BOOST YOUR IMMUNITY

www.qedod.com

Contents

What is the immune system?

Our immune system is really amazing. If something harmful or irritating tries to attack part of your body, a biological response kicks in to try to remove it. This response then recognises damaged cells, irritants, and pathogens and starts the healing process.

So how does this network of cells, organs, proteins and antibodies that are on guard 24/7 to keep us healthy work? There are two main parts - the Innate Response which sorts out the friends from the enemies and deals with problems by flushing or burning out the invader which can sometimes have the effect of making us feel feverish or uncomfortable is really a sign of the body trying to heal itself. The Acquired Response is more like the body's SWAT team so when invaders have been recognised it identifies the cells that can kill them and sends them into battle.

Another major part of the immune system is the network of lymph nodes and vessels, or lymphatic system, Lymphatic vessels are thin tubes that carry a clear fluid called lymph which contains tissue fluid, waste products, and immune system cells all over the body. Lymph nodes are small clumps of cells connected by the lymphatic vessels that contain the white blood cells that trap viruses, bacteria and other invaders, including cancer cells. White blood cells are the cells of the immune system and are made in one of your lymph organs such as the spleen or thymus and in the bone marrow.

There are also epithelial cells that line our bodies and make antimicrobial products including antiviral compounds. If a pathogen gets past these defences our white blood cells kick in and work with our lymphocytes. One particularly clever type are macrophages which inhabit all our body tissue and can remember germs so, if we've built some immunity when they meet that germ again they'll deal with it most likely without us even knowing.

So, when someone is talking about 'boosting' our immune system there are a number of things to consider - which part of the system, how they are going to do it and, most importantly, the sometimes hard to find scientific evidence.

An overactive immune system

Sometimes, people are born with certain genes that stimulate their immune system react to substances that most of us find harmless. These substances are called allergens and some of the more common examples are dust, mould, pollen and some foods such as nuts. An overactive

immune system can react in different ways but the most common is an allergic reaction that can produce conditions such as:

- **Asthma:** Common causes are dust, pollen or an irritant like tobacco smoke, which can cause coughing, wheezing and problems in breathing.
- **Eczema.** An allergen causes an itchy rash known as atopic dermatitis.
- **Hay fever (allergic rhinitis):** Dust, pets or outdoor allergens such as pollens or moulds can cause sneezing, a runny nose, sniffling and swelling of the nasal passages.
- **Food allergy:** Foods such as nuts can cause severe allergic reactions.

Boosting your immune system

The idea of boosting your immunity sounds great but it's proved difficult to do because it is a system not a single entity. In order to work effectively it needs balance and harmony and that our lifestyle choices can play a key role in this.

The effects of diet, exercise, age, psychological stress, and other factors on the immune response, in animals and in humans, are constantly being studied but there are some simple guidelines you can follow to help keep your immune system strong and healthy. Your body as a whole will also work benefit from:

- Not smoking
- eating a diet high in fruits and vegetables
- exercising regularly
- maintaining a healthy weight
- drinking alcohol in moderation

- getting adequate sleep
- avoiding infection by washing your hands frequently and cooking meats thoroughly
- minimising stress.

The importance of balance

Rather than thinking about 'boosting' the immune system we need to consider 'balancing' it and thinking of it as a system that runs from 'underactive' to 'overactive'. If it's 'underactive' it doesn't function properly and deal with diseases such as Malaria but, if it's 'overactive' it can start targeting our own cells which can cause autoimmune diseases like rheumatoid arthritis and multiple sclerosis. An overly vigorous immune response can also cause inflammation, something that can be considered a result of the 'war' between the immune system and invading pathogens although some serious illnesses caused by infections can be a result of an over-vigorous immune response.

Keep your gut healthy

Our bodies contain more cells belonging to microbes, such as bacteria and yeasts than human ones, so its essential we keep our microbiome healthy.

Microbes form protective barriers and programme our immune systems and research has shown that animals bred with no microbiome have less well developed immune responses. Older people and those with diseases involving inflammation, such as allergies, asthma, rheumatoid arthritis and diabetes can also have less varied gut microbiomes.

To keep your gut healthy you should eat a varied diet with lots of high-fibre and plant foods such as pulses and fermented foods. Kefir yoghurt and pickles such as sauerkraut and kimchi are good choices and some people find probiotic supplements helpful. These contain 'good bacteria' that are thought to improve our gut health but research on them is mixed and the European Food Safety Authority has ruled that they can't claim to *improve* immune function because of a lack of scientific evidence.

