FoodChoice

Intolerances and Sensitivities

Common Food Intolerances and Sensitivities plus Predisposition to Food Allergies

POWERED BY fitgenes

Name: John Doe
Kit: 27

Introduction

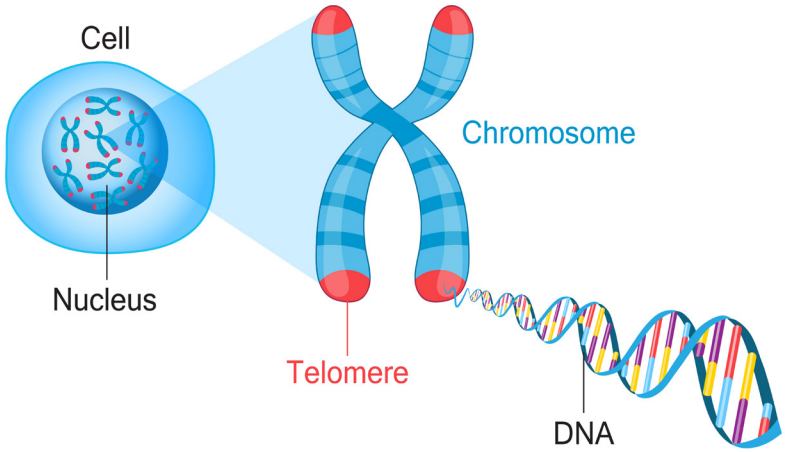
Genetic variants (alterations in the DNA sequence) is what makes everyone unique.

Thank you for choosing Fitgenes to assist in your food choice. Fitgenes is a DNA-based healthtech company aiming at helping you achieve your individual goals on overall health, nutrition, and performance, by applying nutrigenetics and nutrigenomics evidence.

Nutrigenetics is the study of the impact of genetic variation on dietary responses, while nutrigenomics is a scientific discipline that studies how nutrients affect gene expression. This means that **your genes are not your destiny:** you can modify your genetic predisposition to certain conditions by making the right lifestyle choices.

THE BASICS OF DNA

The human genome consists of 23 pairs of chromosomes found in the cell nuclei, which contain genes and other non-coding sequences. Overall, it is estimated that each individual has approximately 30,000 genes. A gene is, essentially, a sequence of DNA that codes for a molecule with a function. As chromosomes come in pairs, each individual has two copies of each gene, one inherited from each parent.



DIFFERENCES BETWEEN FOOD ALLERGIES, INTOLERANCES, AND SENSITIVITIES

Some of the symptoms of food allergies, intolerances, and sensitivities often overlap, although these are different conditions.

A true **food allergy** involves the immune system attacking a particular harmless food, and even small amounts can cause a reaction. **Coeliac disease** also involves the immune system, but this is an autoimmune disease, where a person's immune system attacks its own cells in response to gluten intake.

On the other hand, a **food intolerance** refers to a difficulty digesting certain substances, such as lactose and alcohol. This is generally due to an inefficiency of the enzyme (a protein that accelerates chemical reactions) involved in the process. **Histamine intolerance** is slightly different. This occurs when the body accumulates too much of it, and symptoms can look like those associated with seasonal allergies.

Finally, **food sensitivities** happen when the normal side effects of substances, such as caffeine and salt, are exaggerated. As a result, a person can become more sensitive to the effects of that substance in comparison to other people.

YOUR Genetic Profile Report

In this report, you will identify some of the foods or drinks that you should consider minimising or avoiding in order to prevent diet-related health issues and promote wellness, according to your genetics. In particular, we detail your specific genetic variants that can influence your body's response to what you ingest – ranging from coeliac disease risk and dietary intolerances to individual sensitivities to common ingredients, in addition to food allergies - with genotype-specific interventions. This information, combined with other assessments, can be used by an accredited practitioner to design even more personalised and targeted interventions to maximise your health potential.

In order to simplify the results, the genes tested as part of your personal profile have been grouped in the following categories:

1. **Coeliac Disease Risk**
2. **Lactose Intolerance**
3. **Alcohol Intolerance**
4. **Caffeine Sensitivity**
5. **Salt Sensitivity**
6. **Histamine Intolerance**
7. **Food Allergies (Predisposition)**

For each gene, you can have three different results, as shown by the figure below.

Beneficial	Less Beneficial	Least Beneficial
One or both of the genes in the pair contributes to the normal healthy functioning of the gene product.	One of the genes in the pair is contributing to a situation that impairs the healthy functioning of the gene product.	Both of the genes in the pair are contributing to a situation that impairs healthy functioning of the gene product.

For categories that have multiple genes, your risk for a particular condition will be increased with the more orange (slightly increased) or red (further increased) results you have. Similarly, if you only have green results, your risk will not be increased based on the genes included in this report.

If you have any worry or concern about a particular category or result, or if there is anything you do not understand, we encourage you to contact us for further information, in addition to speaking to your health practitioner.

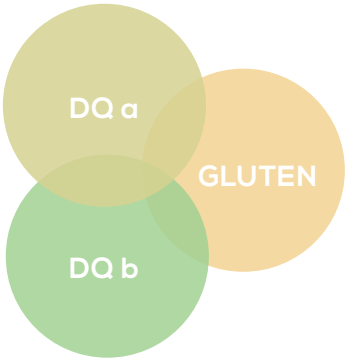
Note: when comparing results from Fitgenes with other sources, it is important to take into account whether testing was done on the forward or reverse strand. For this reason, it is possible that results do not completely match, but they are still the same (C=G, A=T). Caution should be taking with complementary changes (C>G, A>T).

