

The CarbChoice® Report



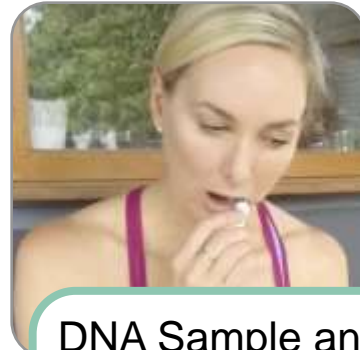
CarbChoice may only be supplied by Fitgenes Accredited Practitioners or any Nutriscience practitioner who has completed Fitgenes CarbChoice® short training module. See final page for details.

Patient Consult and Process



Awareness and Suitability

- **Patient goals and needs**
- Education about genetics and applications
- Suitability of CarbChoice for their goals
- **Select DNA report, if suitable**



DNA Sample and Billing

- Enter patient in Pracware
- Allocate kit and select CarbChoice (billing event)
- Patient sample
 - **Performed in clinic or Fitgenes can send a kit**
- Consent form if in clinic



Test Performed

- Kit posted to Fitgenes
- Results available **3-4 weeks after sample received by Fitgenes***
- Email notification to practitioner
-
- (* whole process can be up to 5 weeks in periods of slow postage e.g. Christmas, COVID)



Retrieve Report From Pracware

- Re-review patient goals
- Review goals in light of report
- Key area(s) of focus
- Treatment plan and dietary recommendations, interventions
- Book follow-up appointment to receive report

The CarbChoice® Report

Congratulations on making the choice to improve your health and wellbeing!

Your CarbChoice report is designed to guide you on your journey toward better long-term health and wellbeing. You can use this information to prepare a personalised diet, exercise and wellness plan that supports your individual needs for making the right choices around starch carbohydrates.

What you will learn from your CarbChoice profile

Your potential genetic predisposition to processing starch carbohydrates.

How much starchy carbohydrate might be suitable for you.

Foods and ingredients to include as part of your daily diet supporting optimal starch carbohydrate processing.

Foods to avoid or minimise to support your weight management goals and nutritional needs.

Foods to increase your amylase levels to support better starch carbohydrate processing.

The CarbChoice® Score (AMY1 Copy Number Variation)

CarbChoice

Your AMY1 Gene Score tells you exactly how tolerant your digestive system is to starch. If you have a high processing range, it means you are better adapted to a high-starch diet. If you sit in a lower processing range, it means you are less starch-tolerant. CarbChoice reports on the activity of your AMY1 gene and how well this stimulates the production of amylase in your saliva when you chew your food.



Low Activity Processing

Individuals who are low processing should decrease their intake of starch carbohydrate and consider changing to higher fibre carbohydrates. High starch carbohydrate intake is associated with a greater risk of obesity, insulin resistance and diabetes.



Moderate Activity Processing

Individuals with moderate processing ability can tolerate more starch carbohydrate such as grains. High starch carbohydrate intake is associated with a higher risk of weight management issues and related problems.



Higher Activity Processing

Individuals with high range processing ability can tolerate a higher level of starch carbohydrate intake, such as grains which has less impact on weight management and insulin levels.

They have a lower risk of obesity.

Personalised to the Individual

Men and Women's Versions –

Dietary Advice and Exercise Differences Based on Score



CarbChoice

HIGH Starch Foods

Following is a selection of grains and cereals that are high in starch.

Grain

CarbChoice

Low starch foods can be included in your diet to support a well-balanced meal plan. As a guide, these low starch foods are included as starch in grams per 100g (3.5-oz) starch per 100g.

Low Starch Foods

Fruit

CarbChoice

No Starch Foods

Fruits – No Starch

Vegetable

Other Low Starch

Amylase Inhibitors

While salivary amylase can be increased, there are several plants which contain polyphenols which may inhibit or decrease salivary amylase and, hence, affect your carbohydrate metabolism.

