other sources include seeds such as walnuts and flaxseeds. PUFAs at room temperatures are liquids. PUFAs can help reduce LDL cholesterol levels in the blood which can subsequently lower the risk of heart disease and stroke. Oils rich in polyunsaturated fats also contribute vitamin E, an antioxidant vitamin that keeps the body healthy by protecting cells from damage. There are two main types of PUFA, omega 3 and omega 6 fatty acids. Omega 3 PUFAs are anti-inflammatory and found in fatty fish, shellfish, liver, and in some seeds like flaxseed. Omega 6 rich foods are predominantly present in animal fats. The ideal ratio of omega 6 to omega 3 is around 2:1 to 4:1, but modern diets contain ratios ranging from 15:1 to even 25:1, which leads to a much increased dietary need for omega 3 intake for most individuals. Genetic variations can influence the dietary requirement for omega 3 PUFA intake.

6.2

Response to Polyunsaturated Fats

Interpretation

As per your genotype, your Polyunsaturated Fatty Acid (PUFA) Response is poor. People with such a genotype usually show a diminished response to the usual omega 3 PUFA intake in terms of health benefits, thereby leading to an increased dietary requirement for omega 3 PUFA.

Gene Table

Gene Name: AGT | Your Genotype: CT

The AGT gene encodes for a protein, angiotensinogen, which plays a role in the regulation of blood pressure and fluid balance in the body. Variations in the AGT gene have found to be associated with concentrations of total cholesterol and low-density lipoprotein cholesterol in the plasma.

Gene Name: FADS1 | Your Genotype: GG

This gene encodes the enzyme Fatty acid desaturase 1(Δ5 desaturase) which catalyses the conversion of omega-3 & omega-6 parent fatty acids namely alpha-linolenic acid (ALA) & linoleic acid (LA) to their longer chain derivatives (eicosapentaenoic acid or EPA & docosahexaenoic acid or DHA from ALA; and arachidonic acid or AA from LA). Desaturase activity may affect the vascular responses to an inflammatory damage by altering the availability of eicosanoid precursors. Individuals with greater desaturase activity may have a greater risk of vascular disease, owing to the increased levels of AA. Though EPA levels are also increased in such individuals, dietary n-6 is manyfold higher compared to n-3. Hence in such individuals atherosclerotic CAD predisposition is mainly due to increased AA levels.

Gene Name: APOA5 | Your Genotype: AG

The APOA5 gene encodes for a protein, apolipoprotein A-5 (APOA5), which is a major component of VLDL (very low-density lipoprotein), chylomicrons, and HDL (high-density lipoprotein). APOA5 functions as an activator of a key enzyme in triglyceride catabolism, inhibits the VLDL-particle production and assembly in the liver, and accelerates the uptake of lipoprotein remnants in the liver. Certain variants in this gene are associated with higher fasting triglyceride concentrations in people consuming a high n-6 polyunsaturated fatty acid (PUFA) diet.

Gene Name: APOA4 | Your Genotype: AG

Variations in the APOA4 gene tend to have an influence on the particle size of low-density lipoprotein and its propensity for oxidative modifications in response to one's diet. Thus, variants of the APOA4 gene may modify the concentration of plasma LDL cholesterol following dietary fat intake.

Gene Name: APOC3 | Your Genotype: CG

The APOC3 gene encodes for a protein, apolipoprotein C-3 (APOC3), which is a component of very-low-density lipoprotein (VLDL). This gene plays a role in inhibiting the activities of proteins that are required for the hydrolysis of triglycerides and therefore influences the circulating triglyceride levels. Hence, an increase in the level of APOC3 may increase the risk for hypertriglyceridemia and may inhibit hepatic uptake of triglyceride-rich particles, which may result in impaired triglyceride degradation.

Gene Name: CETP | Your Genotype: TT

The CETP gene encodes for a protein that is involved in the transfer of cholesteryl ester from high-density lipoprotein (HDL) to other lipoproteins. Variations in the CETP gene may influence the responses of lipids (fats) and lipoproteins to the alterations in the ratio of polyunsaturated to saturated fatty acids in the diet.

Gene Name: SREBP1C | Your Genotype: CC

The SREBP1C gene encodes for the protein sterol regulatory element-binding protein-1c (SREBP-1c), which is involved in the regulation of lipid and glucose metabolism. The expression of SREBP-1c is influenced by factors like polyunsaturated fatty acids and glucose.

Gene Name: ADIPOQ | Your Genotype: TT

The ADIPOQ gene encodes for a protein, adiponectin, which is a plasma protein secreted by the visceral adipose tissue. Adiponectin increases insulin sensitivity and tissue fat oxidation, resulting in reduced circulating fatty acid levels. Therefore, variants of the ADIPOQ gene may influence the serum cholesterol and low-density lipoprotein (LDL) cholesterol levels, and serum lipid levels; these factors are further dependent on the composition of dietary fatty acids.

Do's and Don'ts

Do's

- Replace sources high in saturated fat with sources high in unsaturated fats.
- Strictly increase consumption of omega 3 PUFAs to maintain a healthy ratio between omega 3 and omega 6 PUFA intake.

Don'ts

- Avoid consuming excessive calories since fats are very calorie dense.

