BELL ADVISORY SERVICES LLC

Maqui – the Highest Antioxidant Fruit

The maqui fruit, wild harvested in the foothills of the Andes Mountains in Chile, has long been prized for its beneficial health properties. Among these – its role as a powerful antioxidant. The maqui fruit's rich, dark purple color is evidence of that power.

Fruit Claims

Fruits claiming to be the "highest antioxidant" abound. They include acai, aronia, blueberries, goji, mangosteen, pomegranates, and wolfberry, to name a few. Yet, how are these antioxidant claims supported?

High-antioxidant fruits have high levels of antioxidant compounds. These fall into certain families, such as polyphenols, carotenoids, or acids. These, in turn, can be broken into a diverse number of smaller groups – such as anthocyanins and catechins – and an even larger number of individual compounds. Some of these, like ascorbic acid, lycopene, EGCG, and resveratrol, have become recognized antioxidants on their own.

These antioxidant compounds can be measured to give evidence of a fruit's antioxidant characteristics. By itself, however, "characterization" is incomplete. For starters, there remain large numbers of unknown compounds that may contribute to a fruit's (or other botanical's) antioxidant properties. This is especially true for "exotic" fruits that have not been the subject of extensive analysis.

So how else can fruits claim the antioxidant crown? They use ORAC.

ORAC Testing

The ORAC method (Oxygen Radical Absorbance Capacity) from Brunswick Labs has become the industry standard for measuring the antioxidant potential of fruits (and other substances). It is well known by consumers and is used by major nutrition companies to promote antioxidants in their brands. The United States Department of Agriculture (USDA) also keeps a public database of the ORAC values of hundreds of commonly consumed food items. This has become a primary source of ORAC data for comparing foods, including fruits.

ORAC measures how much antioxidant activity there is – not what causes it. That means a fruit can have unknown antioxidant compounds in it and ORAC still measures its antioxidant activity.

Over the past decade, ORAC has become a major factor in the description and comparison of high-antioxidant fruits. In fact, it has helped drive market growth for popular fruits such as acai and blueberries.

Comparing Fruit ORAC Values

Wouldn't it be great if we could compare the ORAC values of different fruits using valid, reliable results? There are a couple of key conditions that are necessary. (Conditions that many ORAC claims in the market don't meet.)

First, the ORAC values being compared should be for the edible portions of fresh fruits. This is very important for the following reasons:

1) Inedible portions, such as skins (e.g. banana, orange, watermelon) and seeds (e.g. avocado, acai) can comprise a significant percentage of the whole fruit

2) Concentrated forms, such as liquid concentrates and dried powders, involve many processing factors that make comparison difficult

Consumers can be seriously misled by such data. Acai presents an excellent example. A commonly cited ORAC value for acai is 1,027 per gram. Although this 1-time ORAC result is for a 5% moisture freeze-dried powder, it is regularly cited as a fresh fruit ORAC value.

Second, ORAC values should be from one of three sources:
1) Brunswick Labs (the owner of the ORAC patent)
2) An authorized licensee of Brunswick Labs
3) The USDA

For 1) and 2), certificates of analysis should be made available. The USDA ORAC database is public information and can be found at http://www.ars.usda.gov/nutrientdata/ORAC.

Next Generation ORAC5.0™
ORAC has become a trusted measure of antioxidants in nutritional products, and it has recently gotten much better. That's because the latest patented version of ORAC measures performance against 4 additional primary reactive species (commonly called radicals).

While the original ORAC measured against peroxyl only, the expanded ORAC5.0™ includes hydroxyl, peroxynitrite, superoxide anion, and singlet oxygen. Thus, ORAC5.0™ provides valuable information about broad-spectrum antioxidant protection against the 5 primary radicals.

Maqui Wins the Gold Medal

Now that we have explained how ORAC5.0™ results from Brunswick Labs and the USDA can be used to compare the antioxidant power of fruits, let's take a look. The chart, below, shows the performance of maqui and the top 10 fruits tested by the USDA.

Maqui outperforms all other fruits by a large margin. ORAC5.0™ results are over 5 times the average for all of the top 10 fruits, and over 3 times that of the next highest. And maqui outperforms the average against each of the 5 primary radicals. This is gold medal performance.

That's Not All

What is it in maqui that makes it the highest antioxidant fruit? It is a rich source of anthocyanins, the family of compounds that give maqui its deep purple color, as well as other flavonoids, a diverse family of antioxidant compounds.

However, these antioxidants, which are common in many fruits such as blueberries and blackberries, do not tell the whole story. There is something unique and special about maqui that separates it from other high antioxidant fruits.

A recent study shows that maqui contains significant amounts of 3-hydroxyindole. 3-hydroxyindole is part of the class of enzyme hydroxyindole O-methyltransferase (HIOMT) that regulates the conversion of serotonin to melatonin.

This is important for three reasons: (1) melatonin is a powerful antioxidant; (2) melatonin stimulates the production of SOD, one of our body's endogenous antioxidants; and (3) melatonin is a thermogenic. That is, it is involved in the upregulation of thermogenesis – the process of heat production. Other thermogenics are caffeine, ephedra, capsicum, etc.

In other words, this special enzyme is triple powerful: it produces a powerful antioxidant, it stimulates our bodies' own antioxidant defenses, and it helps generate metabolic energy.

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When you add it all up, there is only one conclusion: Maqui is the premier antioxidant fruit available on the market today.

Chart – ORAC5.0™ Comparison

Maqui vs. Top USDA Fruits and Vegetables

Fruit/Vegetables	ORAC	HORAC	NORAC	SORAC	SOAC	ORAC5.0
Maqui	200	**700**	**30**	**500**	**90**	**1,520**
Blackberry	50	200	5	150	80	485
Blueberry	70	200	5	130	80	485
Strawberry	40	80	2	180	50	352
Plum	80	100	3	70	40	293
Raspberry	60	100	1	80	60	301
Orange	20	40	2	60	150	272
Cherry	30	120	2	80	20	252
Apple	50	70	2	60	60	242
Kiwi	10	20	2	100	40	172
Onion	10	20	1	50	30	111
Average of top 10 (rounded)	40	100	3	100	60	300
Maqui as % of average	500%	700%	1000%	500%	150%	507%
Highest per radical (rounded)	80	200	10	150	150	500
Maqui % of highest	250%	350%	300%	333%	60%	304%

Source: Bell Advisory Services

About Bell Advisory Services

David N. Bell, President of Bell Advisory Services, is a recognized authority on natural product antioxidants and ORAC. The following are highlights of his industry role.

- Has been Brunswick Labs advisor for 7 years
- Directed Brunswick Labs' ORAC marketing programs
- Has written numerous articles on antioxidant trends and ORAC
- Is a regular "go to" expert for trade publications
- Has provided expert testimony for corporate due diligence on the ORAC method
- Has given presentations around the world on antioxidants and ORAC
- Is called upon regularly by industry participants to clarify and resolve questions, discrepancies, and differences of opinion about antioxidants and ORAC

No other industry expert has played as central a role in the application of ORAC to consumer food and nutrition products.

Mr. Bell has been a key advisor to international companies for over 20 years. He received his MBA from the Wharton School at the University of Pennsylvania.