These include foods and beverages such as:

Foods and beverages inhibiting Amylase

STRAWBERRY, BLUEBERRY, BLACKBERRY, PINEAPPLE, BANANA, COCONUT, SOY BEAN, RED CABBAGE, BLACK TEA, RED WINE, CLOVE, GINGER, FENNEL, ANISE, CARAWAY, DILL, MUSTARD, PEPPER, SAGE, THYME, VANILLA, CINNAMON, CLOVE, GINGER, FENNEL, ANISE, CARAWAY, DILL, MUSTARD, PEPPER, SAGE, THYME, VANILLA, CINNAMON.

Exercise

CarbChoice

Exercise

While research has used only treadmill and cycles as the exercise modality, there is no doubt that other types of cardio both indoors and outdoors will also increase salivary amylase.

CYCLING

ROWING

Exercise Int

VO₂ max or maximal is the maximum amount of oxygen your body can use during exercise. It is measured in liters per minute (L/min) or milliliters per kilogram of body weight per minute (ml/kg/min).

Calculating VO₂ Max using the following formula:

Using your resting heart rate (RHR) and your maximum heart rate (HR_{max}):

$VO_{2\text{ max}} = 15.3 \times (HR_{\text{max}} - RHR) \times 0.7$

Or by simply using the equivalent to 82% of VO₂ max.

The easiest way to find your maximum heart rate is to use a heart rate monitor.

If you haven't exercised in a while, start with a low intensity level and gradually increase it.

Exercise

Personalised to the Individual

Men and Women's Versions –

Dietary Advice and Exercise Differences Based on Score



CarbChoice **HIGH Starch Foods**

Following is a selection of grains and cereals that are high in starch.

Grain

CarbChoice **LOW Starch Foods**

Low starch foods can be included in your diet to support a well-balanced meal plan. As a guide, these low starch foods are included as starch in grams per 100g (3.5-oz) starch over 10g grams.

Fruit

Vegetables

Other LOW Starch

CarbChoice **No Starch Foods**

Fruits - No Starch

Apple	Banana	Cherry	Cranberry	Fig	Grape
Grapefruit	Kiwi	Lemon	Lime	Lychee	Mango
Orange	Pineapple	Raspberry	Strawberry	Tangerine	Watermelon
Blackberry	Blueberry	Cantaloupe	Cashew	Coconut	Custard Apple
Dragonfruit	Elderberry	Guava	Honeydew	Jackfruit	Kumquat
Lemon	Lime	Mango	Marionberry	Passionfruit	Peach
Pineapple	Raspberry	Strawberry	Tangerine	Watermelon	Whiteberry

CarbChoice **Exercise**

While research has used only treadmill and cycles as the exercise modality, there is no doubt that other types of cardio both indoors and outdoors will also increase salivary amylase.

CYCLING

ROWING

Exercise Int

VO₂ max or maximal is 1 minute. The faster you calculate VO₂ Max, the better you are using the following formula:

Using your resting heart rate:

$VO_{2\text{ max}} = 15.3 \times (220 - \text{Resting heart rate})$

Or by simply using the equivalent to 82% of VO₂ max:

The secret way to a correct max heart rate is to use the following formula:

If you haven't exercised in some time, use a higher intensity level.

Exercise

Sample Report: CarbChoice® Score



Classified in this CarbChoice report as the population group most likely to have poor capacity to process starchy carbohydrates.

CarbChoice®
Score of 2
(AMY1 CNV = 2)

Your lower processing capacity means:

- You may not produce as much of the enzyme in your saliva needed to break down the starch found in carbohydrates.
- You may have reduced tolerance of high-starch diets.
- You may be at a higher risk of, and predisposition to, obesity.
- You may have reduced glycaemic control resulting in decreased glucose or blood sugar control.
- You may have an increased risk of metabolic abnormalities which occur when the normal process of metabolism is or becomes disrupted.
- You may be at increased risk of obesity compared to individuals with a higher processing result.
- You may be at higher risk of insulin resistance and diabetes if you are consuming a high starch carbohydrate diet.

Sample Report: CarbChoice® Interventions (Score = 2)



Classified in this CarbChoice report as the population group most likely to have poor capacity to process starchy carbohydrates.

Dietary Recommendations

Your low starch carbohydrate processing capacity means you should aim to avoid refined and processed starchy carbohydrates in your everyday diet.

Trial a low carbohydrate diet providing 25% of overall daily energy intake (approx. 165g for men made up of low starch options).