Response To Protein

What is Response to Protein ?

Protein is an essential macronutrient required by the body for growth and maintenance. It acts as a building block for all the cells in the body and can also serve as a fuel source. When broken down into amino acids, they are used as precursors to several other molecules essential for life. A protein-rich diet boosts metabolism and reduces appetite. Therefore, consumption of proteins invokes a feeling of fullness, decreases total calorie consumption, and reduces appetite over time, which aids in fat loss and weight maintenance. Dietary sources of protein include both animals and plant proteins, which include meats, dairy products, fish, eggs, grains, legumes, and nuts. Genetic variations can lead to altered response to increased protein consumption in terms of maintaining lost weight.

2.0

Response to Protein

Interpretation

According to your genotype, your Protein Response is excellent. People with such a genotype tend to easily maintain body weight on adequate protein ingestion. Increasing protein intake along with suitable weight training would help achieve optimum muscle mass and weight.

Gene Table

Gene Name: TFAP2B | Your Genotype: AA

The TFAP2B gene encodes a protein (transcription factor AP-2β), which in conjunction with other proteins from the AP-2 family binds to specific regions of DNA and helps to control the activity of genes involved in the stimulation of cell proliferation and in the destruction of cells.

Do's and Don'ts

Do's

- Intake at least 0.8 grams of protein per kilogram of bodyweight per day.

Don'ts

- Avoid consuming more than 2 grams of protein per kilogram of bodyweight per day.

Response To Fiber

What is Response to Fiber ?

Dietary fiber is a type of carbohydrate that cannot be digested by the body. The primary role of dietary fiber is in bowel function. Dietary fiber, particularly insoluble fiber, helps prevent constipation by increasing stool weight and decreasing the time of transit of stools in the gut. It also helps in lowering the risks of heart disease and diabetes. Fiber based foods retain water in the intestine which helps to feel fuller, thereby keeping excessive calorie intake in check, which reduces the risk of developing obesity. It is commonly found in fruits, vegetable, pulses, and whole grains. Genetic variations can influence the extent of benefit that increased fiber intake can have on keeping weight in check.

2.0

Response to Fiber

Interpretation

As per your genotype, your Fiber Response is excellent. People with such a genotype usually show greater benefits in terms of fat loss with increased fiber intake.

Gene Table

Gene Name: FTO | Your Genotype: AA

The FTO gene has strong associations with conditions such as obesity and type II diabetes. Studies have shown that people with certain variations in the FTO gene are found to have beneficial results with increased fiber intake; variations may also be associated with decreased body mass index (BMI) and obesity in response to high fiber intake and physical activity.

Do's and Don'ts

Do's

- Include fiber rich foods in your diet.
- Increase consumption of water along with the increased fiber intake.

Don'ts

- Avoid consuming excessive fiber as it can lead to bloating, gas, diarrhea, and/or constipation.

Category Summary

WEIGHT MANAGEMENT AND MAINTENANCE

6.5

Ability to Maintain Weight Loss

Ability To Maintain Weight Loss

What is Ability to Maintain Weight Loss ?

While losing weight is difficult for many people, it is equally challenging to keep the weight off. A significant number of people who lose a large amount of weight tend to regain it 1 to 3 years later. Certain genetic variations can influence the ability to maintain body weight post weight loss. This increases the importance of following a healthy nutrition plan and exercise regimen to maintain the weight loss for those people who are at a higher genetic risk for regaining lost weight.

6.5

Ability to Maintain Weight Loss

Interpretation

As per your genotype, your Ability to Maintain Weight Loss is poor. People with such a genotype tend to be unable to maintain their weight post a weight loss intervention.

Gene Table

Gene Name: NEGR1 | Your Genotype: AG

NEGR1 (Neuronal Growth Regulator 1) is a Protein Coding gene. It's a key obesity gene and has effects on brain structure as well. Polymorphisms in this gene are found to be associated with propensity of weight regain.

Gene Name: FTO | Your Genotype: GT

The FTO gene has strong associations with conditions such as obesity and type II diabetes. Variations in the FTO gene may influence weight regain.

Gene Name: PPARG | Your Genotype: CC

PPAR (peroxisome proliferator-activated receptor) is involved in regulating the carbohydrate and lipid homeostasis, adipogenesis, fatty acid storage, and maintaining energy balance. The PPARG gene encodes a protein (PPAR-gamma) which plays a role in the regulation of fat cell differentiation, storage of fatty acid, and glucose metabolism.

Gene Name: ADIPOQ

Your Genotype: GG

The ADIPOQ gene encodes for a protein, adiponectin, which is produced in the adipose tissue (fat tissue). Variations in the ADIPOQ gene can influence the production of adiponectin, thereby affecting energy intake and body weight.

Do's and Don'ts

Do's

- Maintain an active lifestyle with a sustainable workout and diet plan.
- Manage your calorie intake.

Don'ts

- Avoid binging on foods with high calorie content.
- Avoid going on crash diets in order to lose weight.

