

Colour code your health by eating a rainbow of foods

It feels as though we are continually being told to eat more fruits and vegetables to maintain good health and keep diseases at bay, with current research suggesting that eating five-a-day is not enough to reap the health benefits they have to offer. So, what exactly is it about these nutritious colourful allies that makes them so great?

The protective effect of antioxidant micronutrients such as the ACE vitamins and selenium have been understood for some time now. These antioxidants are essential to help reduce free radicals in the body (unstable molecules produced from digestion and exposure to pollution, sunlight and cigarette smoke) and they have been attributed to lowering the risk of many diseases including cardiovascular disease, cancer and dementia. However, research has now moved forward to discover the beneficial effects of compounds known as phytonutrients that are responsible for colouring fruits and vegetables, and how they too can have a powerful effect on our health and reduce the risk of disease.

Phytochemicals originally evolved to help plants protect themselves from diseases and insects and research is beginning to demonstrate that in the same way they can also help to protect us from disease. There are thousands of phytochemicals found in fruit and vegetables and as the research is new we're only just starting to unveil their identity and extremely complex action within the body.

Although the science is complex, the message is simple; eat a wide variety of different coloured foods. As nutrients in foods work in synergy and different phytonutrients can be more freely absorbed depending on their make up within the structure of the food, it's also a good idea to not only mix colours and types of fruits and vegetables but also cooking methods combining raw with cooked (such as adding roasted sweet potato or tomatoes to salad).

By dividing different fruits and vegetables by their hue you can see how mother nature has allowed us to colour code our health by eating a rainbow of foods.

Red and pink

Foods: *watermelon, pomegranate, red peppers, tomatoes, strawberries, pink grapefruit, cranberries, red grapes, raspberries, rhubarb, red chillies*

Benefit: *Most red fruits and vegetables contain lycopene, which is a member of the carotenoid family which are converted into vitamin A within the body. This vitamin along with vitamins C and E help to protect the body from free radical damage. Studies show that Lycopene* may reduce the risk of prostate cancer as well as helping to promote good colon health. Red berries contain ellagic acid (helps to support the immune system) and anthocyanins, which research suggests reduces inflammation and help preserve memory whilst helping to slow down the degenerative processes of ageing. These are also considered to be protective against certain cancers and cardiovascular disease as well as showing antiviral and antibacterial properties.*

**Lycopene is more freely available in processed or cooked tomatoes. Try roasting cherry tomatoes with balsamic and a little olive oil.*

Yellow and orange

Foods: Yellow peppers, orange peppers, cantaloupe melon, carrots, sweetcorn, butternut squash, mangoes, grapefruit, peaches, pineapples, oranges

Benefit: The key antioxidant found in orange and yellow fruits and vegetables are carotenoids (also found in green leafy vegetables). These are converted to vitamin A in the body, which is essential for healthy skin and eyes. Beta-carotene has been linked to a reduced risk of heart disease and certain cancers as well as playing a role in the immune system, reducing cognitive decline and possibly dementia risk. You will also find a group of compounds in this hue known as bioflavonoids which studies suggest reduce inflammation in the body and may also work to slow down the development of cancer, heart disease and neurodegenerative diseases such as Alzheimer's and Parkinson's. Combining your orange foods with healthy fats found in avocados or oils will help with the absorption of carotenoids. Try drizzling olive oil over roasted butternut squash.

Green

Foods: Peas, kale, broccoli, kiwi fruit, avocado, mint, gooseberries, grapes, asparagus, artichokes, pak choi, honeydew melon, green peppers, Brussels sprouts, cabbage, green beans

Benefit: Lutein (found also in yellow fruits and vegetables) and zeaxanthin found in green vegetables are major pigments in the eyes and important for the maintenance of healthy vision. Studies have shown that people who eat higher amounts of these compounds in their diet have a lower risk of developing age-related macular degeneration (AMD) which is a major cause of blindness as we age. Zeaxanthin may also help to reduce the risk of breast and lung cancers, and play a role in the prevention of heart disease and stroke. Leucolin is another antioxidant found in green peppers and celery which has been found to lower inflammation in the brain and central nervous system. Green foods also contain quercetin which also has an anti-inflammatory effect within the body.

Purple and blue

Foods: black grapes, beetroot, cherries, blackberries, blueberries, red onions, aubergines, purple potatoes, purple cabbage, plums

Benefit: Anthocyanins are present in this colourful group of fruits and vegetables. These compounds are thought to reduce inflammation, which may help with preservation of memory and reduced risk of certain cancers. Blueberries have been the focus of research into the effects of anthocyanins and reduced mental decline (including Alzheimer's). Purple grapes are especially high in a type of polyphenol known as resveratrol, which has been shown to protect against heart disease and promote a healthy circulatory system by reducing the levels of bad blood fats and blocking the formation of blood clots (which can cause heart attack and stroke). Blackberries contain ellagic acid and catechins, which may help to protect against cancer.

White

Foods: Mushrooms, garlic, onions, cauliflower, endive, parsnips, turnip, taro, celeriac

Benefit: Although not strictly a colour of the rainbow, white vegetables also contain a variety of phytonutrients that can have a protective effect on your health. Onions and garlic contain quercetin and allicin, which are known to kill harmful bacteria and protect capillaries (smallest of the body's blood vessels). You will find powerful polyphenols in mushrooms which can help to reduce the risk of heart disease. Glucosinolates and thiocyanates found in cauliflower may also help reduce the risk of heart disease and cancer as well as help with digestive disorders.

Just adding a few more colours to your meals each day can make a big difference to the nutritional quality of your diet. Here are my top five tips to adding a little extra colour to your diet:

- Try to include at least two different colour vegetables with each meal, this could be a salad with tomatoes and cucumber, roasted squash and beetroot or peas with baby onions*
- Smoothies and juices are a great way to combine lots of different coloured fruits and vegetables such as beetroot, carrot and apple*
- Homemade soups are an easy way to combine colours as are stews and casseroles*
- Snack on a variety of chopped veggies (perhaps with a dip such as hummus) such as courgette, red peppers and carrot*
- Throw a handful of mixed berries over porridge, breakfast cereal or yoghurt; you could even combine them with sweet apples to make a antioxidant-rich fruit compote*