The Immune System and ageing

As we get older, our immune response starts to decline and we become more susceptible to infection. Good nutrition and a level of physical activity become even more important to ensure the immune system of older people remains in good working order.

Vitamins and Mineral Supplements

Taking a daily multivitamin and mineral supplement may be helpful if you think your diet is not providing you with all your micronutrient needs or if you feel you're deficient in a specific area – perhaps if you don't like vegetables or don't eat dairy products. They may also bring other health benefits.

Foods to help boost your immune system

During uncertain or difficult times certain foods may help keep your immune system strong so its a good idea to try and get some of these immune boosters into your diet!

1. Fruits and Vegetables

Citrus fruits - Most people turn to Vitamin C when they feel they are developing or have caught a cold. Although scientists are not sure how it helps, Vitamin C may reduce the duration of common cold symptoms and improve the function of the human immune system by increasing the production of white blood cells that are key to fighting infections. Popular citrus fruits include grapefruit, oranges, tangerines, lemons, limes and clementines. Because your body can't produce or store Vitamin C, we need to take it daily for continued health. Most citrus fruits are high in Vitamin C and with so many options it's should be easy to add to your diets.

Blueberries - Blueberries have antioxidant properties that may boost the immune system They also contain a type of flavonoid called anthocyanin. A study in 2016 also found that flavonoids play an essential role in the respiratory tract's immune defence system and that people who ate foods rich in flavonoids were less likely to get an upper respiratory tract infection, or common cold, than those who did not.

Papaya - Papaya is another fruit loaded with Vitamin C with 224% of the daily-recommended amount of Vitamin C being found in a single papaya! They also have a digestive enzyme called papain that has anti-

inflammatory effects as well as good amounts of Potassium, B Vitamins and Folate which are all beneficial to our overall health.

Kiwi Fruit - Kiwi Fruit are naturally full of a number of essential nutrients, including Folate, Potassium, Vitamin K and Vitamin C. Vitamin C boosts white blood cells to fight infection whilst the Kiwi Fruits other nutrients keep the rest of your body functioning properly.

Elderberries - Elderberry is a shrub that has been used medicinally for centuries. Extracts of elderberry have antiviral, anticancer, and anti-inflammatory properties and is also high in flavonoids. Some studies suggest elderberry extract reduces the duration of the flu and helps reduce swelling in mucus membranes. Elderberry extract has been shown to react adversely to some prescription drugs so check with your GP if you are thinking of adding this to your diet.

Acai Berry - Acai Berry is a black-purple fruit that comes from the acai palm tree in Brazil, Trinidad, and some other parts of South America. The fruit is high in anthocyanin's, the flavonoid molecules that are antioxidants and may combat oxidative stress in the body by mopping up free radicals. There is research being undertaken as a potential treatment for all conditions such as increasing prostate specific antigen (PSA), cardiovascular disease and metabolic syndrome, lower rectum cancer and constipation.

Watermelon - A two-cup serving of watermelon has 270 mg of potassium which is 30% of the daily value of Vitamin A, and 25% of the value of Vitamin C. It also provides Vitamin B6 and Glutathione for proper immune function. Another benefit is that a two-cup serving of watermelon also has only 80 calories!

Pomegranate - Studies have found the beneficial compounds in pomegranate extract inhibit the growth of harmful types of bacteria including *E coli* O157:H7, *Salmonella, Yersinia, Shigella, Listeria, Clostridium, Staphylococcus aureus,* and other organisms. It's also thought it inhibits the growth of bacteria in the mouth which can contribute to periodontal disease, plaque build-up and gingivitis. Pomegranate extracts have may have antiviral properties against flu, herpes and other viruses and in addition it may promote the growth of beneficial gut flora that boosts the immune system including *Bifidobacterium* and *Lactobacillus.*

Red Bell Peppers - Ounce for ounce, red bell peppers contain twice as much Vitamin C as citrus fruit. They're also a rich source of Beta Carotene which helps keep our eyes and skin healthy. Although they contain lots of Vitamin C, Red Bell Peppers don't have a high sugar level in the same way fruit does so they are great if you need to watch your sugar level. Stir frying and roasting are the best way to maintain the nutrients.