Category Summary

MICRONUTRIENT REQUIREMENTS

9.0	9.0	7.6
Phosphate Metabolism	Calcium Metabolism	Vitamin A Metabolism
7.2	8.0	7.0
Vitamin E Metabolism	Vitamin C Metabolism	Vitamin B6 Metabolism
6.0	6.9	5.0
Vitamin D Metabolism	Iron Metabolism	Vitamin B9 Metabolism
5.3	5.3	2.0
Vitamin B12 Metabolism	Antioxidant Metabolism	Magnesium Metabolism

Phosphate Metabolism

What is Phosphate Metabolism ?

Phosphate is an essential mineral that is necessary for the formation of bones and teeth. In the body, almost all of the phosphorus is combined with oxygen, forming phosphate. Phosphate is also used as a building block for several important substances including those used by the cell for energy generation, making cell membranes, and making DNA. Dietary sources of phosphate include milk, meat products, sea fish (salmon, mackerel, and sardines), seeds (pumpkin and sunflower seeds), legumes, eggs, and oatmeal. Genetic variations can influence serum phosphate levels, thereby leading to altered dietary requirement.

9.0

Phosphate Metabolism

Interpretation

As per your genotype, your Phosphate Metabolism is very poor. People with such a genotype tend to be inefficient at phosphate metabolism, thereby leading to an increased dietary requirement.

Gene Table

Do's and Don'ts

Do's

- Eat a well balanced diet.
- Ensure that you are not deficient in vitamin D and/or magnesium.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Calcium Metabolism

What is Calcium Metabolism ?

Calcium is the most abundant mineral in the body, more than 90% of which is present in the bones and teeth. Calcium is also important for proper functioning of the thyroid gland. Calcium is absorbed by the body in the form of phosphate salts and it is crucial for the regulation of muscle contraction and heart functioning. Calcium levels in the blood are also important in the production of clotting factors and for nerve impulse transmission. Given its multitude of functions in the human body, deficiency of calcium can lead to problems such as osteoporosis, osteopenia, and muscle cramps. Excessive intake of calcium can cause constipation, increased thirst or urination, nausea, vomiting, and kidney stones. Foods rich in calcium include all dairy products, almonds, broccoli, cabbage, soybeans, tofu, salmons, and sardines. Genetic variations can lead to abnormal calcium absorption in the body.

9.0

Calcium Metabolism

Interpretation

As per your genotype, your Calcium Metabolism is very poor. People with such a genotype tend to have an elevated risk of developing high serum calcium levels.

Gene Table

Gene Name: CASR | Your Genotype: GG

The CASR gene encodes for a protein (calcium-sensing receptor - CaSR), which is abundant in the cells within the parathyroid glands and the renal tubules of kidneys. The parathyroid hormone produced by the parathyroid glands helps in increasing blood calcium levels. Binding of a high amount of calcium to the CaSR protein can block the production of parathyroid hormone thereby preventing the release of more calcium into the blood.

Do's and Don'ts

Do's

- Maintain a balanced diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Vitamin A Metabolism

What is Vitamin A Metabolism ?

Vitamin A is a group of nutritional organic compounds which are of primary importance in the process of vision. It also plays an important role in the immune function of the body and in maintaining skin health. Animal sources like organ meat, fish, and milk products provide vitamin A in the form of retinol or retinoic acid, while plant sources like carrots, sweet potatoes, spinach, kale, and cantaloupes provide the precursor of vitamin A in the form of carotenes, which are converted into retinol inside the body. Some symptoms related to vitamin A deficiency include night blindness, acne, or dry skin. Excess vitamin A in the body could lead to abdominal pain, muscle pain, nausea, vomiting, and diarrhea. Genetic variations can affect the process of beta-carotene conversion to retinol, thereby influencing dietary vitamin A requirement.

7.6

Vitamin A Metabolism

Interpretation

As per your genotype, your Vitamin A Metabolism is poor. People with such a genotype tend to have a reduced ability to metabolize vitamin A, thereby increasing their risk of vitamin A deficiency.

Gene Table

Do's and Don'ts

Do's

- Consume a balanced diet.
- Include vitamin A rich foods in your diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Vitamin E Metabolism

What is Vitamin E Metabolism ?

Vitamin E, also known as tocopherols are a class of fat-soluble vitamins. Primary role of vitamin E in the body is as an antioxidant, to neutralize the free radicals produced in the body, thereby preventing cellular damage. It is also an important component of the immune system. Vitamin E deficiency has been known to cause cognitive decline and neuromuscular problems. Vitamin E is possibly unsafe in excess and may lead to nausea, diarrhea, stomach cramps, headache, and bleeding-related problems. Sources of vitamin E include vegetable oils, nuts, salmon, crayfish, soybean, spinach, broccoli, and almonds. Genetic variations can influence the absorption of vitamin E in the body.

7.2

Vitamin E Metabolism

Interpretation

As per your genotype, your Vitamin E Metabolism is poor. People with such a genotype tend to have lower plasma levels of vitamin E due to its inefficient absorption. Therefore, they are at an elevated risk for vitamin E deficiency.

Gene Table

Gene Name: CD36 | Your Genotype: AA

Vitamin E is a fat-soluble vitamin and an antioxidant. The protein encoded by the CD36 gene is involved in the uptake of long-chain fatty acids and therefore may also influence the plasma concentrations of vitamin E.