Disclaimer and limitations: all genes and variants presented in this report, with their corresponding implications for your health, have gone through extensive scientific literature review. Nevertheless, genetic research is rapidly increasing, and our understanding of the information included in this report will increase over time, and so the content of future reports may vary from this one.

1 COELIAC Disease Risk

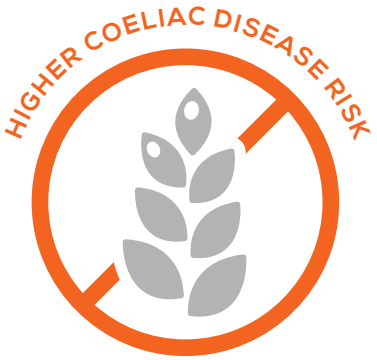
Coeliac disease is defined as an autoimmune reaction to eating gluten. Symptoms are varied, and can include chronic diarrhoea, abdominal pain and swelling, or anaemia. It is estimated that about 1% of people suffer from coeliac disease. This condition is becoming more and more well-known due to the popularity of gluten-free foods in supermarkets and restaurants. Some people decide to follow a low-gluten diet when it is not "clinically" necessary. This may not be the best choice, as a study has inversely linked gluten intake and type 2 diabetes risk. A relatively more common issue is known as "non-coeliac gluten sensitivity", which does not require a strict gluten-free diet.

However, the genetic causes of this issue are not well-understood. The most common "coeliac disease genes" are *HLA-DQA1 (this corresponds to the commonly reported haplotype HLA-DQ2)* and *HLA-DQB1 (HLA-DQ8)*, part of the HLA gene complex involved in the regulation of the immune system, whose genetic variants have been associated with risk of developing coeliac disease. That is, **a positive genetic result does not diagnose the disease, but indicates a higher predisposition to develop the disease than the general population.** A negative genetic result, however, has a stronger predictive value.

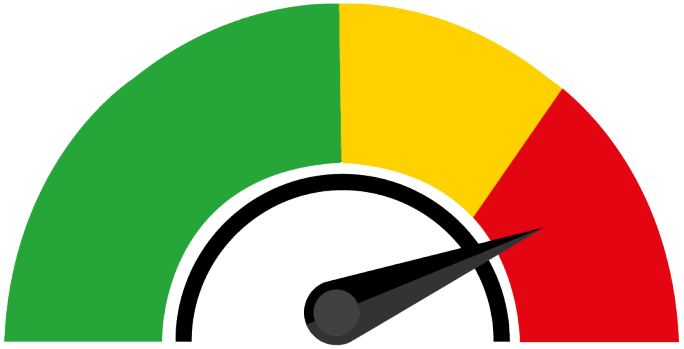


Specific HLA genes produce receptor proteins that form a functional complex and bind gluten peptides

Individuals with certain genetic variants trigger an immune response more easily



Your Results



You have a moderately increased risk of coeliac disease

> It is recommended to have a small to moderate intake of gluten, eat a variety of vegetables daily, and avoid processed, high-sugar and high-fat foods

> Follow a gluten-free diet only if coeliac disease is confirmed through conventional testing (refer to the Supplementary File for further information on coeliac disease, and to your health practitioner if you are experiencing coeliac disease symptoms)

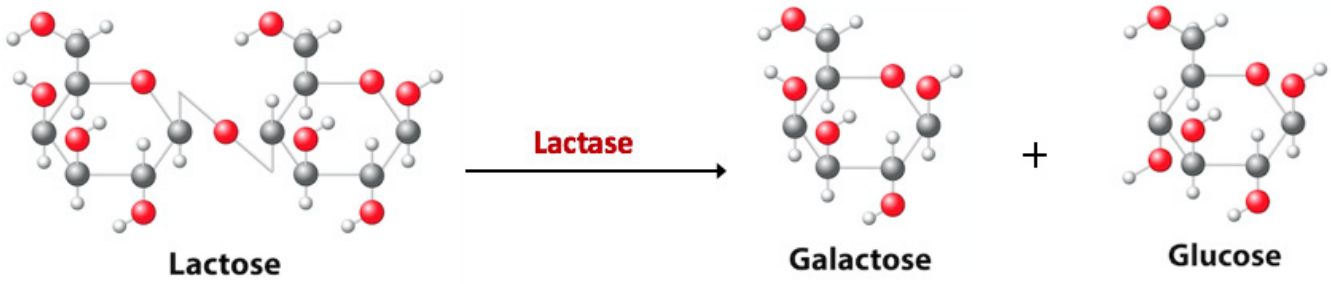
2 LACTOSE Intolerance

Lactose intolerance is characterised by the inability to digest lactose, causing abdominal pain and swelling, flatulence, diarrhoea, and other symptoms. It has been estimated that about 65% of the global population are lactose intolerant, although this differs among communities. Rates are higher in some Asian and African countries, with up to 100% of individuals affected, as opposed to only 4% in some European countries.

