

# Nutrition and Anxiety

A self-help guide

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# Foreword

There is now over-whelming evidence to support the fact that gut microbes (collectively called the microbiota) have a major impact on our brain and our behaviour, especially in stress related disorders such as anxiety.

Recent studies indicate that those with anxiety may have alterations in the content of gut microbes. Such alterations are referred to as a gut dysbiosis. The reason for this dysbiosis remains uncertain. However, it is likely that in many cases diet plays a role.

Over recent decades, dietary patterns in Europe and elsewhere have undergone major compositional changes, with increased intakes of red meat, high fat foods, and refined sugars. Individuals who consume a Mediterranean diet have lower rates of anxiety and a recent study suggests that a Mediterranean diet may have antidepressant properties. Assuming this to be the case, which components of the Mediterranean diet mediate the effects?

In this helpful booklet, the various components of a healthy diet in relation to stress are examined. Overall it seems reasonable to conclude that those experiencing anxiety should be encouraged to enhance a plant-based diet with a high content of grains /fibres and fish. Such a diet will promote the development of an optimal microbiota and hopefully better mental health.



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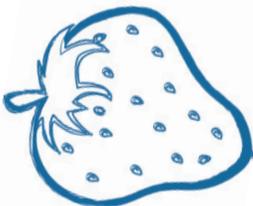
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# Healthy food, healthy mood – the scientific bit!

Consuming a “Westernised” diet consisting of fast food, sweets, refined carbohydrates, processed meats and low intake of fruit and vegetables has been associated with the onset of depression and anxiety.<sup>1</sup>

Research has shown<sup>2</sup> people who eat a better quality diet, for example a mix of food types containing a good variety of protein sources and nutrients, combined with eating in general in moderation, were less likely to be depressed. Conversely, eating a higher intake of ultra processed and unhealthy foods was linked to increased anxiety.

The human gastrointestinal tract includes at least 1000 different species of bacteria harbouring more than 100 trillion microbial cells which in total can weigh up to 2kg. This gut microbiota (or gut flora) is responsible for proper digestive functioning, digestion of foods indigestible in the small intestine, as well as the protection of our immune system from pathogens<sup>3</sup>.



Nonetheless, evidence suggests that gut microbiota and its health is essential for brain/mental health as well. And here comes the gut-brain axis, where neuropeptides and gut hormones target the same membrane receptors resulting in the same biological implications i.e. headache at the same time as abdominal pain<sup>4</sup>.



Gut microbiota also appears to control the levels of signalling molecules such as noradrenaline and tryptophan in different areas of the central nervous system and thus regulating mood and behaviour as well as contributing to mood disorders such as anxiety and depression<sup>5</sup>.

For this reason, what we need in anxiety or depression are foods that provide nutrients, vitamins and minerals known to calm the mind and body while also boosting our energy and stabilising our mood.

This guide outlines the type of food that you should consider including in a healthy, balanced diet that will assist you in managing your mental well-being, while also highlighting some of the foods that are less helpful to eat.



# Nutrients you need

Having a balanced diet is about ensuring that you are eating the right type of nutrients that your body needs.

## Healthy fats

The human brain consists of approximately 60% fat. If you do not consume a sufficient amount of omega-3 and good cholesterol, your risk of developing depressive symptoms is increased as omega-3 cannot be produced inside the body and can only be obtained through dietary means.

There is also strong growing evidence that omega-3 polyunsaturated fats - known as 'PUFAs', can decrease anxiety disorders<sup>6</sup>. Research also shows that they have an anti-anxiety effect (anxiolytic effect) by balancing dopamine levels (a neurotransmitter) which leads to enhancements in mood<sup>7</sup>.

Moreover, an omega-6 / omega-3 PUFA ratio of 4:1 is important in order to avoid inflammation and other health conditions such as cardiovascular disease, cancer and autoimmune diseases<sup>8</sup>.

## Good sources of omega-3 PUFA

Oily fish is a great source of omega-3 and can be found in fish such as salmon<sup>9</sup>, tuna, mackerel, anchovies and sardines<sup>10</sup>. Regularly eating salmon can help lower anxiety, research shows, which experts say is because of its omega-3 fatty acids; a key mood-boosting nutrient and as previously mentioned, one our bodies do not produce.

