

WHENEVER we go to supermarkets or watch advertisements on TV, we often see foods and food products being marketed as being rich in antioxidants, with the implication that they are good for our health.

But what are antioxidants and why are they good for us?

To understand about antioxidants, we need to learn about the process of oxidation.

Oxidation is a natural reaction in living things that produces free radicals.

For instance, a peeled or cut apple that is exposed to the air will turn brown due to oxidation.

For humans, various biological and environmental factors can cause oxidation and lead to an increase of free radicals in our body.

These include air pollution, contaminants, radiation, UV (ultraviolet) exposure, tobacco smoking, alcohol intake and high blood sugar levels.

Excessive free radicals in our body may attack our cells, causing cell damage and oxidative stress.

This in turn may lead to harmful conditions, such as inflammation, atherosclerosis, cancer and other non-communicable diseases (NCDs).

Oxidative stress may also play a

# What are antioxidants?

STAR Health (06/10/2021) PAGE 06

Less a particular type of substance and more of a chemical property, antioxidants help combat harmful free radicals in the body.



Fruits and vegetables are the best natural source of antioxidants. — 123rf.com

Here are some simple tips to increase your antioxidant intake:

> **Aim to consume at least five servings of a variety of colourful fruits and vegetables daily.**

Include those that are rich in antioxidants, such as berries and green leafy vegetables.

The phytonutrients in fruits and vegetables are also vital for other body functions.

> **Include nuts, seeds and dried fruits as your snack choice.**

These foods are also rich in antioxidants.

However, remember to consume in moderation.

Opt for varieties with no added sugar or salt.

> **Spice up your recipes with herbs and spices.**

Turmeric, cumin, oregano, ginger, clove, cinnamon and various other natural seasonings not only add flavour to your food, but also contribute to your antioxidant

Oxidative stress may also play a role in promoting ageing and suppressing the immune system.

Here is where antioxidants come in to inhibit oxidation and prevent cell damage due to free radicals.

## Antioxidant sources

A balance of free radicals and antioxidants in the body is crucial to prevent oxidative stress and maintain our health.

Hundreds or even thousands of different substances can act as antioxidants to fight free radicals.

Commonly-known antioxidants include vitamin C, vitamin E, beta-carotene, and minerals like selenium and manganese.

There are also others like glutathione, coenzyme Q10, lipoic acid, flavonoids, phenols, polyphenols, phytoestrogens and more.

Some antioxidants like glutathione can be produced in the body, while others like vitamins C and E can be obtained from dietary sources.

It is important to know that antioxidants are not exactly a group of similar substances.

It is more appropriate to define an antioxidant as a substance that has the chemical property of anti-oxidation.

Thus, each antioxidant may have different mechanisms of action and serve different physio-

logical functions.

Each has unique chemical behaviours and biological properties, and hence are not interchangeable with other antioxidants.

Here are some of the most common antioxidants:

### > Vitamin C

Also known as ascorbic acid, this water-soluble vitamin helps in the absorption of iron and is essential for the formation of collagen and the maintenance of capillaries, muscles and teeth.

It is abundant in nature, especially in fresh fruits and leafy vegetables such as guava, mango, papaya, cabbage, mustard leaves and spinach.

### > Vitamin E

A fat-soluble vitamin that mainly functions as an antioxidant to prevent oxidative damage to cell membranes.

It also prevents clots from forming in heart arteries and enhances immune function.

Vitamin E is only synthesised by plants, so it is present primarily in plant products such as vegetable oils, seeds, nuts and cereal grains.

### > Selenium

An important mineral with antioxidant properties that also plays a key role in the function of a variety of proteins.

Good natural food sources of selenium include nuts like Brazil nuts and walnuts; grains and

seeds; fresh and saltwater fish like tuna, cod, red snapper and herring; meat (especially the organs); poultry; eggs; milk; and shellfish.

### > Carotenoids

These plant pigments are responsible for the bright red, yellow and orange hues in many fruits and vegetables.

They are a type of antioxidant that has been found to reduce the risk of diseases like cancers and eye conditions, as well as boosting your immune system.

Some carotenoids can be converted into vitamin A when released into the body.

Carotenoid-rich foods include carrot, sweet potatoes, pumpkin, and green leafy vegetables such as kailan and spinach, as well as yellow and orange fruits like mango, papaya and watermelon.

### > Alpha-lipoic acid (ALA)

This vitamin-like compound is unique among biological antioxidants, as it is soluble in both water and fat.

Studies found that ALA may lower blood sugar levels and improve insulin sensitivity.

It is also potentially beneficial in treating nerve pain in diabetics.

It can be found in red meat, organ meats (such as liver), yeast, spinach and broccoli.

## Food or supplements

Sufficient dietary intake of anti-

oxidants is essential for health, but which is the best source for antioxidants: food or supplements?

A well-balanced diet with a variety of antioxidant-rich vegetables, fruits, grains, seeds and nuts is the best way to ensure adequate antioxidant intake.

Consuming antioxidants derived from whole foods have been shown to be more beneficial as a variety of different antioxidants can be obtained.

Another reason is that antioxidants tend to work better in combination with other nutrients in foods.

This is not only for optimal antioxidant activity, but also for other chemical properties and biological functions.

Supplements may be beneficial if you are deficient in certain nutrients, unable to have a healthy diet or unable to get enough fruits and vegetables.

Hence, supplements may be needed by some individuals at certain times of their lives.

It would be ideal to seek advice from a nutritionist to see if you are in need of any supplements, what type you might need and how long you need to take them for.

As the name suggests, any type of supplement should be used to add on to your daily diet, and not be used to replace a balanced diet.

> Opt for tea or coffee, instead of sugary drinks.

Tea, whether green or black, has been shown to be a good source of antioxidants.

Living in a modern world, we are vulnerable to increased exposure to free radicals, not just from the environment, but also due to our own lifestyle.

Oxidative damage due to free radicals contribute to the cause of many chronic health problems like cancer, heart disease and inflammatory diseases.

Hence, consuming a variety of colourful fruits, vegetables and other plant products is important to ensure that you get all the nutrients you need, especially antioxidants, which can counter excessive free radicals.

**Associate Professor Dr Norhaizan Mohd Esa is a nutritionist. For more information, email starhealth@thestar.com.my. The information provided is for educational purposes only and should not be considered as medical advice. The Star does not give any warranty on accuracy, completeness, functionality, usefulness or other assurances as to the content appearing in this article. The Star disclaims all responsibility for any losses, damage to property or personal injury suffered directly or indirectly from reliance on such information.**