Lifestyle Recommendations

You should undertake moderate to high-intensity physical activity. Before starting this type of exercise, you should discuss this with your fitness or health practitioner, especially if suffering from any medical condition or injury.

Sample Report: CarbChoice[®] Interventions (Score = 2)



CarbChoice

Take Home Messages for Low Range Processing

- 1. Replace high starch foods in your diet with no or low starch foods (see your report for details) or resistant starch wholefoods.
- 2. Consume foods or drinks that increase amylase production before any high starch meals, i.e. citric acid drinks, acidic fruits (see report for details).
- 3. Consume higher starch meals towards the end of the day or after 30 minutes of moderate to high-intensity exercise.
- 4. Avoid smoking and drinking tea or alcohol before meals.
- 5. Fill up on vegetables from the no starch and low starch lists (see report for details) to assist with weight loss.
- 6. Use the table of suggested food swaps to help start making appropriate food choices for your AMY1 CNV result.

- Avoid starch / carbohydrates
- Increase production of α -amylase
- Minimise dietary impact of starches
- Avoid α -amylase inhibitors
- Minimise dietary impact of starches
- Minimise dietary impact of starches

Three Key Ways to Achieve Your Goals

- 1. Reduce or actively manage your food choices and quantities.
- 2. Improve your amylase production.
- 3. Recognise that lifestyle factors such as exercise can contribute to good health and weight management.

CarbChoice® Intervention Strategy (Especially Low-Medium CNV)

Increase production of α -amylase

**Avoid α -amylase inhibitors -
especially just before a meal**

Minimise dietary impact of starches



CarbChoice® Dietary Interventions











Increase Production of α -amylase / Avoid α -amylase Inhibitors

Foods containing citric acid have been shown to increase your production of amylase which helps break down starch carbohydrates.

Foods containing Citric Acid g/100g

				
SUNDRIED TOMATOES	LEMON	LIMES	PASSIOFRUIT PULP	RASPBERRIES
5.4g/100	4.5g/100	4.3g/100	3.5g/100	2.4g
				
TOMATO PASTE salted	APRICOTS	GUAVA	TANGELO	MANI
1.6g/100	1.4g/100	1.4g/100	1.4g/100	1.3g

Foods and beverages inhibiting Amylase

				
STRAWBERRIES	BLUEBERRIES	BLACKCURRANTS	PUMPKIN	BEANS
				
CORN	EGG PLANT	RED CABBAGE	BLACK TEA	RED WINE

**Berries are best consumed with no or low starch food.*

CarbChoice® Dietary Interventions

Minimise Dietary Impact of Starches



Increase / substitute foods with no or limited starch / carbohydrate

Add in resistant starches

Minimise or avoid higher starch foods

CarbChoice® Dietary Interventions

Minimise Dietary Impact of Starches

Fruits - No Starch



APRICOT



BLACKBERRY



GRAPES



GRAPFRUIT



LYCHEE



MANDARIN



PASSIONFRUIT



PAPAYA



PLUM



POMEGRANATE



ROCKMELON



STARFRUIT



ALFALFA



ASPARAGUS



AVOCADO



BROCCOLI



BRUSSELS SPROUT



CABBAGE



CELERIAC



CELERY



CHICKPEAS



FENNEL



KALE



KOHLEWURST



OKRA



ONION



PARSLEY



SILVERBEET



SOYA BEANS



SPINACH

Enjoy any of these NO starch vegetable foods

Enjoy any of these NO starch vegetable foods

Enjoy any of these NO starch vegetable foods

Fruit



APPLE - UNRIPE
0.5-1g/100g



BLUEBERRY
0.5g/100g



HAIRY MELON
0.3g/100g



JACKFRUIT
0.4g/100g



RIPE BANANAS
5.83g/100g



STARFRUIT

Fruits

Vegetables



BROCCOLINI
0.7g/100g



BUTTER BEANS
0.3g/100g



POTATOES
Especially dry mash mixes, frozen and take-away chips and wedges, hash browns and potato gems

