Camu camu – Superior Antioxidant Performance

The Camu camu fruit, wild harvested in the Amazonian River basin of Brazil, has long been prized for its beneficial health properties. Among these – its role as a powerful antioxidant. The Camu camu fruit's rich, dark reddish-purple color is evidence of that power. (See pictures, below.)

Fruit Claims

Many fruits claim to be the "highest antioxidant." They include acai, maqui, blueberries, pomegranates, and mangosteen, 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.

In fact, the "fingerprint" of a fruit tells us about its unique nutrient characteristics. We have compared two important categories in camu camu with other leading antioxidant fruits.

Vitamin C

Ascorbic acid, or vitamin C is among the most important antioxidant substances. It is involved in a diverse range of metabolic activities that are beneficial to human health. It is also found in higher concentrations in camu camu than in any other known fruit. (See "Nutrient Summary," below)

Total Phenolics

Total phenolics (TP) represents the broadest view of plant compounds. By measuring TP, we get the most comprehensive measure of compounds that might contribute to a fruit's antioxidant capacity. TP content in camu camu is considerably higher than other high-antioxidant fruits. (See "Nutrient Summary," below)

Total ORAC Testing

How else can a fruit's antioxidant potential be measured? 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.

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.

While the original ORAC measured against peroxyl only, the expanded Total ORAC includes hydroxyl, peroxynitrite, superoxide anion, and singlet oxygen. Total ORAC provides valuable information about broad-spectrum antioxidant protection against the 5 primary radicals – dangerous and versatile contributors to oxidative damage.

Only Total ORAC captures a fruit's multi-dimensional antioxidant capacity.

Camu camu demonstrates superior Total ORAC performance

Now that we have explained how Total ORAC 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 Camu camu and the top 10 fruits tested by the USDA. (See "Nutrient Summary," below)

Camu camu outperforms all other fruits by a large margin. Total ORAC results are 9 times the average for all of the top 10 fruits, and over 5 times that of the next highest - blackberries. And Camu camu outperforms the average against 4 of the 5 primary radicals.

Note: We have confined our comparison to USDA high-antioxidant fruits. At present, valid public Total ORAC data does not exist for acai, goji, mangosteen, maqui, and pomegranate.

That's Not All

Research indicates that beneficial compounds such as vitamin C have greater efficacy – that is, positive performance – *in vivo* when they remain in their natural state. A recent clinical study demonstrates just this: that the naturally occurring vitamin C in camu camu outperforms synthetic vitamin C supplementation. (*Tropical fruit camu-camu (Myrciaria dubia) has anti-oxidative and anti-inflammatory properties.* Inoue T, Komoda H, Uchida T, Node K. J Cardiol. 2008 Oct;52(2):127-32.)

Camu camu – the Highest Antioxidant Fruit

Vitamin C, Total Phenolics, Total ORAC. When you add it all up, there is one conclusion: Camu camu is the premier antioxidant fruit available on the market today.

Photos: Fresh frozen camu camu – various maturity

Nutrient Summary

Chart 1 – Vitamin C comparison (mg/g)

Camu camu	**12.0**
Pepper, red	1.3
Broccoli	0.9
Kiwi	0.9
Pepper, green	0.8
Papaya	0.6
Strawberry	0.6
Orange	0.5
Pineapple	0.5
Cauliflower	0.5
Cantaloupe	0.4

Chart 2 – Total Phenolics comparison (mg GAE/g)

Camu camu	**13.5**
Blackberry	5.0
Cranberry	5.0
Raspberry	4.0
Blueberry	3.5
Orange, navel	3.5
Plum	3.5
Pomegranate	3.5
Strawberry	3.5
Cherry, sweet	3.0
Apple	2.5

Chart 3 – Total ORAC comparison (per gram)

Top Fruits	ORAC	HORAC	NORAC	SORAC	SOAC	Total
Camu camu	**70**	**310**	**48**	**2,150**	**24**	**2,602**
Blackberry	51	210	5	145	79	490
Blueberry	68	178	5	125	78	454
Strawberry	35	75	2	175	45	332
Plum	76	113	3	71	40	303
Raspberry	55	84	1	77	56	273
Orange	15	36	2	60	135	248
Cherry	31	115	2	80	15	243
Apple	49	74	2	57	55	237
Kiwi	8	16	2	100	35	161
Onion	6	17	1	50	30	104
Average	39	92	3	94	57	285
Camu multiple	2	3	16	23	0.5	9

Source: USDA, Brunswick Labs, Bell Advisory Services