Salmon also contains vitamin B12, which helps produce brain chemicals that affect mood. Low levels of B12 are linked to depression.

## SALMON

Regularly eating salmon can help lower anxiety, research shows.

Experts say it's because it contains omega-3 fatty acid; a key mood-boosting nutrient and one our bodies don't produce.

Salmon also contains vitamin B12, which helps produce brain chemicals that affect mood. Low levels of B12 are linked to depression.



Between 1994 and 1997, 935 randomly selected women aged 20-93, participated in an Australian study regarding the effect of dietary fish and PUFA intake in mood disorders. The study used several tools in their study; specifically a Food Frequency Questionnaire (FFQ) which asks about intake of 74 food items and 6 alcoholic beverages as part of the dietary assessment. The study concluded that the only PUFA related to depression and anxiety disorders was Docosahexaenoic Acid (DHA).

Additionally, although DHA seemed to have a beneficial effect on both health conditions, those who had fish more frequently seemed to also have reduced anxiety by 50% and depression by 70% than others who consumed less fish during a week<sup>11</sup>.

## Nuts are good for us!

Seeds and nuts, such as walnuts have been shown to have a consistent association<sup>12</sup> with fewer and less frequent depressive symptoms in a representative sample of the U.S. population over a 10-year period. Brazil nuts, pumpkin seeds and almonds are also good sources of PUFA.

Chia seeds are a superb source of omega-3 (about 65% of the oil content) with the therapeutic effects of chia in helping with anxiety and depression having been scientifically established<sup>13</sup>.



**WALNUTS**

**Walnuts can help fight stress!**

They contain high levels of omega-3 oils which increase serotonin levels and help boost your mood.

They also contain folic acid and zinc, which are also beneficial in the defence against stress when eaten as part of a healthy diet.

## As are eggs...

Eggs contain various trace nutrients that are beneficial for your health and are an ideal food source as they contain a little bit of almost every nutrient you need.

## And avocado<sup>14</sup>

In addition to providing omega-3 PUFA, avocados are perfect for brain health and anxiety as they are also a great source of vitamins C, E, K, and B-6, as well as riboflavin, niacin, folate, pantothenic acid, magnesium, and potassium. They also increase lutein, beta-carotene and potassium levels which helps to lower blood pressure and thus calm the body.

# Other useful nutrients

## Folate and other B vitamins<sup>15</sup>

There are a variety of B vitamins, including folate, known as B complex vitamins and which are also

**AVOCADO**

**Avocados can help boost your mood!**

They contain lots of healthy fats your brain needs to help put a smile on your face.

They are also full of tryptophan, as well as folic acid and vitamin B, which help the body to turn tryptophan into the feel-good chemical, serotonin.



found in salmon and trout (both of which are also high in omega-3), as well as leafy greens such as spinach and asparagus. Eating these types of food will contribute towards having a healthy, well balanced diet.

### Low-glycaemic foods<sup>16</sup>

Research has suggested that a high glycaemic index (GI) can lead to increased depressive symptoms and low mood. However, it is also advisable to take a cautionary approach with GI food types as some high GI foods are not necessarily “bad” and not all low GI foods are “good”.



ASPARAGUS

**Asparagus can help fight depression!**

Eaten as part of a healthy diet, asparagus can help boost your mood as it contains excellent levels of folate, which is an amazing B vitamin.

Folate is needed in the brain to create good mood chemicals like noradrenaline and dopamine.

Some high GI foods to consider being aware of overconsuming though are sugar and sugary foods, sugary soft drinks, white bread and potatoes. Low/medium GI foods to include in your diet include pulses and wholegrain foods such as oats.

**OATS**

Oats can help you feel content!

Studies have found that fluctuation in blood sugar can impact on your mood. Complex carbohydrates like oats can help to keep your blood sugar and mood stable.

Oats have a low glycaemic index, causing a slow release of glucose. This helps you to stay fuller for longer, and reduces irritability.



## Magnesium

A study of over 5,700 participants aged between 46-49 and 70-74 year showed that rates of depressive disorders were lower amongst those who had a higher intake of foods rich in magnesium<sup>17</sup>.