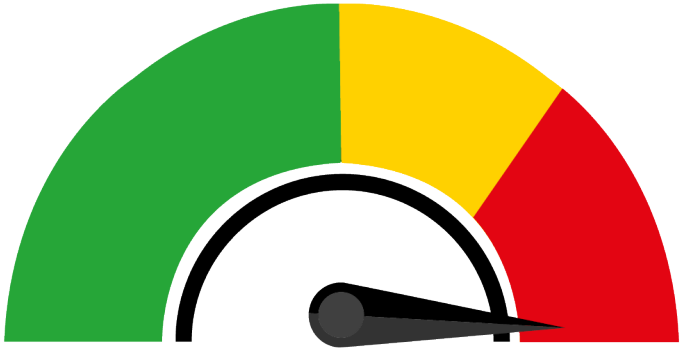
Lactase is the enzyme that digests the lactose present in milk and other dairy products. In some individuals, lactase activity persists at a high level throughout life, enabling the digestion of lactose as an adult. However, this activity can decline after weaning, leading to "lactose intolerance".

Milk allergy, on the contrary, involves the immune system and can be life-threatening. This can be determined by an allergy test. It is thus important to differentiate between lactose intolerance and milk allergy.

LCT is the gene responsible for producing the enzyme lactase. A genetic variant located in the *MCM6* gene has been found to affect the *LCT* gene function, and be associated with lactose intolerance.



Your Results



You have a high risk of lactose intolerance

> Avoid milk and dairy products high in lactose, and processed foods that contain lactose (refer to the Supplementary File or your health practicioner for further information)
> Consider the use of digestive enzymes containing lactase available as a supplement to help digestion
> Make sure you get enough calcium from non-dairy sources (fortified soymilk, white beans, kale, almonds, etc.)

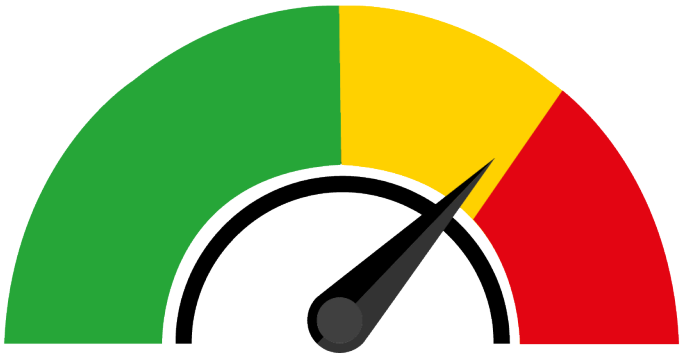
3 ALCOHOL Intolerance

It is well-known that alcohol does not affect everybody the same way, as it depends on a number of factors: how fast you drink, your food intake, your weight, sex and age, and, of course, your genetics. Alcohol intolerance can be described as a genetic condition in which the body is unable to metabolise efficiently toxins present in ingested alcohol. It is especially common in Asians, and it has been said that ¨Europeans are genetically programmed to drink more alcohol (and eat more fatty foods)". Even so, it can affect anybody.

This condition is characterised by unpleasant symptoms immediately after drinking, mainly flushing (what is known as "alcohol flush reaction"), as well as runny nose, nausea, vomiting, sleepiness, or hangover-like symptoms. There is currently no cure for alcohol intolerance, but you might be able to reduce associated symptoms.

Two of the most recognised genes associated with alcohol intolerance and flushing are *ADH1B* and *ALDH2*, which are involved in alcohol metabolism.

Your Results



You have a moderately increased risk of alcohol intolerance

> Avoid or limit alcohol intake. You can use non-alcoholic alternatives (refer to the Supplementary File or your health practitioner for further information)

4 CAFFEINE Sensitivity

Caffeine is present in many beverages, such as coffee, tea, caffeinated soda, or energy drinks. It is a natural central nervous system stimulant that helps combat fatigue and improves concentration, and is also a diuretic (increases production of urine). A morning coffee is a common routine for many people, although experts have said that this is not the best time of the day to drink coffee, since it interferes with cortisol production. The half-life for caffeine (time taken for the body to eliminate one-half of the caffeine) is between 4 to 6 hours on average, which is the reason why some people do not take coffee after 3 pm.

Some individuals may consume a large amount of caffeine during the day without being affected, while others may experience anxiety and an increase in blood pressure after just one cup of coffee. In most healthy adults, up to 400mg of caffeine a day is considered to be safe, although the average amount is between 200mg and 300mg.

Here, we show two important genes in the caffeine pathway: *CYP1A2*, which has a central role in caffeine metabolism and has been associated with risk of hypertension, and *ADORA2A*, determinant in caffeine effects on sleep and anxiety levels.

Your Results

You have a moderately increased risk of caffeine sensitivity

> Decrease intake of caffeine (up to 150mg a day), as it has a more stimulating effect for you. You can use caffeine-free alternatives (refer to the Supplementary File or your health practitioner for further information)

> Limit intake of caffeine to the morning or early afternoon at the latest to avoid sleep problems

5 SALT Sensitivity

Salt is a mineral added to most foods, and affects people differently. Salt sensitivity is arbitrarily defined as an increase in blood pressure of at least 10% in response to a change in salt intake. Increased salt intake, regardless of the actual level of blood pressure, can be a risk factor for cardiovascular and kidney diseases. It is usually believed that a reduction in salt intake results in a decrease in blood pressure, leading to beneficial outcomes. This is not always positive for everyone, as some individuals can be salt-sensitive, while others may be salt-resistant.

Recommended amount of salt for most healthy adults is up to 6g a day (equivalent to 2,300mg or 2.3g of sodium), about a teaspoon of salt.