Gene Name: TTPA | Your Genotype: TA

The TTPA gene encodes for a protein (α-tocopherol transfer protein - αTTP) which plays a key role in the distribution of α-tocopherol (vitamin E obtained from the diet) throughout the body. Vitamin E from the diet is absorbed in the intestine and transported into the liver. In the liver, αTTP transfers vitamin E to very-low-density lipoproteins (VLDLs) which travels through the bloodstream and transports vitamin E throughout the body. αTTP may also play a role in the transport of vitamin E to nerve cells.

Do's and Don'ts

Do's

- Consume a balanced diet.
- Include vitamin E rich foods in your diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Vitamin C Metabolism

What is Vitamin C Metabolism ?

Vitamin C, also known as ascorbic acid, is an essential water-soluble vitamin involved in the repair of tissues and the enzymatic production of certain neurotransmitters. It also plays an important role in the immune system, functioning as an antioxidant. Vitamin C deficiency has been known to cause scurvy (bleeding of gums), skin rashes, and impaired wound healing. However, excess intake could cause gastrointestinal problems, headache, and trouble sleeping. Sources rich in ascorbic acid include citrus fruits such as oranges and grapefruit, kiwi, mango, and papaya. Genetic variations can influence the absorption of vitamin C in the body.

8.0

Vitamin C Metabolism

Interpretation

As per your genotype, your Vitamin C Metabolism is poor. People with such a genotype tend to have a reduced ability to absorb vitamin C. Therefore, they are at an elevated risk for vitamin C deficiency.

Gene Table

Do's and Don'ts

Do's

- Consume a balanced diet.
- Consume vitamin C rich foods.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Vitamin B6 Metabolism

What is Vitamin B6 Metabolism ?

Vitamin B6 is a part of the vitamin B group of essential nutrients. Our bodies use B vitamins to convert the food we eat into the energy we need to function. It plays a crucial role in carbohydrate, lipid, and amino acid metabolism. Deficiency of vitamin B6 is associated with anemia, dermatitis, and weakened immune function of the body. When present in excess, it has been shown to cause neurological disorders. Vitamin B6 sources include chicken, eggs, chickpeas, bananas, sweet potatoes, pistachios, and spinach. Genetic variations can alter the absorption of vitamin B6, thereby influencing the risk of vitamin B6 deficiency.

7.0

Vitamin B6 Metabolism

Interpretation

As per your genotype, your Vitamin B6 Metabolism is poor. People with such a genotype tend to have lower plasma levels of vitamin B6 due to its inefficient absorption. Therefore, they are at an elevated risk for vitamin B6 deficiency.

Gene Table

Gene Name: NBPF3 | Your Genotype: CT

The variant in this gene has been associated with decreased levels of Vitamin B6 (pyridoxine). Pyridoxine, one of the forms of Vitamin B6, strengthens the protein collagen's regenerative ability which is much needed for rendering us flexibility and skin firmness. Excess of glucose inside the cell can cause cell damage (glycation), and pyridoxine is needed for protecting the cell against glycation-induced damage.

Do's and Don'ts

Do's

- Consume a balanced diet.
- Include vitamin B6 rich foods in your diet.

Don'ts

Avoid self-medicating with supplements without consulting a physician.

Vitamin D Metabolism

What is Vitamin D Metabolism ?

Vitamin D is a fat-soluble vitamin which is synthesized upon exposure of skin to sunlight. Vitamin D plays an important role in regulating calcium levels in the blood, thereby playing an important role in maintenance of bone health. Vitamin D deficiency has been associated with rickets (bone and muscle weakness). It also results in cognitive impairment in older people. Excess vitamin D in the body is associated with elevated calcium levels in the blood, which in the short term could lead to nausea, vomiting, and poor appetite. Food sources for vitamin D include tuna, salmon, egg yolks, cheese, and spinach. However, food sources contain only a very small percentage of daily vitamin D requirement, thereby making sunlight the primary source for vitamin D. Genetic variations can influence the metabolism of vitamin D, thereby influencing the risk of developing vitamin D deficiency.

6.0

Vitamin D Metabolism

Interpretation

As per your genotype, your Vitamin D Metabolism is typical. People with such a genotype tend to have a typical efficiency for metabolising vitamin D.

Gene Table

Gene Name: VDR | Your Genotype: AA

Vitamin D can either be acquired through dietary intake or made in the body with help from sunlight exposure. The VDR gene encodes the vitamin D receptor (VDR) protein which plays a role in the body's response to vitamin D. It binds to calcitriol, the active form of vitamin D, leading to the formation of a protein called retinoid X receptor. The resulting complex binds to vitamin D response elements (specific regions of DNA), and thereby influences the activity of vitamin D-responsive genes.

Gene Name: GC

Your Genotype: AC

The GC gene encodes the vitamin D binding protein (DBP) that belongs to the albumin gene family. The encoded protein has multiple functions and is found in the plasma, ascitic fluid, cerebrospinal fluid, and on the surface of many cell types. The protein binds to vitamin D and its plasma metabolites, transporting them to the target tissues.

Do's and Don'ts

Do's

- Expose yourself to sun as it is the primary source of vitamin D.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Iron Metabolism

What is Iron Metabolism ?

