

Antioxidants

Saskatoons have a higher potential to neutralize free radicals than Blueberries

The ORAC measures the antioxidant power of foods in vitro using chemical surrogates but does not indicate the bioavailability of antioxidants. Despite being an in vitro method, the cellular antioxidant assay (CAA) is an indicator of biological performance of food antioxidants and is useful to compare biological performance of different fruits. CAA assay uses HepG2 human liver cells pre-treated with food antioxidants (Wolfe et al., 2007). However, the current version of the CAA assay has a drawback that is antioxidant power is tested only against peroxy radicals. The method is not yet improved to measure the biological performance of food antioxidants against other significant free radicals.

As per 2012 data, the CAA value communicates that, at the cellular level the antioxidant power of 1.0 g of dried saskatoons on the peroxy radical (to neutralize/scavenge the free radical) is equivalent to the antioxidant power of 36 μ moles of quercetin. Quercetin is the antioxidant standard used in the assay. At cellular level, the antioxidant power of 1.0 g of saskatoon (dry) powder of 2013 harvest is equivalent to 153.55 μ moles of quercetin, which is a remarkable increase from 2012. This observation is compatible with the ORAC 5.0 data for peroxy radicals, which has increased from 391 μ mole TE/g (in 2012) to 425 μ mole TE/g (in 2013) (3.6a). This data show the non-linear relationship between in vitro antioxidant power (ORAC value of test tube experiments) and cellular level antioxidant power (CAA value) of the same compounds of saskatoons.

The antioxidant power of 1.0 gram of dried blueberries is equivalent to 171 μ moles of quercetin (Wolfe et al., 2007). Thus, at cellular level, blueberry antioxidants are more effective in scavenging peroxy radicals than saskatoon berry antioxidants. This is explicable, as blueberry ORAC tested in vitro against peroxy radical is significantly higher (518 μ mole TE/g dw) than that of saskatoons (391 μ mole TE/g dw). We expect to test the CAA of saskatoons against hydroxyl radicals, super oxide radicals and singlet oxygen radicals when analytical protocols are available.

Antioxidants in the diet helps to decrease Inflammation, Risk of Cancer & Cardiovascular Diseases

How do we know?

Tested berries (2012 and 2013) by the Brunswick Laboratories, USA

Source: blueberry data from Wang et al., 2011

Source: Hou, D. 2003. Current Molecular Medicine

Source: Wang et al., 2011

