

## **ORAC Intake, Health Outcomes, and the Common Diseases of Aging**

"If these findings are borne out in further research, young and middle-aged people may be able to reduce risk of diseases of aging--including senility--simply by adding high-ORAC foods to their diets," Floyd P. Horn, administrator, Agricultural Research Service's Human Nutrition Research Center on Aging at Tufts University in Boston.

ORAC, short for Oxygen Radical Absorbance Capacity, is a test tube analysis that measures the total antioxidant power of foods and other chemical substances. Antioxidant power is the ability to neutralize oxygen free radicals. Therefore ORAC testing is a way to measure how many oxygen radicals a specific food can absorb. The more oxygen radicals a food can absorb, the higher its ORAC score.

Foods that score high in an antioxidant analysis called ORAC may protect cells and their components from oxidative damage. So suggests the latest studies of animals and human blood at the Agricultural Research Service's Human Nutrition Research Center on Aging at Tufts University in Boston. (ARS is the chief scientific agency of the U.S. Department of Agriculture.) In other words the higher a foods ORAC score, the better it is at helping our bodies fight diseases like cancer and heart disease.

Oxygen radicals are chemicals that are naturally formed inside our bodies by the process of oxidation. They are normal by products of everyday functions like digestion and physical activity. We are also all exposed daily to polluted air, ingest oxidized or partially rancid foods, and oxidizing radiations from the sun and various electrical appliances.

Free radicals are bad for our health in many ways. A good illustrative example of the harmful of oxidation is rusting. When metal rusts it becomes weak and flaky, it starts to degenerate or decay until it no longer performs its functions well. Eventually the metal "fatigues" and "fails". **THIS EXACT SAME PROCESS HAPPENS IN OUR BODY!** Just like in rusting, the cells, organs, and other parts of our body can be made weak by oxidation. This can lead to diseases like cancer, heart disease, cataracts and macular degeneration, osteoarthritis, chronic obstructive pulmonary disease (COPD), senile dementia and other neurodegenerative diseases, and perhaps even skin aging and wrinkling!

The Free Radical Theory of Aging is the thesis that oxidative damage culminates in many of the above maladies of aging is now well accepted in the health community. Therefore, if our bodies can quench these oxygen radicals before they do damage, then they won't hurt us. Chemicals that neutralize oxidation from free radicals are called antioxidants. The antioxidant evidence has spurred skyrocketing sales of antioxidant vitamins. But several large trials have had mixed results on vitamin pills as far as achieving the desired benefits. This may be because there are hundreds, maybe even thousands, of antioxidant phytonutrients (plant chemical nutrients) in natural plant foods and herbs. Some of these phytonutrients we have identified, many more as yet remain to be identified. What we do

know is that most of these powerfully beneficial plant compounds are not found in vitamin pills. Therefore, it is not surprising that nutritional science has found that those who eat 8-10 servings of fruits and vegetables a day suffer from a much lower incidence of the common chronic degenerative diseases of aging as compared to those who eat only 2 or 3 servings a day.

By the year 2050, nearly one-third of the U.S. population is expected to be over age 65. If further research supports these early findings, millions of aging people may be able to guard against many of the worst and most common diseases simply by adding high-ORAC foods to their diets! This could save much suffering, as well as reduce the staggering cost of treating and caring for the elderly.

Dr. Guohua Cao, a physician and chemist, developed the ORAC test while he was a visiting scientist at the National Institute on Aging in Baltimore, Maryland. According to Dr. Cao, "The ORAC value covers all the antioxidants in foods. You cannot easily measure each antioxidant separately, but you can use the ORAC assay to identify which phyto-nutrients are the important antioxidants. It may be that combinations of nutrients found in foods have greater protective effects than each nutrient taken alone."

New, natural plant chemicals are being discovered every day. We don't know as yet which ones, in what amounts, best fight cancer and other diseases. But we do know that as our knowledge is so limited, it is best to get these plant chemicals from plant foods, NOT just supplements, to fully enjoy the disease-fighting benefits.

We do know some of the best plant foods however. Dark greens and brightly colored plant foods are the ones with the highest ORAC scores. Think strawberries, spinach, kale, broccoli, blueberries, wild tart cherries, prunes, tomatoes, carrots, tea, pomegranate, mangosteen, and acai.