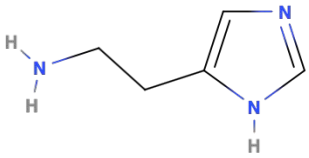
The *AGT*, *ACE*, and *AGTR1* genes belong to the renin-angiotensin system, which regulates blood pressure and balance of fluids and salts in the body, and have been associated with salt sensitivity and risk of hypertension.

Your Results

You have a low risk of salt sensitivity

> Can use recommended intake of salt
> Refer to the Supplementary File for further information on salt (salt and health, salt in foods and alternatives), or to your health practitioner if you still have any concern

6 HISTAMINE Intolerance

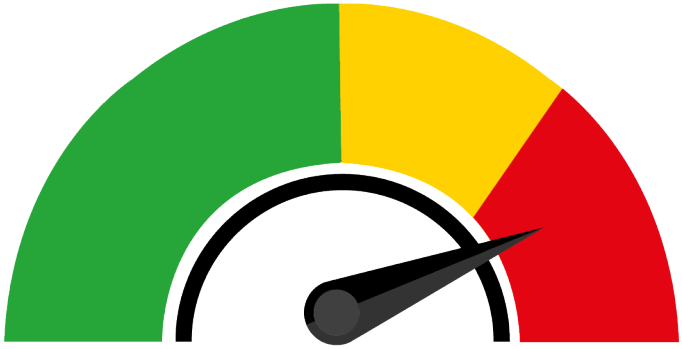


Histamine is a biologically active substance naturally produced as part of the immune response to increase the permeability of the capillaries to leukocytes and proteins, and it also regulates other physiological functions.

The term histamine intolerance is used to describe a situation in which the histamine levels are too high and/or the human body cannot break it down effectively. Symptoms of histamine intolerance are very similar to those of seasonal allergies, and include headaches, itchy skin, runny nose, fatigue, hives, and digestive issues. A low-histamine diet, typically rich in fresh fruits and vegetables, can be recommended to those suffering from histamine intolerance.

The main enzymes responsible for breaking down histamine are encoded by the *DAO* and *HNMT* genes, in which genetic variants have been associated with risk of histamine intolerance.

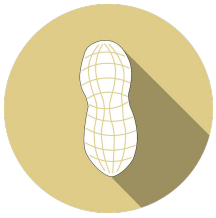
Your Results

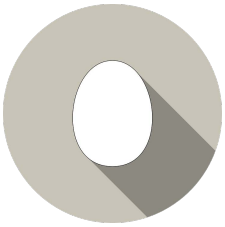


You have a high risk of histamine intolerance

> Avoid foods with high histamine content or histamine-releasers (canned foods, fermented dairy products and vegetables, legumes, etc.) as well as drinks that have been reported to block histamine metabolism genes (alcohol, energy drinks, black and green tea, etc.)
> Aim for foods and beverages with low histamine content (fresh fruits and vegetables, grains, etc.)
> Refer to the supplementary file for a more detailed list of foods and beverages with different histamine content or effect on histamine levels

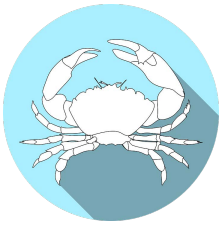
7 Food **ALLERGIES**

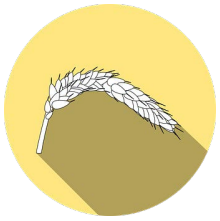


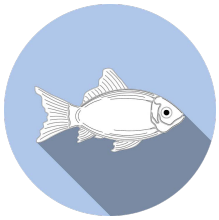


Food allergies represent a condition in which certain foods trigger an abnormal response of the immune system. Most common foods allergies are caused by peanuts and tree nuts, dairy milk, eggs, shellfish, wheat, soy, and fish. Symptoms of food allergies are obvious and usually occur short time after exposure, ranging from mild to severe. The development of food allergies is determined by the epigenome, which can be altered as a result of environmental factors throughout the lifespan, although it is more sensitive during early life stages. On the other hand, food allergies often run in families. Children born in families with history of allergic diseases, especially when both parents are affected, are more likely to develop food allergies than those with no family history. Of note, children do not always develop the same type of food allergy as their parents.

Although **the genetics of food allergies are not fully established**, there is a growing amount of research identifying genetic risk variants for food allergies. Specifically, variants in a number of genes or regions involved in immunological regulation or epithelial barrier function (the SERPINB gene cluster, the cytokine gene cluster, the filaggrin gene, *C11orf30/LRC32* locus, and the HLA region) have been associated with a predisposition to risk of food allergies by candidate gene and genome-wide association studies.







Your Results

You have a low risk of food allergies

> While you do not carry any of the tested genetic risk markers for food allergies, remember that this does not necessarily mean that you do not have or will never develop any food allergy

> Refer to your health practitioner for more information on allergy management and prevention (in adults and children), and to the supplementary file for more general information on food allergies from Allergy & Anaphylaxis Australia

YOUR Genetic Profile Report: Summary

This report has been designed to identify your geneticvariants associated with body reactions to certain foods or drinks. Through genotype-specific interventions, you can find what elements in your diet should be avoided or minimised to maximise your health potential (this can be assisted by an accredited practitioner).

Please also see the Supplementary File containing more information about each of these categories, and we encourage you to speak to your health practitioner if you have any concern about a particular category.