Iron is an essential element required in the body for the production of red blood cells. About 70% of the body's iron stores are found in the red blood cells. It is essential for the formation of hemoglobin and transport of oxygen to the cells in the body. Iron is also involved in immune-system related functions and is a critical nutrient for energy metabolism pathway. Deficiency of iron can lead to fatigue, weakness, pale skin, headache, and dizziness, while excess iron intake is toxic to the body. Dietary sources of iron include chicken, tofu, red meats, broccoli, brussel sprouts, legumes, and spinach. Genetics variations can affect iron metabolism and thereby influence the ability to absorb iron from the diet.

6.9

Iron Metabolism

Interpretation

As per your genotype, your Iron Metabolism is poor. People with such a genotype are usually at an elevated risk of developing iron deficiency due to its inefficient absorption and transport.

Gene Table

Gene Name: TMPRSS6 | Your Genotype: GG

The TMPRSS6 gene encodes a protein called matriptase-2, which influences the levels of the protein, hepcidin. Hepcidin is important for the regulation of iron balance in the body. Low levels of iron in the blood, can decrease the production of hepcidin which can cause more iron from the diet to be absorbed in the intestines and transported to the bloodstream.

Gene Name: HFE | Your Genotype: GG

The HFE gene encodes for a membrane protein that binds to the transferrin receptor 1 protein. This process prevents the receptor from binding to another protein called transferrin. However, binding of transferrin receptor 1 to transferrin is required for iron to enter liver cells, thereby regulating iron levels in liver cells. The HFE gene also influences the production of hepcidin, which is a protein produced by the liver. Hepcidin plays a role in determining the amount of iron absorbed from the diet and its release from the storage sites throughout the body. Binding of HFE protein to transferrin receptor 1, prevents the production of hepcidin, and hepcidin production occurs when the HFE protein is not bound to transferrin receptor 1.

Gene Name: HIST1H1T | Your Genotype: GG

HIST1H1T belongs to the family of histone H1 proteins which is one of the five main histone protein families. Histones are the primary proteins that are components of chromatin found in cells. Chromatic has several functions, a crucial function among them being regulation of gene expression. The HIST1H1T gene is located in the region of the HFE gene which has a significant role in iron metabolism.

Do's and Don'ts

Do's

- Consume a well balanced diet.

Don'ts

- Avoid consuming calcium and iron supplements together, as calcium can inhibit iron absorption.
- Avoid self-medicating with supplements without consulting a physician.

Vitamin B9 Metabolism

What is Vitamin B9 Metabolism ?

Vitamin B9, more commonly known as folate (naturally-occurring form of B9) or folic acid (a synthetic form), is a water-soluble vitamin that is a part of the B vitamin family. Vitamin B9, when converted to its active form, plays an important role in DNA synthesis and cell division, red blood cell production, and clearance of homocysteine, all of which are affected in cases of impaired metabolism of vitamin B9. An excess accumulation of homocysteine can induce inflammation, damage blood vessels, increase blood pressure, and cause a disturbance in heart health. However, excess vitamin B9 intake has been known to cause stomach problems, trouble sleeping, and adverse skin reactions. Sources rich in vitamin B9 include egg yolks, beef liver, tuna, legumes, asparagus, and beetroots. Variations in certain genes can influence the metabolism of vitamin B9.

5.0

Vitamin B9 Metabolism

Interpretation

As per your genotype, your Vitamin B9 Metabolism is typical. People with such a genotype tend to have a typical efficiency for converting dietary vitamin B9 into its active form.

Gene Table

Do's and Don'ts

Do's

- Consume a balanced diet.
- Include vitamin B9 rich foods in your diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Vitamin B12 Metabolism

What is Vitamin B12 Metabolism ?

Vitamin B12, or cobalamin, is a water-soluble vitamin involved in many metabolism pathways in our body. It is particularly important in the nervous system functioning and synthesis of myelin. It also plays an important role in red blood cell formation and production of DNA. Along with folate and riboflavin, it also helps in eliminating homocysteine from the cell. Deficiency of vitamin B12 has known to cause impaired nervous system functioning, lethargy, and fatigue. Vitamin B12 sources include chicken, meat, tofu, eggs, salmon, dairy products, and almond milk. Genetic variations can affect its absorption from food, thereby influencing the risk of vitamin B12 deficiency.

5.3

Vitamin B12 Metabolism

Interpretation

As per your genotype, your Vitamin B12 Metabolism is typical. People with such a genotype tend to have a typical efficiency for vitamin B12 absorption.

Gene Table

Gene Name: CUBN | Your Genotype: GA

Vitamin B12 is not synthesized in the body and is obtained from dietary intake. The CUBN gene encodes a protein, cubilin, which is the intestinal receptor for vitamin B12 (also called cobalamin). Therefore, the CUBN gene plays a crucial role in vitamin B12 absorption. Cubilin protein, mainly associated with renal cells and cells lining the small intestine, binds to vitamin B12 as it passes through the small intestine; the resulting cubilin-vitamin B12 complex is released into the blood from the intestinal cells and transported throughout the body.