Broccoli - Broccoli is supercharged with vitamins and minerals. One cup of broccoli provides as much Vitamin C as an orange and it also provides Vitamins A, B1, B2, B3, B6 and E, potent antioxidants, such as Glutathione and Sulforaphane, Beta-Carotene, Potassium, Magnesium, Zinc and Iron so it's a good vegetable to eat regularly to support our immune system health! The best way to make the most of its nutrients is to cook it as little as possible — or better still, not at all.

Sweet Potatoes - One medium sweet potato contains 120% of our daily Vitamin A and 30% of our daily Vitamin C. They are also rich in Beta Carotene, an antioxidant that gives the potatoes their orange colour. It's also a source of Vitamin A which helps to keep skin healthy and may even

provide some protection from sun damage from ultraviolet (UV) rays. Sweet potatoes are cholesterol-free, fat-free and provide fibre as well.

Mushrooms - Mushrooms are high in Selenium and B vitamins like Riboflavin and Niacin that help the immune system to work to its best. They are also high in polysaccharides that may boost immune function and synthesise Vitamin D when they are exposed to UV light. Mushrooms may therefore be the only plant source of Vitamin D which is thought to boost the immune system.

Garlic - Early civilizations recognised garlic as a way of fighting infections and there is some research showing that it may also help lower blood pressure and slow down hardening of the arteries. Garlic has antibacterial, antiviral, and anti-fungal properties and its immune-boosting properties seem to come from a heavy concentration of sulphur-containing compounds, such as Allicin. The bulbs are rich in antioxidants that may quench free radicals that play a role in Alzheimer's disease, heart disease, cancers, and other conditions. The antiviral properties may be helpful in reducing the severity of colds or flu.

Ginger - Ginger is thought to have anti-inflammatory, antioxidative, antibacterial and antiviral properties. It may also help decrease nausea, chronic pain and inflammation so may help in reducing a sore throat or other inflammatory illnesses. Ginger may also possess cholesterol-lowering properties. It can be used in a variety of dishes and desserts, as well as in teas.

Spinach - Spinach is rich in Vitamin C but is also packed with numerous antioxidants such as Flavonoids and Carotenoids, Folate, Fibre, Magnesium and Iron as well as Vitamin E and Beta Carotene, which may increase the infection-fighting ability of your immune system. It may also provide the body with the necessary nutrients for cell division and DNA repair. Similar to broccoli, spinach is healthiest when it's cooked as little as possible although light cooking enhances its Vitamin A and allows other nutrients to be released from Oxalic Acids.

2. Dairy

Yogurt - Nutrition guidelines recommend adults consume 3 servings of dairy products per day. Low-fat yogurt provides 11 grams of protein, 250 calories, and almost 400 mg of calcium per 8-ounce serving. It can also help meet your daily requirement of Vitamin B12, Vitamin D and Vitamin B2 (Riboflavin). Yogurt is also rich in probiotics including *Lactobacillus acidophilus, Lactobacillus casei,* and *Bifidus* and these strains may boost immune function and help reduce the length and severity of colds. Look for yogurts that have "live and active cultures" such as Greek yogurt and go for plain yogurts rather than the pre-flavoured ones which are loaded with sugar. Try sweetening a plain yogurt with healthy fruits and a drizzle of honey instead.

3. Nuts and Seeds

Almonds- A small handful of almonds is a healthy snack that may benefit the immune system. About 46 whole, shelled almonds provides nearly 100% of the recommended daily amount of Vitamin E which is key to a healthy immune system. Nuts are a 'healthy fat' and also contain Fibre, Manganese and Magnesium.

Sunflower seeds - Sunflower seeds are full of nutrients, including Phosphorous, Magnesium and Vitamin B-6. They're also incredibly high in Vitamin E, an antioxidant that is important in regulating and maintaining immune system function. They can make a tasty addition to salads or to porridge. Other foods with high amounts of Vitamin E include Avocados and dark leafy greens.

4. Herbs and Spices

Turmeric - Turmeric has also been used for years as an anti-inflammatory in treating both osteoarthritis and rheumatoid arthritis. It is also thought that the high concentrations of curcumin, which gives turmeric its distinctive colour, can help decrease exercise-induced muscle damage and improve immune response.