Results for Kit Id 27

Category	Gene (variant)	Your Result	Meaning
Coeliac Disease	HLA-DQA1 (rs2187668)	GA	You have a moderately increased risk of coeliac disease
	HLA-DQB1 (rs7454108)	CT	
Lactose Intolerance	LCT (rs4988235)	CC	You have a high risk of lactose intolerance
Alcohol Intolerance	ADH1B (rs1229984)	CC	You have a moderately increased risk of alcohol intolerance
	ALDH2 (rs671)	GG	
Caffeine Sensitivity	CYP1A2 (rs762551)	CA	You have a moderately increased risk of caffeine sensitivity
	ADORA2A-1 (rs2298383)	CT	
Salt Sensitivity	AGT (rs699)	TT	You have a low risk of salt sensitivity
	AGTR1 (rs5186)	AA	
	ACE (rs4343)	II	
Histamine Intolerance	DAO-1 (rs2052129)	AC	You have a high risk of histamine intolerance
	DAO-2 (rs1049793)	GC	
	HNMT-1 (rs1050891)	TC	
	HNMT-2 (rs11558538)	TC	
Food Allergies	FLG-AS1 (rs12123821)	GG	You have a low risk of food allergies
	C11orf30/LRRC32 (rs2212434)	CC	
	IL4/KIF3A (rs11949166)	AA	
	SERPINB7 (rs12964116)	AA	
	HLA-DQB1-2 (rs9273440)	TT	
	SERPINB7/B2 (rs1243064)	TT	

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Supplementary File

VERSION 4.0

Coeliac Disease Risk

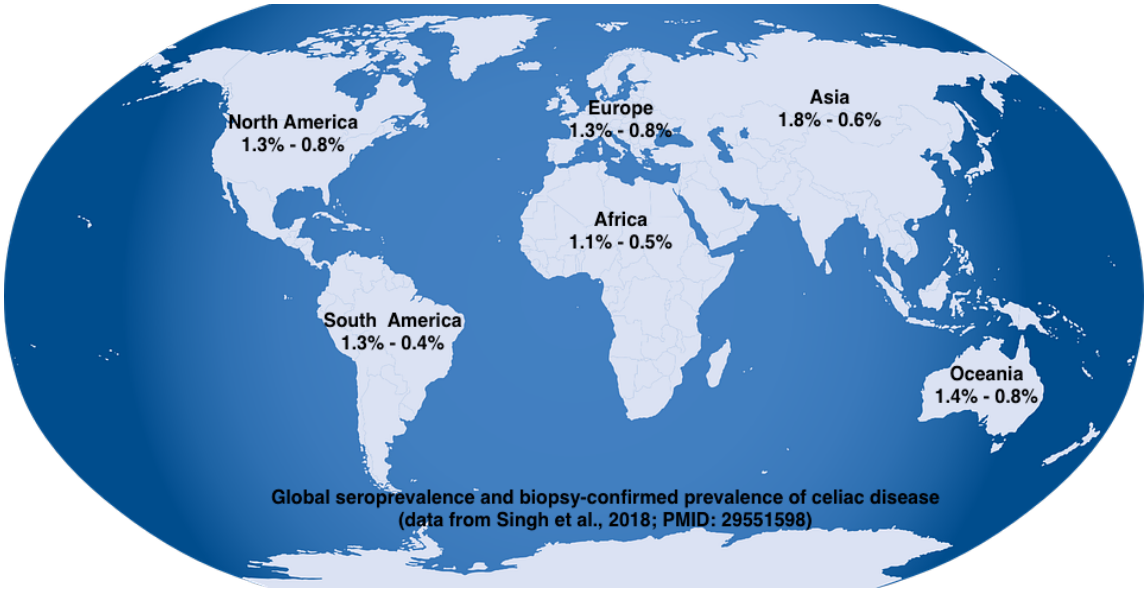
Conventional Coeliac Disease Testing

There are two tests usually performed to diagnose coeliac disease. The first is a blood test to measure antibodies which react to gluten, which will be elevated in those with the condition. Note that for accurate results, it is recommended to eat foods containing gluten for six weeks before this test. If you are already following a gluten-free diet, this result may be negative. The second test is a small bowel biopsy, which involves a gastroscopic procedure to take a sample of the small bowel.

Gluten-free Diet

If you need to follow a gluten-free diet, there are naturally gluten-free food groups that you can eat: fruits and vegetables, meat and poultry, fish and sea food, dairy, beans, legumes, and nuts. Regarding grains and other starch-containing foods, you can enjoy the following: rice, corn, soy, potato, quinoa, chia, and yucca, among many others. For other foods that usually contain gluten (pastas, breads, crackers, seasonings and spice mixes), you can find gluten-free substitutes by identifying the corresponding label in the product. Most beverages are naturally gluten-free (juices, sodas, and sport drinks). Most alcoholic beverages are also gluten-free, except for some types of wines (dessert wines and those made from barley malt) and beers made from gluten-containing grains.

