Migraine and food

MIGRAINE ACTION

Migraine? Avoid chocolate, cheese and red wine and you'll be fine. How often have you heard those words from a well-intentioned friend or relative? If only it were that simple!!

Fact behind the myth

The chocolate, cheese and red wine advice is not, without foundation. In November 1974, Migraine Action awarded gold medals to Professor Sandler, Dr Youdim and Dr Edda Hannington for their work in detecting a biochemical defect in migraineurs which was not present in non-migraine controls. Their research showed that, in the migraineurs studied, there was an alteration in the body's final handling of food containing amines; for example, tyramine, which is found in cheese, wine and citrus fruits, and phenylethylamine, which is found in chocolate and alcohol.

Further work by Dr Katherina Dalton showed that in a survey of over 2,000 migraineurs, over three quarters of them had eaten at least one amine-containing food in the 24 hours before an attack.[1.].

Amines are more readily absorbed when fat is present, which may explain why chocolate and cheese are considered to be such villains and why fried foods and dairy products are so often implicated in migraine attacks.

Common migraine trigger foods include:

Chocolate	Pork
Cheese and other diary products	Seafood
Citrus fruits and fruit juices	Onions
Coffee and tea (caffeine)	Marmite
Alcohol	Wheat

This is not a comprehensive list and there are many other foods to which certain individuals may have a sensitivity. It must be emphasised that not all migraineurs will be sensitive to all or any of these foods nor will they trigger an attack in a sensitive person every time they are eaten. Some people tend to experience food cravings, such as a craving for cheese, up to 48 hours before an attack (during the prodrome stage); these can be mistaken for food triggers. Eating a suspected food trigger on a migraine-free day will help you to ascertain if it is a real trigger or whether it is a food craving that acts as a warning of an impending migraine.

Food intolerance

It's important to distinguish food intolerance from food allergy. If you have a food allergy, eating even the tiniest amount of the food may trigger a serious allergic reaction. By contrast, if you have a food intolerance, you usually can eat small amounts of the food without a reaction.

A food intolerance differs from a food allergy as your immune system isn't activated. Food intolerance often occurs when the body is unable to deal with certain types of food or ingredients. This is usually because the body doesn't produce enough of a particular chemical or enzyme that is needed for the digestion of that food. It is an adverse reaction to some sort of food or ingredient that occurs every time the food is eaten but particularly if large quantities are consumed.

Food intolerance can cause a variety of symptoms which may develop up to 48 hours after eating the problem food. It can occur to a greater or lesser extent, develop at differing speeds, vary according to the amount consumed and be affected by numerous other factors. The extent of the prevalence of this condition is unknown as very often the food connection goes unrecognised.

It is known that food intolerance can be a trigger factor for many migraineurs. For some people, intolerances are easy to recognise; they know that if they eat a specific food, even if it is a small amount, a migraine attack will follow within a given period of time. However, for most people it is more complicated as the intolerance may be disguised and may sometimes only produce mild symptoms, or they may have several different intolerances.

Food sensitivities are peculiar to each individual, so it is unwise to exclude certain foods from your diet because you have read or heard that they were responsible for triggering migraine in someone else.

Eliminating food from your diet

Whilst research into food intolerance and migraine is still ongoing, some studies have found that the withdrawal of specific foods (IgG-based) from your diet can help to improve your migraine. A food intolerance audit conducted in 2005, found that 30% to 40% of migraineurs who eliminated certain foods from their diet reported a considerable benefit; over 60% found their migraine symptoms returned only once they reintroduced the foods back into their diet. [2.] A more recent clinical double-blind, randomised, cross-over study conducted on migraineurs, also found that diet restriction based on IgG antibodies can be effective in reducing the frequency of migraine attacks, adding support towards undertaking an elimination diet.[3.]