Other LOW Starch



ALMOND MEAL
1.2g/100g



BRAZIL NUTS
0.3g/100g



PEANUTS
3.8g/100g



PECAN NUTS
0.6g/100g

Vegetables




POTATOES
Especially dry mash mixes, frozen and take-away chips and wedges, hash browns and potato gems




SWEET POTATOES
Especially frozen chips and white fleshed varieties. Orange flesh varieties have less starch


Grains and Cereals




CORN
Including corn starches, popcorn, corn cakes, corn chips, and maize flours used to make corn bread, tortillas and tacos




PASTA
Almost all pasta is made from durum wheat, which is rich in carbohydrates, including starch




TAPIOCA
Tapioca is a starch extracted from cassava root, a tuber native to South America



BREAKFAST CEREALS
Cereals typically contain starches in the form of rice, grains, dried fruit and sugar and other sweeteners.



RICE
Particularly Jasmine rice which has a higher glycaemic response than Basmati rice, rice crackers, rice cakes, rice flour.



WHEAT
Wheat is the major component of flour, bread, biscuits, and cakes.

CarbChoice® Dietary Interventions

Food Swaps and Menu Suggestions Suited to CC Score



Suggested Food Swaps for Low Range Processing

Breakfast



❌ Toasted muesli / flake cereal + Soy Milk



✅ 1 piece Rye toast + 1/4 avocado + tomato (acidic) + egg

Lunch



❌ Stir fry Asian noodle



✅ Four bean, spinach, cucumber, tomato, feta salad with chicken

Dinner



❌ Rice and corn



✅ 1 x chat potato with skin on and stir fried Asian greens; capsicum, bok choy, carrots, chilli, mushrooms

BREAKFAST

Smoked salmon egg omelette with spinach, tomato & avocado salsa



Ingredients
 2 or 3 medium eggs
 30 - 50g smoked salmon
 Tsp Olive oil
 1 tomato
 ½ avocado
 Dash of lemon juice

Recipe
 Whisk eggs, Chop tomato, avocado and mix gently together
 Squeeze lemon juice over and a small dash of olive oil

SNACKS

Nutrient Boosting Vegie Juic Berry Energy Boost Smoothie



Nutrient boosting Vegie Juice
 3 x carrots
 1 bunch of celery
 Kiwi fruit
 Apple
 5cm slice of ginger
 Squeeze of lemon juice

Berry energy boost Smoothie
 1 ½ cups of frozen berries of choice
 1 Cup of plant-based milk of choice (Almond, Soy, Coconut)
 1 Banana
 Dash of honey or maple syrup
 Sprinkle of cinnamon

Blend until smooth and creamy

LUNCH

Turkey San Choy Bow



Ingredients
 150g Turkey mince
 3 lettuce leaves
 1 cup of frozen vegetables of choice
 Dash of soy sauce, fish sauce, lime juice

Recipe
 Pan fry turkey mince, add in vegetables and stir fry for a few minutes
 Add in soy, fish sauce and lime juice to taste.
 Fill lettuce cups

DINNERS

Steak and Vegetables / Fish and Vegetables With a side Salad



Ingredients
 Choice of steak 90g or fish 120g
 1 ½ cups of vegetables of choice either fresh or frozen
 Green salad

Recipe
 Pan fry choice of meat or fish in a dash of olive oil
 Steam vegetables
 Prepare a small green salad

Lifestyle Interventions

From our CarbChoice® Score =2 sample report

You have a low range AMY1 CNV; there are lifestyle choices which can maintain or increase your levels. The following offers some guidance.

Salivary amylase is influenced by lifestyle factors such as:

- Exercise and sport.
- Chewing your food.
- Satiety
- Food perception
- Conditions in which you eat your food.