Prevalence of coeliac disease



Further information

For further information on coeliac disease, please refer to your local support organisation:

Australia	www.coeliac.org.au
Canada	www.celiac.ca
New Zealand	www.coeliac.org.nz
Singapore	www.singaporeceliacs.com
UK	www.coeliac.org.uk
USA	www.celiac.org

Lactose Intolerance

Lactose in Foods

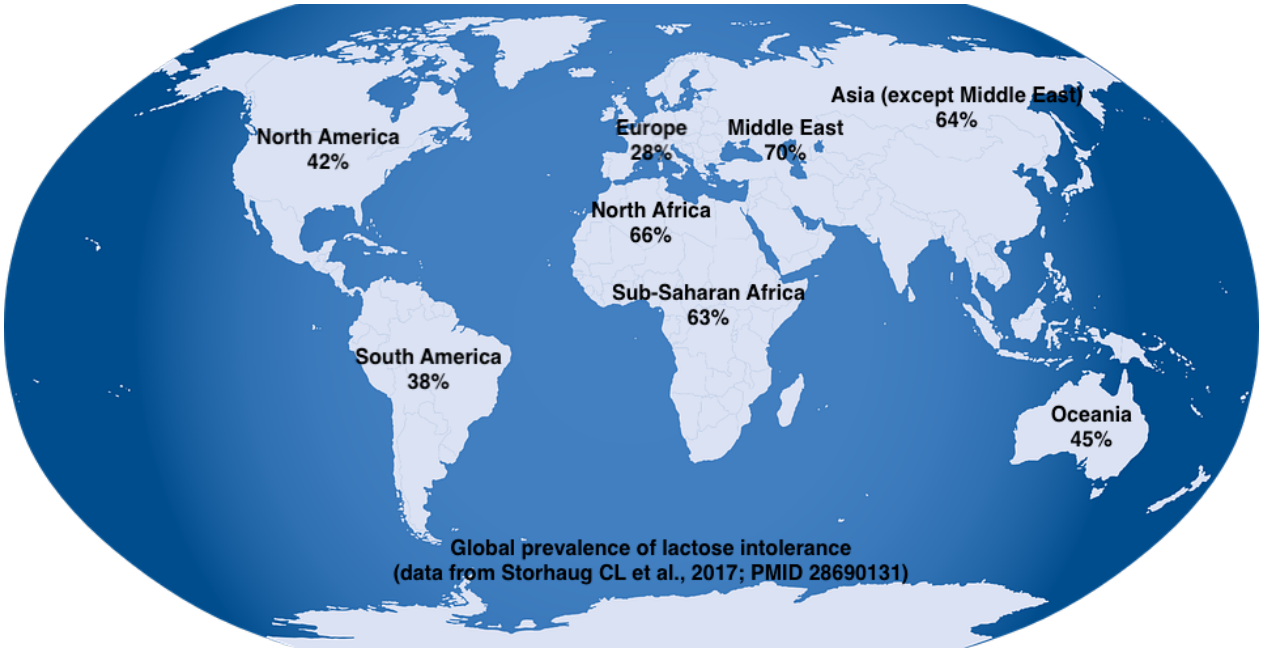
Australian Dietary Guidelines inform that individuals with lactose intolerance can tolerate up to 250mL of milk a day, as long as this is consumed throughout the day and with other foods. Fermented dairy products, such as yoghurt and cheese, are often better tolerated, as lactase is used as part of the fermenting process, reducing the overall lactose content and therefore increasing tolerance to the end product. Below is a list of dairy products and their lactose content, in decreasing order, to use as a guide.

Food	Per 100g	Per Serving Size
Whey	39g - 75g	7.8g - 15g per 20g
Milk powder	36g - 52g	13g - 19g per 35g
Condensed milk	10g - 16g	5.5g - 8.8g per 55mL
Milk (low and full fat)	4g - 5g	10g - 12.5g per 250mL
Chocolate milk	4g	10g per 250mL
Cream	4g	1.6g per 40mL
Yoghurt (whole milk)	4g	8g per 200g
Ice cream	3g - 8g	2.25g - 6g per 80mL
Buttermilk	3g - 5g	7.5g - 12.5g per 250mL
Low fat yoghurt	2g - 7g	4g - 14g per 200g
Whipping cream	3g	1.2g per 50mL
Ricotta cheese	1g - 5g	1.2g - 6g per 120g
Cottage/cream/mozzarella cheese	1g - 3g	0.5g – 1.5g per 50g
Butter	0.5g - 1g	0.1g - 0.2g per 20g
Feta cheese	0.5g	0.15g per 30g
Cheddar cheese	0.1g	0.03g per 30g
Brie/camembert/parmesan/ gruyere cheese	0.1g - 1g	0.03g - 0.3g per 30g
Swiss cheese	0g - 3g	0g - 1g per 30g
Gouda cheese	0g - 2g	0g - 0.6g per 30g

Hidden Lactose

If you are lactose intolerant, you will need to carefully check the labels of what you ingest, as there are many other foods and drinks that can also contain lactose, including: biscuits, cream soups, cheese sauce, custard, salad cream and dressing, mayonnaise, cakes, some types of baked goods and breakfast cereals, muesli bars, or some processed meats.

Prevalence of lactose intolerance



Alcohol Intolerance

Alcohol and Health

Alcohol consumption and tolerance varies with each individual, due partly to your genotype. A general guide to reduce alcohol-related issues is:

1. For healthy adults, no more than two standard drinks a day reduces lifetime risk of harm.
2. For healthy adults, no more than four standard drinks on one occasion reduces risk of alcohol-related injury.
3. For children and young people under 18 years, no alcohol is the safest option, and delay drinking for as long as possible.
4. For women who are planning pregnancy, pregnant or breast feeding, not drinking is the safest option.