However, using the dietary approach to help manage food intolerance, if this is what causes your migraine, can be complex and should be done carefully. There can be dangers in eliminating certain types of food from your diet, especially for children. For example, exclusion of all dairy produce has been shown to cause osteoporosis, even in relatively young men. If you do eliminate foods try and substitute it for a healthier alternative. It may be beneficial to ask your doctor to refer you to a dietician or allergy specialist for advice. The psychological factors involved should also be considered; sometimes food aversion can occur due to emotions we have associated with a particular food, with symptoms not occurring when the food is given in a disguised form.

Frequently reported food intolerances include:

Cow's milk	Yeast	Egg white
Egg yolk	Wheat	Gluten (gliadin)
Corn	Cashew	Mollusc mix (mussels, oysters, scallops)
Brazil nut	Cranberries	Garlic

Caffeine

Caffeine has often been recognised as causing headaches, particularly if it is consumed regularly or abruptly withdrawn. Some healthcare professionals believe that consuming more than 200mg of caffeine a day for more than two weeks can result in a headache when your intake of caffeine is reduced or stopped. Caffeine can be found in numerous products, such as tea, coffee, chocolate, fizzy drinks and some painkillers.

Item	Item size	Caffeine content
Coffee	150ml	60 - 150mg
Tea	150ml	40 - 80mg
Diet Coke	12oz	45mg
Dr Pepper	12oz	61mg
Panadol Extra	-	65mg
Anadin Extra	-	45mg
Solpadeine Plus	-	30mg
Propain	-	50mg

Although the view of healthcare professionals is mixed, not all caffeine is bad. Research studies undertaken have found that mild to moderate doses of caffeine in medication can be helpful in easing headache pain, particularly if taken in combination (e.g. acetaminophen, aspirin and caffeine). One study reported 59.3% of patients experiencing either little or no head pain after they were given the combination drug, with many also finding it helped to alleviate other migraine symptoms they normally experience, such as nausea, photophobia (light sensitivity) and phonophobia (sound sensitivity). [4.].

Caffeine taken in low doses can actually increase alertness and energy but high doses can cause insomnia, irritability, anxiety and headaches. Overusing medication containing caffeine can cause rebound or medication overuse headaches which can be very disruptive for migraineurs. For further information on medication overuse headache, please visit **www.migraine.org.uk/moh**.

Withdrawal symptoms

When you suddenly stop your intake of caffeine you are likely to experience withdrawal symptoms, such as nausea, headache, anxiety, irritability and have difficulty concentrating. The actual amount of caffeine that needs to be consumed on a daily basis to induce withdrawal symptoms varies from person to person and can be dependant on your age. However, most people are likely to experience withdrawal symptoms if they drink about five cups of coffee a day, equivalent to 500mg of caffeine a day. Nevertheless, some people may experience withdrawal even if they consume only 100mg of caffeine a day. It is important to monitor your daily intake of caffeine and be aware of the differing amounts of caffeine between products, as the caffeine content can greatly vary (e.g. coffee brewed from one restaurant to another). Consuming caffeine containing products in moderation should not give you undesired effects. However, if you are concerned about your caffeine intake and how it affects your migraines, please seek medical advice.

Food additives and migraine

These are usually used to enhance flavours, prevent spoilage or change in the colour of food products. Whilst there are no definitive studies showing that food additives cause migraine, many migraineurs do report sensitivity towards them.

Monosodium glutamate (MSG)

MSG which is naturally present in mushrooms, kelp and scallops, acts as a preservative in many prepared foods and is usually found in soups, sauces and in restaurant food. It does not cause migraine but can trigger an attack as some migraineurs are very sensitive to it.

Nitrites / nitrates

Nitrates may intensify the headaches for migraineurs. It is usually added to cured and processed meats, such as hot dogs, bacon and luncheon meals, and helps to preserve the pink colouring of the products, add flavour and inhibit bacteria.

Aspartame

This is an artificial sweetener used in many drinks and prepared foods. Many migraineurs have a problem with aspartame, possibly due to its effect on serotonin levels. [5.]. It is probably best to try and avoid it or at least see if it does affect you.

Tyramine

Tyramine is an amino acid which is found in aged cheeses, especially strong cheddars. It can also be found in fermented foods, including alcoholic drinks, meats, breads and even fruits (overly ripe fruits have a high tyramine content). Some believe the migraine and tyramine connection is overstated; however, if it does affect you, it is best to avoid it and better to eat fresh foods.

