

THE IC50 RATING FOR ANTIOXIDANT EFFECTIVENESS

by Ronald L. Myers, CNC

If we take a brief look back at some of the nutritional developments of the 20th century, we see various milestones seemed to have our attention over the span of about a decade at a time. During the 1950's chlorophyll was the latest, you could sell almost anything if the word "Chlorophyll" appeared on the label. Then came the 60's and vitamin C. The 1970's highlighted the work of the Shute brothers, Dr. Benjamin Franks and vitamin E... The decade of the 1990's saw antioxidants and Pycnogenol. It seems as Americans we were learning our nutrition one decade at a time.

A BRIEF LOOK AT PYCNOGENOL

Pycnogenol is a complex of antioxidant nutrients that are patented for use to scavenge free radicals. Sorry to be so simple in taking the mystery out of this nutrient, but the facts are Pycnogenol is a "complex" or group of antioxidants. As with any antioxidant or group of antioxidants it is primarily effective against free radical activity. If we review the legitimate claims for this substance, based on research, we find, as we would expect, that it is effective in preventing and correcting the negative health effects of free radical attack.

Pycnogenol is not a naturally occurring substance, but is a specific blend of bioflavonoids patented under this name. Many times, we see the name Pycnogenol followed by the word Proanthocyanidin in parenthesis. This can be misleading. Pycnogenol does contain Proanthocyanidins (a class of flavonoids) but it also contains complex forms of other bioflavonoids as well. Because Pycnogenol is a bioflavonoid complex it is a good "water-soluble" antioxidant. But the human body uses both water-soluble and fat-soluble antioxidants to stem free radical attack. Richard A. Passwater, Ph.D. and Chithan Kandaswami, Ph.D., in their book "Pycnogenol--The Super *Protector* Nutrient" state that *Pycnogenol cannot replace vitamin E, other bioflavonoids, carotenoids and other antioxidants if we want to maintain optimum health.*

You may have heard or read claims that Pycnogenol is many times more "powerful" than vitamin E or vitamin C. These claims are misleading and possibly based on a misunderstanding of the Pycnogenol formula by those making such claims. Due to the way Pycnogenol is "built", using a complex molecular structure of monomers, dimmers and oligomers, it has a powerful timed-release effect. This explains why some of the effects of Pycnogenol are short term and why some can last for days.

You may have heard the same kind of song and dance recently regarding other supposed "super" antioxidants. My experience has been that many of these are being promoted by various multi-level marketing companies. (One that I have heard about more than once is actually an industrial solvent. It may remove iron from the smelting pot, but that does not mean it should be used as an antioxidant in the human system). When you hear these kinds of claims you need to ask the question "based on what" scientific evidence. Claims like these must be based on something other than "faith".

THE IC50 RATING

This is the answer to the "based on what" scientific evidence question. The scientific community has devised a means of evaluating antioxidant efficiencies, known as IC50. This is defined as Scavenging Effect=Inhibitory Concentration or IC. The IC50 is the concentration of an antioxidant at which 50% inhibition of free radical activity is observed. ***The lower the IC50 number, the greater the overall effectiveness of the antioxidant in question.***

The questions to ask regarding antioxidant effectiveness are; 1) what is the IC50 rating of the antioxidant in question, 2) how was the IC50 test conducted. What this means is, was the test conducted against free radicals that occur in the human system? The substance in question may have a low IC50 number, but if the test was not conducted against potent physiological free radicals, this is misleading at best.