There are a range of foods that are rich in magnesium that are recommended to be included in your diet such as:

- **Green leafy vegetables** (e.g. spinach and kale)
- **Fruit** (figs, avocado, banana and raspberries)
- **Nuts and seeds**
- **Legumes** (black beans, chickpeas and kidney beans)
- **Vegetables** (peas, broccoli, cabbage, green beans, artichokes, asparagus, brussel sprouts)
- **Seafood** (salmon, mackerel, tuna)

### **Tryptophan<sup>18</sup>**

Tryptophan is an amino acid that is important for the production of serotonin in the body, which we know is produced in the gut and plays a key role in our mental well-being.

As we are not able to produce tryptophan in our own bodies, we need to ensure our diet includes foods that do contain it. Some foods already mentioned such as salmon, eggs, nuts and seeds are good sources of tryptophan as well as poultry.

Eating a healthy, balanced diet is an essential way to support mental as well as physical health. Including sources of tryptophan in the diet can have positive benefits on energy levels, mood and sleep.

## Antioxidants<sup>19</sup>

Research has shown that there is a role in our diet for antioxidants in combatting Generalised Anxiety Disorder (GAD) and depression. A healthy intake of vitamins A, C and E can play an important role in the management of anxiety and depression.

These vitamins can be found in a variety of foods such as:

### Vitamin A ( $\beta$ -carotene)

Apricots, broccoli, cantaloupe melon, carrots, peaches, pumpkin, spinach and sweet potato

### Vitamin C

Blueberries, broccoli, grapefruit, kiwi, oranges, peppers, potatoes, strawberries and tomatoes

### Vitamin E

Margarine, nuts and seeds, vegetable oils and wheat germ



**SWEET POTATO**

Sweet potatoes can be a mood booster!

They contain the antioxidant beta carotene that can help stop oxidative stress in the brain, which appears to be common in conditions like depression.

They are also one of the best natural sources of carbohydrates, which promote the production of serotonin.

# Other foods to consider

Some good news, dark chocolate IS good for you!

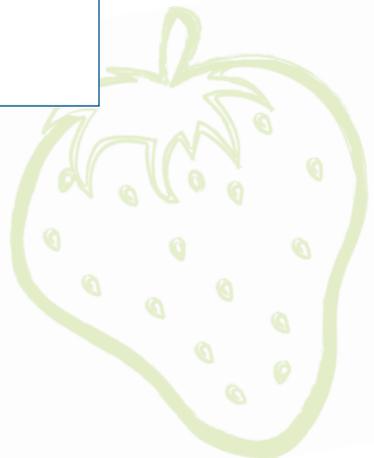
There is strong evidence that dark chocolate is protective against anxiety and depressive symptoms. A randomised trial showed that cocoa polyphenols can improve symptoms associated with clinical anxiety or depression; improving mood state<sup>20</sup>.

**DARK CHOCOLATE**

Dark chocolate can help you feel calmer!

Studies have found that chocolate, which contains at least 70% cocoa, has high levels of polyphenols which help to make you feel calmer.

70% dark chocolate can also boost the feel good chemicals called endorphins. You don't need lots though! Research suggests having 40g a day is ideal.



# Herbs and spices

– more than just a decorative rack in the kitchen!

There is a growing body of evidence that supports the health benefits of a variety of herbs and spices and which when included as part of a balanced diet, can assist with the management of anxiety and/or anxiety-based depression<sup>21</sup>.

For example, **turmeric**, the spice often associated with curry, contains an active compound called curcumin which is a potent anti-inflammatory and antioxidant. These properties may help improve symptoms of depression. Turmeric also increases serotonin levels which helps with both anxiety and depression<sup>22</sup>.

**Chamomile** is another herb that is often associated with health and well-being. It is said to be of benefit in connection with a wide range of illnesses. It is thought that chamomile tea may function in a way similar to benzodiazepines (prescription drugs used in the management of anxiety and sleep difficulties). Research suggests that it binds to benzodiazepine receptors to bring about this effect.