Cinnamon - It is thought Cinnamon can reduce the ability of bacteria to multiply and ease the symptoms of a cold. Try mixing it with raw honey which has similar properties or sprinkling it over porridge or in a hot chocolate.

Wheat Germ - Wheat Germ is the innermost part of the wheat kernel and the most nutrient rich part of the grain. It's rich in B Vitamins, Zinc, and Vitamin E and can easily be added in your diet by sprinkling it on top of yogurt or cereal, adding it to a shake or to baked goods by replacing it for some white flour in recipes.

5. Afternoon Tea

Green Tea - Antioxidants in tea called polyphenols and flavonoids are thought to boost immune function. They may also reduce the risk of heart disease. Both green and black teas are packed with flavonoids, a type of antioxidant but Green Tea also has a high level of Epigallocatechin Gallate, or EGCG, an antioxidant which is thought to enhance immune function. The fermentation process black tea goes through destroys a lot of the EGCG but Green Tea is steamed and not fermented so the EGCG is preserved. Green tea is also a good source of the Amino Acid L-theanine which may aid in the production of germ-fighting compounds in our T-cells. Green Tea may also affect blood lipids, increasing good HDL cholesterol and decreasing LDL bad cholesterol, triglycerides and total cholesterol. It also contains only a small amount of caffeine, so it's a good alternative to black tea or coffee.

Dark Chocolate - Dark chocolate contains an antioxidant called Theobromine which may help to boost the immune system by protecting the body's cells from free radicals, the molecules that the body produces when it breaks down food or comes into contact with pollutants. Free radicals can damage the body's cells and may contribute to disease. However good dark chocolate is though, its important to remember that it's high in calories and saturated fat, so should be eaten in moderation.

6. Fish and Meat

Poultry - Chicken and turkey is high in Vitamin B-6 and just 3 ounces of light turkey or chicken meat contains 40% to 50% of your daily recommended amount. Vitamin B-6 is important to many of the chemical reactions that happen in the body and is also vital to the formation of new and healthy red blood Stock or broth made by boiling chicken bones

contains Gelatin, Chondroitin, and other nutrients helpful for gut healing and immunity.

Shellfish - Some types of shellfish are packed with Zinc which our bodies need to help our immune cells function properly. Varieties of shellfish that are high in Zinc include crab, clams, lobster and mussels. Don't exceed the daily recommended amount of Zinc in your diet which for adult men, is 11 milligrams (mg), and for women, 8 mg, because it can inhibit the immune system function.

Oily fish - Salmon, tuna, pilchards, and other oily fish are a rich source of Omega-3 Fatty Acids which can hep the auto-immune system. According to a 2014 report, long-term intake of Omega-3 fatty acids may reduce the risk of rheumatoid arthritis, a chronic autoimmune condition that occurs when the immune system mistakenly attacks a healthy part of the body.

Oysters - One 3-ounce serving of oysters provides 190% of the daily value of Selenium, 45% of the daily value of Iron, and 20% of the daily value of Vitamin C. It also contains 16 grams of high-quality protein, Zinc and Vitamin A which are all critical for proper immune function.

7. Fermented Foods

The beneficial microorganisms found in fermented foods perform a variety of necessary functions in the GI tract. They synthesize vitamins and amino acids and produce short-chain fatty acids (SCFAs) that the cells lining the GI tract use for fuel. The probiotics establish a healthy balance of flora in the gastrointestinal tract, protecting against pathogenic strains

that try to take hold. About 70% of the immune system lies in the gut. Healthy, balanced gut flora makes for a strong immune system.

Kefir - Kefir is a fermented drink that contains live cultures of bacteria that are thought to be beneficial for health. It may boost the immune system and regular consumption may help with fighting bacteria, reducing inflammation and increasing antioxidant activity. It is particularly beneficial in building a healthy gut.

Miso Soup - Miso soup is made from a salty paste made from fermented soybeans which is rich in the probiotics thought to be beneficial for gastrointestinal health and boosting the immune system. A lack of beneficial bacteria or an imbalance of bacteria in the GI tract is associated with a variety of medical conditions including irritable bowel syndrome, food allergies, gastroenteritis, inflammatory bowel disease, Crohn's disease and even certain kinds of cancers.

Eating just one of these foods won't increase your wellbeing even if you eat it constantly. Pay attention to serving sizes and recommended daily intake so that you don't get too much of a single vitamin and too little of others.