Gene Name: FUT2

Your Genotype: AG

The FUT2 gene encodes for an enzyme (galactoside 2-alpha-L-fucosyltransferase 2), which influences the synthesis of H-antigen. The H-antigen plays a role in the attachment of H. pylori bacteria to the gastric mucosa; H. pylori infection can cause decreased secretion of glycoprotein intrinsic factor, which is required for vitamin B12 absorption in the gastrointestinal system. Variants in the FUT2 gene are found to be associated with vitamin B12 levels in the blood plasma. Variations in the FUT2 gene are also found to be associated with altered intestinal microbiota, which may lead to decreased B12 production by the microbiome.

Do's and Don'ts

Do's

- Consume a balanced diet.
- Include vitamin B12 rich foods in your diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Antioxidant Metabolism

What is Antioxidant Metabolism ?

Antioxidants are compounds that inhibit the oxidation process in the body. Certain processes can lead to the formation of oxidative species in the body, which can damage the cells and DNA, leading to impaired cellular functions. The ability of antioxidants to destroy oxidative species protects the structural integrity of cells and tissues. Antioxidants also function in strengthening the immune response of the body. They have also been known to reduce the risk of cancer and neurodegenerative diseases such as Alzheimer's and Parkinson's. Sources rich in antioxidants include dark chocolate, spinach, green tea, and blueberries. Genetic variations can lead to altered functioning of the body's innate antioxidant defence system, thereby influencing the dietary requirement for antioxidants.

5.3

Antioxidant Metabolism

Interpretation

As per your genotype, your Antioxidant Metabolism is typical. People with such a genotype tend to have a typical antioxidant defence system efficiency.

Gene Table

Gene Name: GSTP1 | Your Genotype: AA

Glutathione S-transferase P1 is an enzyme encoded by the GSTP1 gene. This enzyme plays a key role in the process of detoxification and the antioxidant system.

Gene Name: CAT | Your Genotype: TC

The CAT gene encodes an enzyme, catalase, which is a key antioxidant enzyme that plays a role in the body's defense against oxidative stress. Catalase is involved in the conversion of hydrogen peroxide to water and oxygen which reduces the toxic effects of hydrogen peroxide. Variations in the CAT gene have been found to be associated with a decrease in the catalase activity.

Gene Name: GPX1

Your Genotype: CC

The GPX1 gene encodes an enzyme (glutathione peroxidase 1 - GPX1), which is an important antioxidant enzyme in the body. Glutathione peroxidase plays a role in the breakdown of hydrogen peroxide and thereby helps to protect cells against oxidative damage.

Do's and Don'ts

Do's

- Maintain a balanced diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Magnesium Metabolism

What is Magnesium Metabolism ?

Magnesium is the fourth most abundant mineral in the body. It helps in maintaining normal nerve and muscle function, supports a healthy immune system, keeps the heartbeat steady, and helps bones remain strong. Magnesium also works with calcium for regulation of muscle contraction. Deficiency of magnesium has been associated with improper nerve impulses, thereby resulting in poor coordination, muscle spasms, tremors, and loss of appetite. Meanwhile, excess magnesium intake has been associated with irregular heartbeats, low blood pressure, and slowed breathing. Sources rich in magnesium include salmon, mackerel, tuna, spinach, kale, nuts, and dark chocolate. Genetic variations can influence the absorption of magnesium, thereby affecting its serum levels.

2.0

Magnesium Metabolism

Interpretation

As per your genotype, your Magnesium Metabolism is excellent. People with such a genotype tend to be very efficient at magnesium metabolism.

Gene Table

Gene Name: CASR | Your Genotype: GG

The CASR gene encodes for a protein (calcium-sensing receptor - CaSR), which is abundant in the cells within the parathyroid glands and the renal tubules of kidneys. The CaSR protein can bind to magnesium, which can inhibit the secretion of parathyroid hormone as a result of high serum magnesium levels, which may lead to hypocalcemia (low calcium in the blood plasma). Therefore, CaSR may play a role in maintaining magnesium homeostasis.

Do's and Don'ts

Do's

- Maintain a balanced diet.

Don'ts

- Avoid self-medicating with supplements without consulting a physician.

Category Summary

FOOD INTOLERANCES AND SENSITIVITIES

8.7

Salt Metabolism

9.0

Lactose Intolerance

6.5

Gluten Intolerance

3.6

Caffeine Metabolism

Salt Metabolism

What is Salt Metabolism ?

Table salt is a mineral composed primarily of sodium chloride. Sodium is an important electrolyte and an essential nutrient for human health, whose role in the body is primarily as an electrolyte and maintaining fluid balance. Sodium enables the transmission of nerve impulses around the body, regulating the electrical charges moving in and out of the cells. The presence of sodium ions is essential for the contraction of muscles including the most important muscle, the heart. Excess sodium in the body has many side effects such as hypertension, fluid retention, swelling, and edema. Severe sweating, vomiting, and diarrhea are also markedly associated with increased sodium levels. The food sources rich in sodium are cured meats, salted fish, cheese, and canned foods. Genetic variations can influence how an individual responds to salt intake, thereby influencing how much salt can be tolerated in their diet.

8.7

Salt Metabolism

Interpretation

As per your genotype, your Salt Metabolism is very poor. People with such a genotype are likely to respond very poorly to increased salt intake, and therefore are advised to limit consumption.