A study in 2012 concluded that chamomile may provide clinically meaningful antidepressant activity in addition to its previously observed anxiolytic activity<sup>23</sup>.

Cinnamon<sup>24</sup> and green tea<sup>25</sup> are also good sources of healthy nutrients.



# The Mediterranean Diet

There is strong evidence that variety in food groups is helpful in mental health conditions such as anxiety and depression and the Mediterranean diet<sup>26</sup> is often recommended as it facilitates a good balance of many of the food types and nutrients mentioned so far.

A Mediterranean diet by definition features the healthy eating of a range of food types from countries that border the Mediterranean Sea that many of us will have visited on holiday. Countries such as Greece, Spain, Italy and France are all renowned for their delicious cuisine. Each has its own distinctive and unique flavours; often rich in fish, nuts and vegetables – food types that are helpful in the management of anxiety and/or anxiety-based depression.

A Mediterranean plant-based diet of fruit, vegetables, grains, legumes, fish, nuts, beans and olive oil – but little meat or dairy – certainly appears to have benefits in terms of mood.



# For gut's sake

## Fermented foods play a vital role

Lactobacillus casei and Bifidobacteria longum are probiotic bacteria which reside in the intestine providing protection from diseases<sup>27</sup>.

Kimchi, kefir, miso, sauerkraut, tempeh are all very rich in probiotics that take care of our gut flora potentially benefiting that gut-brain connection with their antioxidant and anti-inflammatory properties<sup>28</sup>.

## Foods best avoiding – the bad stuff!

There are a range of food types that are best avoided as much as possible as they will not provide the healthy balance we've talked about so far.

Specifically, foods such as refined carbohydrates<sup>29</sup>, ultra processed foods<sup>30</sup>, junk and fast foods<sup>31</sup> and excess alcohol consumption<sup>32</sup> – yes all the things we like – are best avoided!



Don't worry we'll suggest some better alternatives on the next page.

# What can I have instead?

## Alcohol and spirits

If you really need that glass of wine to unwind at the end of a busy week then it is probably best to choose a nice red wine.

## Caffeine

Reducing or even cutting out caffeine altogether if you can manage without your fix will help. Instead, try green or chamomile tea or fruit juice.

## Ultra processed food

Avoiding ultra processed foods will benefit your health in many ways. Opt instead for whole foods, home cooked meals and snacks such as pizzas, vegetarian burgers and vegan snacks.

## Refined carbohydrates

A far better choice are complex carbohydrates that produce serotonin in the brain; boosting energy and uplifting mood. Choose brown rice, pasta, potatoes, homemade desserts with yoghurt, fruits, honey and nuts instead of refined carbohydrates such as sugary foods and drinks which are likely to make you feel lethargic.



# In summary

## 1. Eat small, regular meals and snacks

It's very common to feel irritable and depressed during the day without any particular reason. If you have only a few meals in total, your blood sugar drops when you haven't eaten for many hours and, on the other hand, increases too much when you do finally eat, resulting in blood sugar fluctuations which in turn, affect mood.

You can avoid this by instead choosing to:

- eat a good breakfast that is fuelled with nutrients in the morning to kick start your day
- Have 3 big meals and 3 smaller snacks during your day
- Avoid food and beverages that are rich in sugar, salt and saturated fat.

## 2. Eat your 5-a-day

Either it's a fruit combined with yoghurt or dried fruit combined with a handful of mixed nuts or fruit, or even a small fruit or veggie juice – go for it! A fruit a day, keeps the doctor (and moods) away!

## 3. Eat your (lean) protein

Proteins contain super amino-acids and nutrients that are extremely important in the majority of our biochemical pathways i.e. where food is converted into energy by our body. Ensuring you get enough protein in your diet is essential, however most foods

containing protein also contain fat, so in order to get the most out of protein, try and choose lean food choices with reduced saturated fats or proteins that contain healthy fats.

#### **4. Have your healthy fats (polyunsaturated PUFA & monounsaturated MUFA)**

They are everywhere even though you might not know it! For example, there are PUFAs and MUFAs in your breakfast if you have avocados and eggs as well as being found in oily fish and snacks that are nut and seed based.