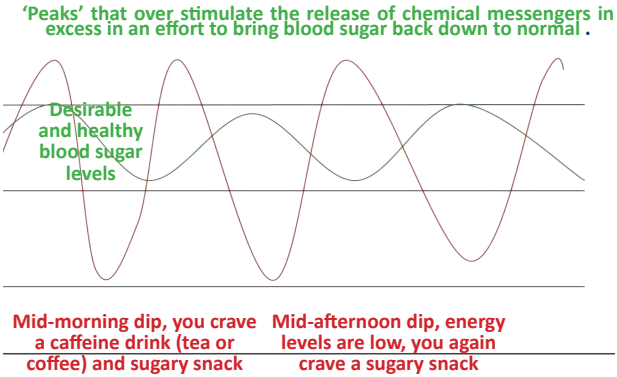
Citric acid

Citric acid is a natural preservative and is also used to add a sour taste to drinks and foods. Some migraineurs have experienced sensitivity towards it.

Remember migraine is a complex and individual condition with numerous trigger factors which can occur in combinations almost peculiar to each migraineur. Therefore, a blanket avoidance of all foods is probably not the best answer. It is best to monitor carefully what you eat and drink, and see if you get a headache. A migraine occurring within three to six hours after having eaten is likely to be due to an offending food. Foods that affect one person may not necessarily have any affect upon another.

The sugar connection

When the level of sugar (glucose) in the blood gets too low (hypoglycaemia) the brain is unable to function properly due to the lack of glucose. As a result the blood flow to the brain increases and nerve tissues become more sensitive to the dilated blood vessels, triggering a migraine attack.



The higher the 'peak' then the lower the 'dips', these over stimulate the release of chemical messengers, which over time, will impact on our general health and trigger migraine attacks.

Stabilising blood sugar levels is extremely important as fluctuating levels can cause problems and can trigger a migraine. To help maintain your sugar levels it is best to avoid long periods without food, such as fasting. Healthcare professionals recommend intervals of no longer than 4 hours between food during the day and no more than 12 hours overnight. It is better to have regular meals with "slow release" carbohydrates or foods with a low glycaemic index (or low GI), which release energy slowly. Foods which have a low GI include:

Fruits	Grapes, plums, strawberries, oranges, peaches
Vegetables	Frozen peas and sweetcorn, broccoli, carrots
Wholegrain foods	Wheat pasta, brown rice, wholegrain bread
Pulses	Kidney beans, chickpeas, lentils, blackeyed beans
Dairy	Milk, yoghurt, custard
Snacks	Nuts, corn chips, hummus, oatmeal crackers

There are foods which have a high glycaemic index (high GI) that give a quick energy boost, but are used up almost immediately, and actually create the peaks and troughs that can trigger a migraine attack. Foods in this high GI category include sugary foods, chips, sweetened breakfast cereals, white bread, baked potatoes and fruits, such as dates and watermelon. Meals and snacks should strike a balance between healthy foods and foods for pleasure. A good balance is approximately 80% for maintaining health and 20% for pleasure. Some purists would insist that 100% of food intake should be towards maintaining health, but if this approach were adopted, choosing, preparing and eating food could become either a chore or an obsession!

Connection between amines, low blood sugar levels and migraine

We all need a certain amount of sugar in our blood to feed all the cells in our body and provide energy which is extracted from our food. If we go a long time without any food, our blood sugar level drops. When it reaches a certain level, our body responds with a sudden outpouring of adrenaline which releases sugar stored in the liver to top up blood sugar levels. In certain susceptible people, this sudden increase in the amount of adrenaline (an amine) in the blood can trigger a migraine attack.

When trying to maintain your blood sugar levels you might want to consider the amount of energy you are likely to use in between meals. If you are likely to undertake vigorous exercise, you may want to shorten the period without any food. Eating at least an hour and a half before exercising will give your body enough time to digest the food; this will also help to balance your blood sugar levels so that a sudden fall which could cause an attack is avoided. Taking glucose sweets prior to exercising can also be useful in helping to maintain blood sugar levels.

