THE BERRY DOCTOR'S JOURNAL
SCIENCE - NUTRITION - HEALTH

Weekly News from Berry Science

Townhall Meeting

Should I Buy Antioxidant Superfruit Juices or Supplements?

Part 3

Practice a color-rich diet of whole foods.

Should we be buying expensive antioxidant superfruit juices?

Part 1, *click!*

Part 2

[note: a human mistake combined with a computer software error, caused the first two answers of the original part 2 to be overwritten]

What's in Part 3?

- other examples of common foods adequately providing ORAC
- some antioxidant phytochemicals seem to be more effective than others -- what are they and in what foods do they occur?
- what might antioxidants actually be doing in the body?

[follow the Wikipedia links]

Berries and other fruits qualifying as superfruits are not only just enjoyable to eat, but we have an expectation from them: we want them to contribute antioxidant value in our diet.

If fresh berries or other superfruits are not convenient, however, many consumers turn to antioxidant superfruit juices, pills or powders for fighting oxygen radicals.

The convenience factor of using juices, smoothies, powders or pills is important in consumer behavior and is unlikely to change, so we accept these more convenient product formats as semi-permanent ways of achieving nutrition.

But questions remain about what we're actually getting...

Do these products really provide benefit?

Is the dietary antioxidant story really all it's cracked up to be?

Or are we buying the marketing message?

In science, we want to hear all points of view, especially those that put exaggerated marketing hype under the spotlight of objective scrutiny.

In a "Townhall Meeting", we stand on the stage with no props or camouflage of the truth -- it's just the audience, the speaker and the topic... all *undressed* of fanfare.

So for August, we're going to look at 3 questions each week to unravel the truth about antioxidant superfruit juices and supplements -- sold to consumers like Aspirin is for headaches.

Aspirin works.

What benefits do antioxidant superfruit juices really offer?

Summary of 6 Main Points from Parts 1 and 2

1. superfruit juices are intended to be a convenient format for delivering antioxidant benefits to consumers. But what's better for us to gain antioxidant intake? Highly processed juices or whole foods?

2. vitamins A, C and E are established essential nutrients with antioxidant purposes in the body, but few superfruit juices or supplements contain them

3. most superfruit juices emphasize anthocyanins and other polyphenols as important antioxidant ingredients (demonstrated in a test tube), but research has not yet convinced scientists about a biological role for these compounds in the human body

4. in fact, there is evidence that the human body aggressively metabolizes and eliminates anthocyanins and polyphenols after eating a meal rich in these compounds

5. wouldn't this suggest that maybe only small amounts are needed in the diet, and could be easily obtained by eating inexpensive colorful plant foods rather than trying to load up on antioxidants from expensive beverages?

6. antioxidant intake is easily achieved by first reviewing the USDA ORAC tables, then choosing a few of these plant foods for daily meals

Townhall Meeting

PART 3

[follow the Wikipedia links]

Question #1

What are some common foods from the ORAC charts that could supply an adequate antioxidant intake from simple daily meals?

Click on this link to download the 2007 USDA ORAC charts
for 277 common foods consumed in the United States

Remember: *the ORAC numbers you see do not have biological importance!*
They apply only to conditions in a test tube.

For reference, a previous study of the ORAC charts from the Berry Doctor's Journal, *click!*

Navigate to page 8 of the document. We are interested in the total ORAC score 3 lines from the top for each food -- the "Mean" (average) value listed. Units shown are the ORAC value per 100 g (about 3.5 ounces of the food).

Also recall from Part 2 that the US Department of Agriculture scientists who devised the ORAC measurement recommend people try *to eat only 6,000 to 10,000 total ORAC units per day.*

This would be sufficient for antioxidant functions in the human body, and would include sources of the proven antioxidant vitamins, A, C and E.

Part 2 also showed how easy it is to obtain 12,000+ ORAC units in one day's meals -- *just from four common foods (red delicious apple, raw cherries, broccoli, granola cereal --find the ORAC numbers and convince yourself)*

So be thinking critically about what you spend on -- and what you get from -- antioxidant superfruit juices:

what are we actually getting as food value from these juices?

Some common foods with high ORAC -- *easy to insert into your daily diet*

- page 18, noor dates, ORAC = 3895
- page 19, raw red grapes, ORAC = 1260
- page 20, pomegranate juice, ORAC = 2341
- page 21, raw red leaf lettuce, ORAC = 2380
- page 22, pecan nuts, ORAC = 17,940
- page 23, raw red onion, ORAC = 1521
- page 24, raw navel orange, ORAC = 1819

Is the point made?