#### **5. Keep your diet balanced**

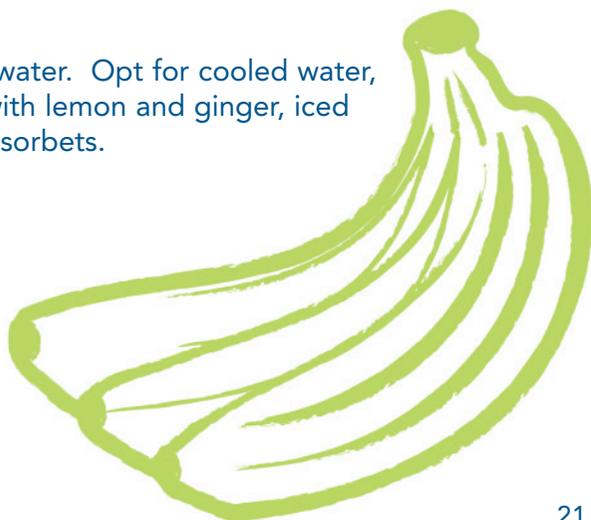
Go for the Mediterranean diet as this has been repeatedly found to be one of the most beneficial ones when it comes to health .

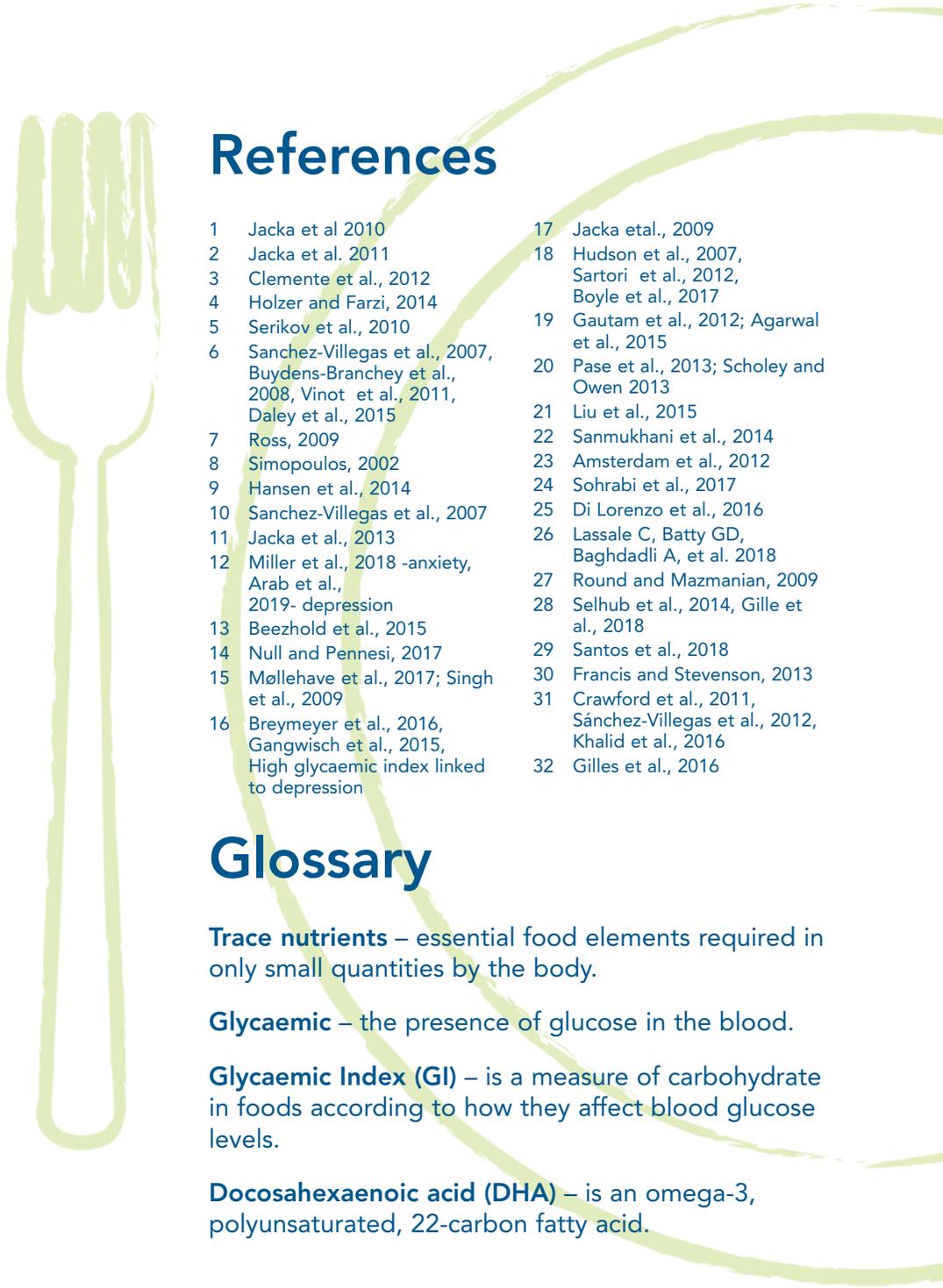
#### **6. Take care of your gut**

Do not forget to get at least one portion (80g) of fermented food into your diet during your day!

#### **7. Stay hydrated**

Drink at least 2 litres of water. Opt for cooled water, flavoured water, water with lemon and ginger, iced tea, smoothies and fruit sorbets.





# References

- 1 Jacka et al 2010
- 2 Jacka et al. 2011
- 3 Clemente et al., 2012
- 4 Holzer and Farzi, 2014
- 5 Serikov et al., 2010
- 6 Sanchez-Villegas et al., 2007, Buydens-Branchey et al., 2008, Vinot et al., 2011, Daley et al., 2015
- 7 Ross, 2009
- 8 Simopoulos, 2002
- 9 Hansen et al., 2014
- 10 Sanchez-Villegas et al., 2007
- 11 Jacka et al., 2013
- 12 Miller et al., 2018 -anxiety, Arab et al., 2019- depression
- 13 Beezhold et al., 2015
- 14 Null and Pennesi, 2017
- 15 Møllehave et al., 2017; Singh et al., 2009
- 16 Breymeyer et al., 2016, Gangwisch et al., 2015, High glycaemic index linked to depression
- 17 Jacka et al., 2009
- 18 Hudson et al., 2007, Sartori et al., 2012, Boyle et al., 2017
- 19 Gautam et al., 2012; Agarwal et al., 2015
- 20 Pase et al., 2013; Scholey and Owen 2013
- 21 Liu et al., 2015
- 22 Sanmukhani et al., 2014
- 23 Amsterdam et al., 2012
- 24 Sohrabi et al., 2017
- 25 Di Lorenzo et al., 2016
- 26 Lassale C, Batty GD, Baghdadli A, et al. 2018