Gene Table

Gene Name: AGT | Your Genotype: CT

The AGT gene encodes a protein called angiotensinogen, which plays a key role in the regulation of fluid and salt balance, and blood pressure in the body. Angiotensin stimulates the production of aldosterone, which is a hormone that triggers the absorption of salt and water by the kidneys.

Gene Name: ADD1 | Your Genotype: GG

The ADD1 gene plays in the role of sodium transport and reabsorption of sodium in the renal tubules.

Gene Name: SGK1

Your Genotype: CC

This gene encodes a serine/threonine protein kinase that plays an important role in cellular stress response. This kinase activates certain potassium, sodium, and chloride channels, suggesting an involvement in the regulation of processes such as cell survival, neuronal excitability, and renal sodium excretion. High levels of expression of this gene may contribute to conditions such as hypertension and diabetic nephropathy. Dehydration alters the expression of a wide variety of genes including SGK1.

Do's and Don'ts

Do's

- Include low sodium salts such as sea salt and himalayan pink salt in your diet.
- Strictly limit salt intake if you have hypertension or a family history of hypertension.

Don'ts

- Avoid exceeding the recommended intake of table salt per day.
- Avoid consuming excess of pickles, sauces, dressings, and other packaged foods as they contain salt.

Lactose Intolerance

What is Lactose Intolerance ?

Lactose, commonly called milk sugar, is a form of carbohydrate present in milk and other dairy products. It makes dairy products taste mildly sweet. The body starts metabolizing lactose in the intestines with the help of lactase, an enzyme produced and released by the cells that line the small intestine. When the body does not produce enough lactase enzyme, lactose is fermented by the intestinal bacteria. This leads to formation of lactic acid and various gases in the stomach, causing symptoms related to lactose intolerance. Symptoms of lactose intolerance are bloating, gas formation in the stomach, and diarrhea. Genetic variations can influence an individual's risk of developing lactose intolerance.

9.0

Lactose Intolerance

Interpretation

As per your genotype, your Lactose Metabolism is very poor. People with such a genotype tend to have a highly elevated risk of developing lactose intolerance. It is usually advised to such people that they have a limited intake of dairy products or avoid it altogether.

Gene Table

Gene Name: MCM6 | Your Genotype: CC

A regulatory element (which is a specific DNA sequence), within the MCM6 gene, plays a key role in regulating the activity or expression of the LCT gene. The LCT gene encodes an enzyme, lactase, which helps in the metabolism of lactose. Reduced activity or expression of the LCT gene can pose a risk for lactose intolerance.

Do's and Don'ts

Do's

- Strictly limit the intake of lactose containing products.
- Consume alternatives to lactose rich milk such as soy milk and almond milk.

Don'ts

- Avoid neglecting symptoms of lactose intolerance.
- Avoid consuming excess of of lactose containing products.

Gluten Intolerance

What is Gluten Intolerance ?

Gluten is a form of storage protein that is stored together with starch in the seeds of various cereals such as wheat, barley, rye, and oats. Gluten in wheat is responsible for providing the elasticity and making it rise during baking process. Gluten intolerance is characterized by adverse reactions to gluten. Celiac disease is the most severe form of gluten intolerance. Symptoms of gluten intolerance upon consumption of gluten-containing products include bloating, diarrhea, constipation, and abdominal pain. Celiac disease has also been associated with other diseases such as diabetes, thyroid disorders, and other autoimmune diseases. People intolerant to gluten can consume gluten-free cereals. A gluten-free diet is essential for managing signs and symptoms of celiac disease and other medical conditions associated with gluten. Genetic variations can influence an individual's risk of developing celiac disease.

6.5

Gluten Intolerance

Interpretation

As per your genotype, your Gluten Metabolism is poor. People with such a genotype tend to have a high risk of developing gluten intolerance. On gluten ingestion, they may exhibit gastrointestinal disturbances like abdominal bloating, flatulence, cramps, and diarrhea.

Gene Table

Gene Name: Intergenic - RGS1 | Your Genotype: AA

RGS1 belongs to a family of RGS genes. It attenuates the signaling activity of G-proteins, blocking the homing of Intra Epithelial Lymphocytes (IELs), and it is specifically expressed both in human small intestinal mucosa and in murine IELs, key players in the development of human CD villous atrophy.

Gene Name: FUT2 | Your Genotype: GA

The FUT2 gene encodes for a protein that influences the production of H antigen, which is an antigen essential for the synthesis of soluble A and B antigen. These antigens act as anchors and as sources of carbon for intestinal bacteria in the intestinal lining. Therefore, variations in the FUT2 gene are found to be associated with altered intestinal microbiota; alteration of the intestinal bacteria may lead to gluten intolerance.

Gene Name: REL | Your Genotype: GG

The REL gene encodes a protein, c-Rel, which belongs to the Rel/NF-κB transcription factor family, which helps in the regulation of genes involved in important processes like inflammation and immune response. Studies have suggested an association of c-REL and the development of adaptive anti-gluten immunity.

Gene Name: Near IL18RAP | Your Genotype: AA

This variant is located near the IL18RAP gene. The protein encoded by the IL18RAP gene is a part of the receptor for interleukin 18 (IL18), which is involved in triggering cell-mediated immunity. The protein influences the signaling by IL18. Variations in this gene are found to be associated with conditions such as Celiac Disease (CD). Celiac Disease (CD) is a chronic, immune-mediated condition that can be triggered due to dietary gluten intake.