While there are some studies which show that drinking a small amount of alcohol two to three times a week can be good for you, you **do not need** to start drinking regularly to get the health benefits.

Moderate to heavy alcohol consumption can have harmful effects on your health, and can increase your risk of developing several diseases, including liver disease, kidney disease, stroke, high blood pressure, cardiomyopathy, colorectal cancer, liver cancer, breast cancer, kidney cancer, and alcohol pancreatitis.

Alcoholism and Alcohol Intoxication Disorder

Genetically, some people have a higher risk of alcoholism, alcohol dependence or alcohol intoxication disorder (binge drinking). However, it is a complex problem that can have multiple causes. It can also be hard to notice in cultures where drinking a lot is socially acceptable.

Some of the signs of alcohol dependence include:

- Worrying about when you will be able to have your next drink.
- Sweating, nausea or insomnia when you are not drinking.
- Needing to drink more and more alcohol to get drunk.
- Drinking alcohol, or wanting to, when you wake up in the morning.
- Consuming alcohol regularly on your own, or trying to hide your drinking.
- Relationships with friends or family are affected by your alcohol consumption.

Digestive System

Alcohol can trigger symptoms of irritable bowel syndrome (IBS). Moderate to heavy drinking can potentially lead to bacterial overgrowth in your small intestine, which can cause bloating, gas, abdominal pain, constipation and diarrhoea. Chronic alcohol use causes changes in the structure and function of the small intestines, disrupting your ability to digest food. If you are experiencing IBS symptoms, it is recommended that you reduce your alcohol consumption and speak to your health practitioner.

Sleep

While alcohol can help you to fall asleep overall, it does not assist sleep due to several mechanisms:

- Alcohol can cause you to miss out on REM sleep, which is when the body restores itself. Usually you will have 6 to 7 cycles of REM sleep, but if you have been drinking, you may only have 1 – 2. It can also make you wake up more easily during the night and feel unrefreshed in the morning.
- Alcohol is a diuretic (increases production of urine), therefore it can interrupt your sleep pattern by making you need to go more to the bathroom.
- Alcohol relaxes the muscles in your body including your mouth, nose and throat, which stops air from flowing smoothly and can make you snore loudly.

If you are drinking alcohol, try to avoid drinking 1 to 2 hours before going to sleep. This allows your body time to process the alcohol before going to bed.

Non-Alcoholic Alternatives

Many social activities and celebrations for adults are associated with alcohol consumption. If you need to cut down on alcohol, you can find some alternatives below.

Sparkling Apple Juice	**Sparkling Water/ Mineral Water**	**Mineral Water with Lime or Mint**	**Mocktails**
Ginger Beer	**Juice**	**Non-alcoholic Wine**	**Non-alcoholic Beer**

Caffeine Sensitivity

Caffeine in Drinks and Food

The caffeine content in foods and drinks is variable. In this table, you can find a general guide to work out how much caffeine you are consuming daily. Note that higher amounts than 400mg of caffeine a day will have a deleterious effect regardless of your genotype.

Drink or Food	Per Serving Size
Coffee from a café/takeaway (1 shot)	113mg - 282mg per 250mL
Espresso or Short Black	~107mg/1 shot
Instant Coffee	60mg - 80mg per 250mL
Iced Coffee*	30mg - 200mg per 500mL
Black Tea i.e. English Breakfast	25mg - 110mg per 250mL
Energy drinks with caffeine*	~80mg per 250mL
Oolong Tea	50mg - 75mg per 250mL
Green Tea	30mg - 50mg per 250mL
White Tea	30mg - 55mg per 250mL
Cola soft drinks*	36mg - 48mg per 375mL
Dark Chocolate	43mg per 100g
Milk Chocolate	20mg per 100g
Hot Chocolate	5mg - 25mg per 250mL
Decaf Coffee	2mg - 12mg per 250mL

*Check product label for specific information on caffeine content.

Caffeine-Free Alternatives

It is not easy to decrease or cut out caffeine drinks. Here are some suggestions that you can try if you need to limit caffeine intake.

Decaf Coffee *contains small amount	**Roasted Chicory Root Coffee** (Teeccino or Cafix)	**Rooibos Tea** (Red Latte)	**Dandelion Tea**
Caffeine-free Chai Latte	**Peppermint Tea**	**Ginger Tea**	**Herbal Tea**

Salt Sensitivity

Salt and Health

The sodium present in salt, when consumed in excess, can lead to negative health outcomes. Too much sodium can increase the risk of high blood pressure in the long term, which is a risk factor for cardiovascular disease. There are other conditions associated with a high-salt diet beyond high blood pressure: heart failure or heart attack, kidney problems and kidney stones, oedema (fluid retention), stroke, left ventricular hypertrophy (thickening of heart muscle), and osteoporosis, among others.

The Australian Government's document titled Nutrient Reference Values for Australia and New Zealand' recommends, for adults aged 19 years and over, to limit the daily sodium intake to between 920 - 1600mg a day with an upper limit of 2,300mg a day. Furthermore, this document recommends a level of no more than 1,600mg a day for older, overweight hypertensives and those wishing to maintain low blood pressure over their lifespan.

Salt in Foods and Alternatives

Below is a list of high-sodium foods in different groups and corresponding low-sodium alternatives.