- 27 Round and Mazmanian, 2009
- 28 Selhub et al., 2014, Gille et al., 2018
- 29 Santos et al., 2018
- 30 Francis and Stevenson, 2013
- 31 Crawford et al., 2011, Sánchez-Villegas et al., 2012, Khalid et al., 2016
- 32 Gilles et al., 2016

# Glossary

**Trace nutrients** – essential food elements required in only small quantities by the body.

**Glycaemic** – the presence of glucose in the blood.

**Glycaemic Index (GI)** – is a measure of carbohydrate in foods according to how they affect blood glucose levels.

**Docosahexaenoic acid (DHA)** – is an omega-3, polyunsaturated, 22-carbon fatty acid.



**Food Frequency Questionnaire (FFQ)** – is a questionnaire used to obtain frequency and, in some cases, portion size information about food and beverage consumption over a specified period of time.

**PUFAs** – short for polyunsaturated fats, a type of fatty acid available to us via the foods we eat and which generally fall into two categories: unsaturated fat and saturated fat.

**Monounsaturated fatty acids (MUFAs)** are a healthy type of fat. Replacing less healthy fats, such as saturated fats and trans fats, with unsaturated fats, such as MUFAs and polyunsaturated fats, may offer health benefits.

## Acknowledgements

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Anxiety UK provides a range of support services for those living with and/or affected by anxiety, stress and anxiety-based depression.

For further information visit [www.anxietyuk.org.uk](http://www.anxietyuk.org.uk)

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