Gene Name: LPP | Your Genotype: CC

The LPP gene is strongly expressed in the small intestine and is involved in the regulation of various important cellular processes. Studies have suggested a strong relationship between Celiac Disease (CD) and the LPP gene. CD is a chronic, immune-mediated condition that can be triggered due to dietary gluten intake. Variations in the LPP gene may lead to the protein-tyrosine-phosphatase 1B (PTP1B) levels becoming adequate or excessive. This can lead to increased extracellular signal-regulated kinase (ERK) activity which can cause the progression of CD.

Gene Name: Intergenic - Near CCR3 | Your Genotype: AG

This variant is located near the CCR3 gene. The CCR3 gene encodes for a protein that is a receptor for C-C type chemokines. It is strongly expressed in various cells and may also contribute to the accumulation and activation of several inflammatory cells involved in the allergic airway.

Gene Name: TAGAP | Your Genotype: GA

The TAGAP gene encodes for a protein that may play a role in Rho GTPase-activating protein. Variations in the TAGAP gene may lead to an increase in GTPase activity, which can eventually result in the development of celiac disease (CD). Variants of this gene may play a role in the body's immune response of CD; CD is a chronic, immune-mediated condition that can be triggered from dietary gluten intake.

Gene Name: HLA-DRA | Your Genotype: GT

The HLA-DRA gene (major histocompatibility complex, class II, DR alpha) encodes for a protein that plays a crucial role in the regulation of the immune system. Variations may lead to an immune response in response to gluten intake and may influence an individual's gluten sensitivity.

Gene Name: HLA DQ7 | Your Genotype: GG

The Human Leukocyte Antigen system (HLA) gene is associated with the synthesis of Major Histocompatibility Complex (MHC), which are cell surface proteins that are associated with the regulation of the immune system. Variations in HLA DQ 8 genes have been shown to be strong genetic predictors of Gluten Sensitivity, individually and together with some other markers of HLA genes.

Gene Name: HLA DQ2.2 | Your Genotype: AG

The Human Leukocyte Antigen system (HLA) gene is associated with the synthesis of Major Histocompatibility Complex (MHC), which are cell surface proteins that are associated with the regulation of the immune system. Variations in HLA DQ 8 genes have been shown to be strong genetic predictors of Gluten Sensitivity, individually and together with some other markers of HLA genes.

Gene Name: HLA DQ8 | Your Genotype: AA

HLA-DQ8 (DQ8) is a human leukocyte antigen serotype within the HLA-DQ (DQ) serotype group. DQ8 is a split antigen of the DQ3 broad antigen. DQ8 is determined by the antibody recognition of β8 and this generally detects the gene product of DQB1*0302. DQ8 is commonly linked to autoimmune disease in the human population. DQ8 is the second most predominant isoform linked to coeliac disease and the DQ most linked to juvenile diabetes. DQ8 increases the risk for rheumatoid arthritis and is linked to the primary risk locus for RA, HLA-DR4. DR4 also plays an important role in juvenile diabetes.

Do's and Don'ts

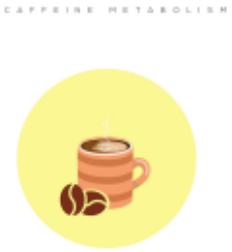
Do's

- Stop intake of gluten rich foods in case symptoms of gluten intolerance are observed.
- Undergo appropriate diagnostic confirmatory tests with the consultation of a physician, if symptoms of gluten intolerance are observed.

Don'ts

- Gastrointestinal problems should not be ignored as they might be associated with gluten intolerance.

Caffeine Metabolism



What is Caffeine Metabolism ?

Caffeine is a central nervous system stimulant, present in beverages such as coffee, tea, energy drinks, and aerated drinks like cola. Caffeine invokes a sense of alertness and wakefulness upon consumption. However, it can also produce a mild form of dependence. Generally, up to 400 mg of caffeine appears to be a safe dose for adults, but great variability is observed in terms of how much caffeine can be tolerated by an individual, which in turn is governed by genetic variations. Excess caffeine consumption can cause several side effects such as anxiety, insomnia, digestive issues, high blood pressure, and rapid heart rate.

3.6

Caffeine Metabolism

Interpretation

As per your genotype, your Caffeine Metabolism is good. People with such a genotype tend to be fast metabolizers of caffeine and therefore can tolerate relatively higher amounts.

Gene Table

Gene Name: CYP1A2 | Your Genotype: AA

The CYP1A2 gene encodes a liver enzyme that is critical for the breakdown of caffeine molecules into substances that can be excreted through urine. This function influences the amount of caffeine its effects in the body. Variations in the CYP1A2 gene can impact caffeine metabolism and how it affects the body.

Gene Name: Near AHR | Your Genotype: CT

This variant is located near the AHR gene. The AHR gene encodes for a protein that plays a role in regulating the expression of other genes, including the CYP1A2 gene, thereby influencing caffeine metabolism.

Do's and Don'ts

Do's

- Consume caffeine in moderation.
- Consume adequate amount of water to prevent dehydration caused by the diuretic effect of caffeine.

Don'ts

- Avoid an overdose of caffeine.