There are no hard and fast rules. Everyone is individual and you may need to experiment with your personal tolerance limits. Some women find that they need to eat more frequently in the days immediately before their menstrual period. If you frequently wake with a migraine, you may find that a protein snack before going to bed is helpful. Some people also keep a piece of fruit by their bed to have as a snack if they wake up during the night. For some migraineurs low blood sugar levels can also contribute to them getting a migraine at weekends or during holiday periods, possibly as a result of changed routines (e.g. a long lie-in resulting in a late breakfast, expending more energy on household tasks, long gaps between food during outings etc.). Eating “frequently” does not necessarily mean eating “more”, so if you are trying to lose weight you may find that eating healthier foods and cutting out the sugary snacks will actually help you to lose weight.

Tips on keeping your blood sugar levels stable

- Always eat breakfast - even if it is just a piece of fruit, prunes, apples, pears and kiwi fruit or oatmeal crackers.
- Aim to eat little (but well balanced) and often, rather than one or two large meals a day. If you need to eat between meals, snack on healthy foods in the low GI category (nuts and dried fruit, oatmeal crackers and hummus or plain bio yoghurt with nuts and seeds).
- Mix carbohydrate with protein and / or fat to increase the slow release element, for example, wholemeal toast and peanut butter is better than white bread and jam.
- If you feel like chocolate or biscuits, try a piece of low GI fruit or a handful of nuts and raisins instead.
- Try to fill yourself up on fibre, like oatmeal and vegetables which have been known to help stabilise blood sugar levels, improve digestion and help to prevent constipation.
- Eat at least an hour and a half before exercising, giving your body enough time to digest the food; this will also help to balance your blood sugar levels, avoiding a sudden fall and triggering a migraine. Glucose sweets are useful in maintaining blood glucose levels prior to exercising.
- Avoid excessively hot or cold drinks, try drinking them at room temperature instead.
- Drink at least 1.5 - 2 litres of water regularly throughout the day as this will help ensure all your bodily functions can operate with efficiency. It is particularly important to drink plenty of water before, during and after exercising. If fluids are not replaced quickly you will become dehydrated and this in turn could trigger an attack. Have a bottle of water to hand or an isotonic drink. Isotonic drinks are drinks in which the mineral salts and glucose are equal to those in the blood and help to keep your body in balance.

Remember that you are actually meant to enjoy eating. Too much concern about eating the “right” things and not eating the “wrong” things can take out the enjoyment factor and lead to poor nutrition or under-nutrition, so don’t deny yourself those little pleasures. If your intake is excessive, then learn to moderate the cravings and educate your palate.

Food intolerance testing

There are various private clinics, laboratories and mail order services which offer to help victims of food allergies or intolerances by examining blood or hair samples. However, you need to be careful when choosing an allergy clinic; a study conducted by the Consumers' Association and Guy's Hospital in London on five commercial allergy clinics throughout Britain found them all to be unreliable and the advice they offered "dubious and risky". With there being no regulations governing this type of practice, unfortunately anyone can "set up shop" as an allergy tester without you knowing whether they are suitably qualified, or that the tests being used are accurate and reliable. If you would like to be tested for allergies, it is best to speak to your GP for advice or contact one of the following organisations:

Action Against Allergy	PO Box 278, Twickenham, TW1 4QQ. Web: **www.actionagainstallergy.co.uk** Tel: **020 8892 2711** Email: **AAA@actionagainstallergy.freeserve.co.uk**
Allergy UK	Planwell House, LEFA Business Park, Edgington Way, Sidcup, Kent. DA14 5BH. Web: **www.allergyuk.org** Tel: **01322 619898** Email: **info@allergyuk.org**
British Society for Allergy and Immunology	1 Warwick Row, London, SW1E 5ER. Web: **www.bsaci.org** Tel: **0207 808 7135** Email: **info@bsaci.org**
Yorktest Laboratories	York Science Park, York, YO10 5DQ. Web: **www.yorktest.com** Tel: **01904 410410** Email: **customercare@yorktest.com**

Food intolerance testing for migraine is available on the NHS in some areas. If allergies are detected, desensitisation is possible but this is seldom available on the NHS.