Other immunity boosting methods

One of the main things that can affect our immune system is stress and anxiety. Stress is the physiological reaction to the 'fight or flight' process, during which the body produces hormones containing adrenalin and cortisol. Cortisol produces a number of reactions that includes raised blood pressure and heart rate. It generally stimulates the body but it is used up through exercise so it's essential to reducing stress.

Exercise is known to improve your overall fitness levels and feelings of wellbeing but there is also some scientific thinking that regular, moderate exertion could also help boost your immune system. This could include walking for 20-30 minutes, every day, regular cycling, dancing, skipping trips to the gym, swimming or even playing golf. Exercise also helps to improve cardiovascular health, lower blood pressure, control weight and helps our circulation so cells and substances in the immune system move efficiently around the body.

The majority of stress and anxiety we feel comes down to the choices we make. If we choose to watch the news and see it as bad that's our choice. If we allow it to make us anxious that's a result of our choice. At the moment just sticking to factual news items once or twice a day would be sensible as constantly watching what's happening on social media drives negativity and our feeling of not being in control. Currently we really can't control some of the things happening in our lives so we have to focus on the things we can control – how we think, how we plan, how we make sense of the present and the future and how we're going to distract ourselves Instead of spending twenty minutes worrying about what we've seen on the news we could spend that time more productively listening to new music, watching something interesting or just doing something that's going to make us feel good!

Focusing on what we can control is important because more control means less anxiety. Anxiety is often seen as a fear of the unknown or of the future so getting control is important. If we think our future is uncertain it stimulates anxiety which produces the stress response in our body. This response calms down as we get control or as we make a plan and can understand what's going to happen. As our thoughts run away with us we need to be able to ask ourselves 'What's my plan?' 'What's my plan if it happens?' and 'What's my plan to stop it happening?'

Other things that we can introduce easily into our lives includes making sure we are breathing properly. Diaphragmatic breathing uses deep, slow and controlled breathing through the diaphragm so if we focus on our breathing not only do we benefit from getting oxygenated blood and red blood corpuscles cells into our body but we also cannot be distracted by the cause of our stress. Laughter, music and dancing are also excellent in controlling stress and anxiety as they use up cortisol. Other more thoughtful or reflective approaches include journaling, a form of self guided meditation, mindfulness which helps us focus on the now so we notice what's going on around us at that moment and meditation which helps us empty our minds so when a negative thought appears we can push it away.

Sleep is also very important to our immunity as it's the time our body rejuvenates and resets itself. Developing a settled routine for getting ready to go to bed often helps by producing a feeling of 'closing down'. Make sure you have a good bed and mattress and that your bedroom is cool and well ventilated with blackout curtains. Try to keep disturbances from children or pets to a minimum and make sure you have a sheet of paper and a pen next to the bed so if you do wake up you can write down what's worrying you (avoid using the blue light from phones and iPods though) Also, on the subject of phones, studies have shown that some viruses can remain infectious on surfaces for up to nine days so you should disinfect your mobile phones and tablets regularly.

In the sort of stressful situation we find ourselves in at the moment, our relationships become even more important than usual. Many of us are living in far closer proximity than usual so as well as having time together, its important to have time for ourselves and time apart. Keep in touch with family and friends via Zoom or Skype as well as the phone and make sure your friends aren't 'drainers' who sap your energy but surround yourself with people who have a positive effect on you and can

make you laugh.

Earlier we talked in some detail about the different types of food that can boost immunity. There is now also a lot of research around how we eat particularly in relation to fasting. There are several different ways of introducing this into your life but it is thought that it's good for our immunity, lifestyle, health and wellbeing rather than being a tool for weight loss.

It's also important to avoid excessive alcohol consumption as some studies have found a link between this and immune function. Research shows people who drink in excess are more susceptible to respiratory illness and pneumonia and recover from infection and wounds more slowly. Alcohol can alter the number of microbes in the gut microbiome, whilst excessive alcohol can damage the lungs, and impair the mucosal immune system, which is essential in helping the body recognise pathogens and fight infection.

There are also a lot of different therapies that some people find helpful. Some like Yoga, Music Therapy, Coaching and Hypnotherapy are well established whilst others like Reiki and Crystal Therapy are less so but this doesn't take way from the fact that some people find them very helpful.

What next?

Take a look at our websites **www.qedod.com** where you can sign up to get our latest podcasts and information.