IC50 RATINGS FOR SOME ANTIOXIDANTS (mcg/ml)

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|---------------------------|-----------------|
| Ascorbic acid | 1.96 +/- 0.013 |
| Alpha tocopherol | 7.3 +/- 0.308 |
| Biotics vegetable culture | 4.7 |
| Gamma oryzanol | 50 +/- 0.408 |
| Pine bark OPC | 4.0 - 13.5 |
| Quercetin | 2.457 +/- 0.192 |
| Ferulic acid (FRAC) | 31.3 +/- 0.327 |
| Bioprotect (overall) | 10.7 +/- 0.113 |
| Hesperidin | >500 |

A FEW THOUGHTS ON ANTIOXIDANTS

A body of research is showing antioxidant substances (both nutritive and non-nutritive) possess ameliorative *and* preventative capabilities. But most Americans do not eat the recommended five servings of fruits and vegetables daily resulting in antioxidant intake below optimum. Surveys have shown that approximately 90% of our population *is not even aware* of the recommended five servings per day of these foods.

But *what if* all Americans were aware of the recommended amounts of fruits and vegetables to be consumed each day and were doing it? Would that put an end to all the free radical pathologies? The answer is NO! It is a well known documented fact that our food is grown on demineralized, devitalized soil resulting in demineralized and devitalized food. And, this is documentable as far back as 1936. The Surgeon Generals Report of 1988 flatly states that over 90% of Americans are "nutrient deficient in their diet". It is interesting to note that the U.S.D.A. agreed with the Surgeon Generals assessment.

The point I am coming to is this, the list of so-called free-radical pathologies has grown to over one hundred conditions and includes everything from cataracts to cancer. If you believe the old saying that an ounce of prevention is worth a pound of cure, then one of the best things you can do for your patients is advise them to supplement their diet with a high quality, broad spectrum antioxidant EVERY DAY! ***Bioprotect***, manufactured by Biotics Research Corporation, is one of the best *broad-spectrum* antioxidants I know of on the market today. A *broad-spectrum* antioxidant is more effective against free radical attack for the following reasons:

- ◆ It should provide both fat-soluble and water-soluble antioxidants (balance)
- ◆ There is a hierarchy among antioxidants so some are more easily oxidized than others and will be used up quickly unless recycled (e.g. vitamin C can regenerate vitamin E from it's radical).
- ◆ A broad-spectrum antioxidant provides both *preventive inhibitors* and *chain breaker* forms.

PREVENTIVE INHIBITORS

These preventive antioxidants are called free radical scavenging enzymes, such as superoxide dismutase (SOD), which destroys the superoxide radical. Because SOD produces hydrogen peroxide, which can yield very damaging hydroxyl radicals, SOD cooperates with catalase and peroxidases to degrade hydrogen peroxide into oxygen and water. This illustrates the general principle that antioxidants usually work together. In this case as *preventive inhibitors* to prevent a very damaging free radical cascade. They block initiation of chain reactions.

CHAIN BREAKERS

These antioxidants destroy free radicals after they have formed and may have begun a cascade. They inhibit propagation of radical chain reactions.

BALANCE

This is an important point to consider when working with patients given the common attitude of Americans that "if a little is good, MORE is better". When dealing with nutritional biochemistry, this attitude can lead to trouble due to the *imbalances* in body chemistry it can cause. Patients tend not to understand the synergism and delicate balance the human body strives to maintain. Providing your patients with a high quality, broad-spectrum antioxidant formula like ***Bioprotect*** can help promote antioxidant balance within the body while supplying the factors necessary for their protection from free radical attack.

ANTIOXIDANTS AVAILABLE FROM BRC

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| Aqueous Selenium | SE-Zyme, SE-Zyme Forte |
| Aqueous Zinc | ZN-Zyme, ZN-Zyme Forte |
| Bio AE Mulsion, Bio AE Mulsion Forte | Bio C Plus, Bio C Plus 1000 |
| Bio Cyanidins | Bio E Mulsion Forte |
| Bio FCTS | CoQ-Zyme Forte, CoQ-Zyme 30 |
| Dismuzyme Plus, Dismuzyme Plus 5000 | Dismuzyme Plus Granules |
| E-Mulsion 200 | Gammanol Forte (with FRAC) |
| GSH-Plus | Immuno-GG |

Available from Viotron International, Ltd
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