Exercise

- Can increase amylase activity by up to 500%
- Amylase concentrations are increased for up to 2.5 hours
- Interval training (fast or vigorous exercise with rest periods) may be more effective than using a treadmill

Patient should be cautioned and consider if exercise is appropriate for them

Chewing food

- Increases saliva production

Alcoholic drinks

- Alcohol decreases the activity of amylase activity: avoid alcohol especially before high starch carbohydrate meals, for best results
- However very few alcoholic beverages contain large amounts of starch, but many have high quantities of other carbohydrates

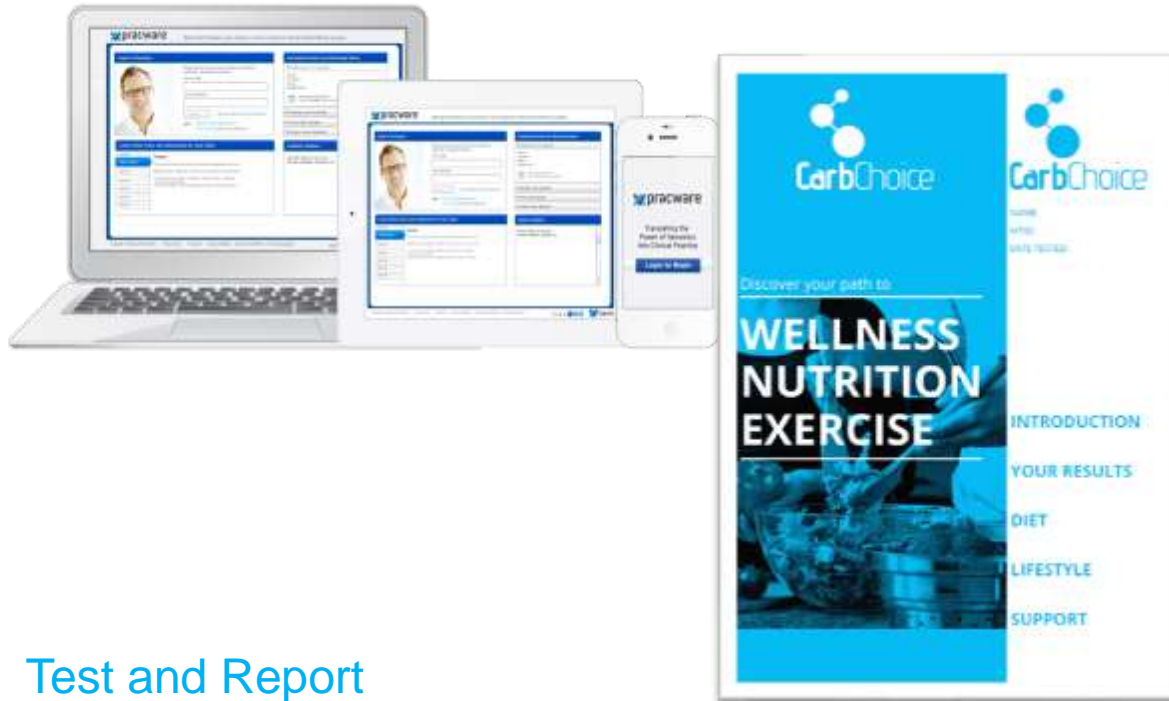
Smoking

- 1 cigarette reduces salivary amylase by ~44%

Lifestyle / Mood

- Significantly higher salivary amylase levels have been observed for individuals reporting a positive mood and calmness

Follow-Up Consult



Test and Report

Practitioner notified that results are available in Pracware



Follow-up Consult – in person / Zoom

Patients can be offered a tailored program and develop long-term relationship

CarbChoice® in Your Practice

Fitgenes Accredited Practitioner

- Any existing Fitgenes Accredited Practitioner who has completed the Accreditation Workshop modules* already has complimentary access to CarbChoice® training and may offer CarbChoice® to their patients, along with any other Fitgenes DNA Report.
- Contact Fitgenes on enquiries@fitgenes.com for access

Any practitioner client of Nutriscience

- Any practitioner who is not a Fitgenes Accredited Practitioner may offer CarbChoice® to their patients after completion of the *short* CarbChoice® training modules.
- There is no charge for CarbChoice® training modules but the practitioner must have ordered and received their own, paid CarbChoice® Report prior to commencing.

Contact Nutriscience for more information on accreditation and pricing

Email: info@nutriscience.co.nz

Phone: 0800 88 44 33

CarbChoice

Discover your path to

WELLNESS NUTRITION EXERCISE

CarbChoice

NAME:

KITID:

DATE TESTED:

dna

FITGENES. DNA TEST KIT
Dietitioner kit



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