

Most people have heard about anti-oxidants, as food/supplement sources undergo increasing amounts of marketing. *"Pomegranates, tablets, green tea or chocolate?"*

Meanwhile most people don't understand oxidation fully - perhaps the adverts you are reading are telling you they cause aging. To expand upon public mystification there are multiple means of measuring antioxidants too, ORAC and ORP. So this document is intended to clear up some normal questions on this most important topic.

Oxidation

The process of oxidation starts with the air you breathe. Each oxygen atom has a nucleus in the center with tiny electrons circling around it like satellites orbiting the earth. Any atom that has eight electrons in its outer orbit is stable, but oxygen has only six. It is therefore very unstable and it needs two more electrons to stabilise. When Oxygen comes into contact with other atoms it may steal two electrons from them, a fire like reaction that releases heat energy. Or the oxygen atom may simply attach itself to one or more atoms to share electrons, as it does with hydrogen to make water (H₂O) or carbon to make CO₂. Either way this is called "oxidation". For example, oxygen burns the wood in a fireplace by capturing its electrons and releasing heat energy into the room. In your body, oxygen captures electrons from your digested food releasing the energy you use for all the activities in your body. What remains after oxidation? In the fireplace, oxidation of the wood hydrocarbons produces CO₂ which floats up the chimney, and leaves carbon ashes on the floor. In your body, oxidation of your food molecules produces CO₂ which you exhale, but the "ashes" remain in your body as electron-deficient molecules called "free radicals". They are dangerous because they roam through your body attempting to replace their missing electrons by stealing electrons from your vital cells, causing damage which usually disables their ability to reproduce as healthy normal cells.

Most people think free radicals come from outside us from sources such as pollution, and this is true too. They are the smoke-of-the-fuel, the oxygen remains from the combustion of food, petrol, tobacco or otherwise, but even in a pollution free world oxidants are being produced constantly in our bodies.

Anti-oxidation

Scientists agree that oxidized compounds wrinkle your skin, damage internal organs, damage DNA and contribute to the signs and symptoms of early aging. The natural way to resist oxidized damage is to provide your body with anti-oxidants – some of which you make, some you eat and drink, and others you may supplement. How do you know which antioxidant is best for you?

Please note: the essential function of an antioxidant is to supply electrons to electron-deficient free radicals so they no longer steal electrons from vital cells. Then how do you determine which antioxidant is the most effective?

The ORP Test

You can measure an antioxidant's potential to supply electrons dispersed into a liquid by using an ORP (Oxidation/Reduction Potential) meter. Oxidized materials are shown as + above zero, antioxidants are either a low + or a negative reading. Lower numbers indicate more available electrons. For example, the antioxidant CoQ10 has an ORP of +49mV, wheatgrass juice has an ORP of -120mV. The negative reading of wheatgrass juice gives it a significantly higher potential for donating electrons and neutralizing free radicals than CoQ10.

The ORAC Test

Another test, known as ORAC (which stands for oxygen radical absorbance capacity), was developed to measure the antioxidants in foods, primarily polyphenols, which are present in brightly colored fruits and vegetables. This gold-standard for measuring antioxidant protection is based on the intensity of the color in the food which is related to its ability to quench a certain type of free radical.

Blueberries are notorious for exhibiting a high ORAC value. Antioxidants that have high ORAC values may not have high bioavailability, making the ORAC value no measure of how the antioxidant is used in the body. Furthermore, not all antioxidants have color. Some of the most effective antioxidants are white minerals, such as zinc and selenium. Therefore an ORAC test cannot be used to evaluate these antioxidants.

You'll have guessed already that the anti-oxidant capacity of ionized water cannot be measured by the ORAC score.

Your Best Antioxidant

The best antioxidant is the one that is most bio-available with the greatest electron donating capacity. Ionized water offers you the easiest antioxidant ever in the form of pure drinking water with a reduced molecule cluster size. Not only does water require less digestion than foods or tablets, the reduced molecule cluster size alters the surface tension causing greater cellular permeability. Antioxidants are required everywhere in our body - not just in our bowel.

Summary

It would be useful if greater comparison of antioxidants could be achieved. There is no formula for conversion between ORP and ORAC. ORP is not a restrictive test like ORAC though, and anyone can purchase an ORP meter and begin testing anything they fancy in their own home.

What science has shown is that we benefit from a variety of antioxidants, so in any case don't rely on a single source especially if the bio-availability is questionable.