Better than a superfruit juice?

100 g (3.5 ounces) of red grapes provide about 20%
of all the antioxidant intake a person needs in one day.
Plus you get the dietary fiber, vitamin C, essential mineral
and caloric value of a whole food.

7 moderate servings of inexpensive, often-favored, common foods shown above provide more than 30,000 ORAC units or 3x more than is likely needed.

Why complicate a diet and spend exhorbitant amounts on superfruit juices when whole foods -- packed with actual essential nutrients not present in most superfruit juices -- furnish what we need in their native delicious forms?

- page 24, fresh oregano, ORAC = 13,970 [Note -- no chef would ever use so much spice for one meal, but the number makes a point: spices have the highest ORACs of any common foods, so check out the charts for spices, select a few, and use them in your meal preparation!]

Question #2

Do all antioxidant food chemicals give the same potential health value, or are some better than others?

And what foods furnish the most beneficial antioxidants?

This is the focus of research on acylated vs. non-acylated compounds that we covered before here, *click!*

Let's review.

Many antioxidant plant pigments, and *nearly all polyphenols*, are acylated, a chemical structure that looks like this, *click!*

Chemicals with acyl groups seem to be recognized as "foreign" substances that need to be actively eliminated by the human body, i.e., they are metabolized or excreted rapidly and extensively, indicating our bodies do not want them in high concentrations.

Here's a public news release explaining what may be at work in this mechanism.

An *non-acylated* food antioxidant is resveratrol which has been extensively studied, showing numerous potential health benefits and anti-disease mechanisms, *click*

Where do we find resveratrol in foods?

Do antioxidant superfruit juices contain resveratrol?

Inexpensive foods and beverages containing resveratrol

- red grapes (skins and seeds)
- blueberries, cranberries, strawberries, blackcurrants
- pistachios and peanuts with skins
- dark grape, blueberry, cranberry or blackcurrant juice
- red wine (2 glasses daily maximum for men, one for women) -- Pinot Noir, Merlot,

Shiraz, Cabernet Sauvignon

- dark grapes, especially those with seeds
- chew seeded dark red, purple or black grapes for maximum benefit
- dark raisins or dried blueberries, cranberries or black currants
- peanuts with skins, peanut butter

Do superfruit juices contain resveratrol?

Unlikely... and never reported on product labels, since these juices must be pasteurized -- *at least twice* -- a high heat process that destroys sensitive molecules like vitamins and polyphenols, *click!*

Question #3

If we only need a small amount of dietary antioxidants, what health values and anti-disease effects might they have ?

The best available science indicates that dietary antioxidants are NOT used like a hammer against free radicals but rather to fine-tune enzymes, possibly turning off reactions or stimulating formation of some other regulator, like nitric oxide (below).

Let's face a fact usually unappreciated: *oxidative reactions are not all bad.* They have a normal, defensive purpose in our bodies to destroy bacteria, viruses and maybe even disease mediators like cancer initiation cells.

Free radicals are also involved in normal functioning of our cells.

A free radical gas -- nitric oxide -- is the universal signaling agent for most of the body's functions.

The most common mediator of oxidative reactions *that are excessive and uncontrolled* are those producing inflammation which may be responsible for the onset of numerous diseases, *click!*

Of interest is that resveratrol's main effect seems to be as an inhibitor of inflammatory mechanisms.

Research headlines on resveratrol (click to read abstracts)

- Potential of resveratrol in anticancer and anti-inflammatory therapy
- Resveratrol as an anti-inflammatory agent
- Resveratrol affects blood platelet functions

NEXT!

- the anthocyanin story
- what do anthocyanins do in a plant? Why does a plant need them?

- what is the fate of anthocyanins -- the main ingredient and marketing message of superfruit beverages -- once inside the human body?

Contents of antioxidant phytochemicals and the principal nutrients of red grapes -- vitamin C, vitamin B6, manganese and prebiotic fiber -- are reduced by the mechanical pressing and heat of wine-making

Reading

References (inexpensive books on Amazon.com)

- Heber D. What Color Is Your Diet?, ReganBooks/HarperCollins, New York, 2001
- Joseph JA, Nadeau DA, Underwood A. The Color Code, Hyperion Books, New York, 2002

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