Research conducted by York University and YorkTest Laboratories on 5,000 food intolerance sufferers has found that the removal of culprit foods identified by food intolerance testing can help to improve the symptoms of migraines and headaches. 76% of people reported moderate to high improvements in migraine symptoms within three months, after eliminating problem foods from their diet. These foods were identified by the YorkTest (an IgG antibodies test), which is commonly used by healthcare professionals to identify food intolerances. [2.].

Other factors are also implicated

We should remember that not all migraine is food related. There are numerous other trigger factors including hormonal factors, stress, strong emotions, environmental influences, such as loud noise, bright or flickering light and strong smells, climate changes and over tiredness. For most migraineurs, there is not just one trigger for their attacks but a combination of factors which individually can be tolerated but, when several occur together, a threshold is passed and an attack is triggered. For example, you may be able to eat cheese or chocolate, cope with a stressful lifestyle, exercise regularly and usually manage with very little sleep with no ill effects when any of these occur in isolation, but if you have a late night followed by a stressful day without having time to stop for lunch, eat a bar of chocolate before going to the gym and then have cheese for supper, you may find that a migraine will strike.

Self help measures

It can be very useful to keep a migraine diary to help you to identify your personal migraine triggers. The simplest way to do this is to write down everything that you ate and drank, plus keep a note of any unusual events, strong emotions etc. in the 24 hours preceding an attack. When you have 3 or 4 such records, by comparing them you may find that a discernible pattern emerges and that a few small changes to your diet and / or lifestyle can bring a marked improvement. If there appears to be no linking factor, it may be beneficial to extend the diary to 48 hours prior to the attack, as some foods (such as grains) can take this amount of time to react.

Alternatively, you can keep a comprehensive daily diary, as this may better assist you to identify the combinations of factors which need to be present to trigger an attack. It will also help you to better understand the frequency and pattern of your migraine, the effect that it has on your quality of life and may assist your GP or specialist to prescribe appropriate treatment.

If you suspect a certain food of being implicated in causing your migraine, it may be a good idea to investigate its use in small quantities in other foods, e.g. chocolate or cocoa may be used as a colouring in fruit cakes, coffee mousse, ginger biscuits etc. Checking food labels can be enlightening and sometimes surprising.

Dehydration

Did you know that by the time we feel thirst we are mildly dehydrated. Shortage of water slows down the release of toxins and other waste products which can cause headaches. The human body is 65% water; when we lose more water than we take in, dehydration occurs and the body loses valuable electrolytes. Dehydration is a known migraine trigger and perhaps one of the easiest to avoid by making sure you keep well hydrated, particularly in the summer as heat increases the risk of dehydration causing a daily headache, a vascular headache or a sudden headache.

Magnesium

Magnesium is often referred to as the "antistress" mineral. It is a kind of natural tranquilliser which helps to relax muscles and is thought to help dilate the blood vessels. It helps in protein synthesis, keeps your bones strong, and helps maintain normal nerve and muscle function. Things that cause the body to run short of magnesium, such as alcohol, stress and menstruation, can trigger a migraine attack or lower your resistance.

Magnesium supplements can be effective in migraine prevention, particularly for women who suffer from premenstrual migraines. Research has found that 360mg of magnesium per day can help to decrease menstrual migraine. [6.].

To help improve your magnesium intake it is best to try and cut down on the processed food you eat and increase your intake of foods rich in magnesium, such as spices, nuts, cereals, wheat germ, beans, soy products, seafood and bananas (warning: bananas are a major migraine trigger for some people). Dark leafy vegetables, as well as grains and nuts, generally have higher magnesium content than meats and dairy products.