Group	High-sodium Foods	Low-sodium Alternatives
Meats, Poultry, Fish, Legumes, Eggs and Nuts	• Smoked, cured, salted or canned meat, fish or poultry including bacon, cold cuts, ham, frankfurters, sausage, sardines, caviar and anchovies • Frozen breaded meats and dinners, such as burritos and pizza • Canned entrees, such as ravioli, spam and chili • Salted nuts • Beans canned with salt added	• Any fresh or frozen beef, lamb, pork, poultry and fish • Eggs and egg substitutes • Low-sodium peanut butter • Dry peas and beans (not canned) • Low-sodium canned fish • Drained, water or oil packed canned fish or poultry
Dairy Products	• Buttermilk • Regular and processed cheese, cheese spreads and sauces • Cottage cheese	• Milk, yogurt, ice cream and ice milk • Low-sodium cheeses, cream cheese, ricotta cheese and mozzarella
Breads, Grains and Cereals	• Bread and rolls with salted tops • Quick breads, self-rising flour, biscuit, pancake and waffle mixes • Pizza, croutons and salted crackers • Pre-packaged, processed mixes for potatoes, rice, pasta and stuffing	• Breads, bagels and rolls without salted tops • Muffins and most ready-to-eat cereals • All rice and pasta, but do not to add salt when cooking • Low-sodium corn and flour tortillas and noodles

		• Low-sodium crackers and breadsticks • Unsalted popcorn, chips and pretzels
Vegetables and Fruits	• Regular canned vegetables and vegetable juices • Olives, pickles, sauerkraut and other pickled vegetables • Vegetables made with ham, bacon or salted pork • Packaged mixes, such as scalloped or au gratin potatoes, frozen hash browns and Tater Tots • Commercially prepared pasta and tomato sauces and salsa	• Fresh and frozen vegetables without sauces • Low-sodium canned vegetables, sauces and juices • Fresh potatoes, frozen French fries and instant mashed potatoes • Low-salt tomato or V-8 juice. • Most fresh, frozen and canned fruit • Dried fruits
Soups	• Regular canned and dehydrated soup, broth and bouillon • Cup of noodles and seasoned ramen mixes	• Low-sodium canned and dehydrated soups, broth and bouillon • Homemade soups without added salt
Fats, Desserts and Sweets	• Soy sauce, seasoning salt, other sauces and marinades • Bottled salad dressings, regular salad dressing with bacon bits • Salted butter or margarine • Instant pudding and cake • Large portions of ketchup, mustard	• Vinegar, unsalted butter or margarine • Vegetable oils and low sodium sauces and salad dressings • Mayonnaise • All desserts made without salt

Source: https://www.ucsfhealth.org

Histamine Intolerance

In the table below, you can find a list of foods and beverages classified according to their histamine content or their effect on histamine levels.

Group	Food or beverage
High histamine content	• Alcohol (especially red wines, ciders, beers, and brown liqueurs) • Eggplants • Pickled or canned foods • Matured cheeses • Smoked meat products • Shellfish • Beans and pulses • Long-stored nuts • Chocolates and other cocoa-based products • Seitan (vegan meat made of wheat gluten) • Rice vinegar • Ready-to-eat meals • Salty snacks • Sweets with preservatives and artificial colourings
Histamine releasers	• Most citrus fruits • Cocoa and chocolate • Walnuts, peanuts • Papaya, pineapples, plums, kiwi and bananas • Legumes • Tomatoes • Wheat germ • Most vinegars • Additives
Histamine metabolism gene blockers	• Alcohol • Energy drinks • Black tea • Yerba mate (traditional south American infused drink made from the leaves and twigs of the *Ilex paraguariensis* plant)
Low histamine content	• Fresh meat • Certain fresh/frozen fish • Eggs • Fresh fruits and vegetables • Grains • Fresh pasteurised milk and milk products, milk substitutes • Most cooking oils • Most leafy herbs • Most fruit juices without citrus fruits • Herbal teas

Source: https://www.histamineintolerance.org.uk

1.

HelpSheet

Food Allergy Basics

- A food allergy is an immune system response to a food protein that the body mistakenly believes is harmful. When the individual eats food containing that protein, the immune system releases massive amounts of chemicals, triggering symptoms that can affect a person's gastrointestinal tract, skin, breathing and/or heart.
- Symptoms of food allergy can include; hives, swelling of the lips, face and eyes, vomiting abdominal pain, swelling of the tongue, breathing difficulty, persistent dizziness or a sudden collapse. If left untreated, these symptoms can be fatal.
- It is estimated that up to 2% of adults, 1 in 10 babies* and 6% of children have food allergy and some of them will experience a life-threatening allergic reaction (anaphylaxis).
- There are more than 170 foods known to have triggered severe allergic reactions. Examples include kiwi fruit, banana, chicken, mustard and celery.
- Currently, there is no cure for food allergy. Avoidance of the food is the only way to prevent a reaction.
- Adrenaline is the first line treatment for severe allergic reactions and can be administered via an auto-injector called the EpiPen®.
- Food allergy is the leading cause of (severe reactions) anaphylaxis outside the hospital setting.
- An estimated 10 people die from anaphylactic reactions each year in Australia and some of these are triggered by food. We do not know exact numbers because there is no register collecting data.

** Osborne et al. Prevalence of challenge-proven IgE-mediated food allergy using population-based sampling and predetermined challenge criteria in infants. J Allergy Clin Immunolol 2011; 127: 668-676*

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