For more information on migraine and magnesium, please visit **www.migraine.org.uk/magnesium.**

Vitamin B2

Vitamin B2 (also known as riboflavin) is found in small amounts in many foods and can help to increase energy production in blood vessels of the brain. It is needed for converting food to energy, and like co-enzyme Q10, also works as an antioxidant.

Lean meats, eggs, legumes, nuts, green leafy vegetables, dairy products and milk provide riboflavin in the diet. Breads and cereals are often fortified with riboflavin. Because riboflavin is destroyed by light, foods with riboflavin should not be stored in exposed glass containers. Riboflavin is stable when heated but will leach into cooking water, and the pasteurisation process causes milk to lose about 20% of its riboflavin content. Alkalis, such as baking soda, also destroy riboflavin.

Research conducted has found that taking 400mg of vitamin B2 per day showed very few side effects in a 1998 study of 80 patients. For 59% of patients their migraines improved by more than 50%. [7.].

For more information on vitamin B2, please visit **www.migraine.org.uk/vitaminb2.**

Fatty acids and omega 3

Healthy fats like omega 3 have been found to help migraine due to their anti-inflammatory nature. They are commonly found in fish, such as salmon, mackerel, trout and herring, and also in seeds and walnuts. You could also try taking fish oil supplements of flaxseed oil.

Is food the problem?

Food allergies have attracted a great deal of attention recently and many unproven claims have featured in the media resulting in the requirement for a redefinition of this term.

An allergy which occurs in about 2% of the adult population, is now widely regarded as a specific immune reaction of the body, caused by coming into contact with foreign proteins known as **allergens.** Examples of allergens include pollen, dust mite, medicines, pets, and foods, such as milk and eggs. Allergens are substances that are foreign to the body and can cause an allergic reaction only in those people who have a predisposition. When you are allergic to something your immune system overreacts and produces antibodies (IgE) to attack the allergen; this leads other blood cells to release further chemicals (including histamine) which together cause the symptoms of an allergic reaction.

Although people can be affected by various different allergens, the most common food implicated in causing allergic reactions are: shellfish, milk, fish, soya beans, wheat, eggs, peanuts, fruit, vegetables and tree nuts, such as walnuts, Brazil nuts, almonds and pistachios. Once you have become sensitive to a particular food, your immune system will produce more antibodies the next time it is consumed, therefore the symptoms can be mild one day and serious the next.

Symptoms of an allergic reaction can vary from person to person, they can occur either straight away or start several hours later. Typical symptoms include swollen lips, face or throat, an itchy sensation in the mouth and lips, vomiting, stomach cramps and diarrhoea, headache, fatigue and irritability, hay fever, asthma and a rash.

Anaphylactic shock

Some people can have 'anaphylaxis' or an 'anaphylactic shock'; this is a rare but serious reaction when coming into contact with an allergen and it affects the whole body within minutes. The likely cause of anaphylaxis are foods, such as nuts, peanuts, eggs, milk, soya, wheat, fish and shellfish. Consuming even a small amount of a particular food can cause anaphylaxis. Some people are extremely sensitive and can be affected by breathing in the food essence; for example, if a person next to them was eating fish or by kissing a person who has recently eaten peanuts. Exercising after having eaten certain foods like celery, shrimps, wheat, apple, hazelnut, squid and chicken can also cause anaphylaxis in some individuals.

Symptoms of anaphylaxis can include:

- Hives or a reddish discolouration of the skin
- Nasal congestion
- Swelling of the throat
- Stomach pain, nausea, vomiting
- Shortness of breath, wheezing
- Low blood pressure or shock

If you develop any of these symptoms, please seek medical treatment straight away as it can be life threatening.

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Web resource: www.medicinenet.com
Web resource: www.headacheexpert.co.uk

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For further information, advice on migraine management and for updates on the latest migraine research, please contact Migraine Action by calling **0116 275 8317**, emailing **info@migraine.org.uk**, or visiting the charity's website at **www.migraine.org.uk**. All of our information resources and more are only made possible through donations and by people becoming members of Migraine Action. Visit **www.migraine.org.uk/donate** to support one of our projects or visit **www.migraine.org.uk/join** to become a member.

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