Organic produce trumps conventional: Here's why!

A controversy has long raged about whether organic fruits and vegetables are superior to regular supermarket varieties. "Organic, schmorganic!" declare the detractors. The implication is that consumers are being scammed into paying premium prices for the mere aura of something healthier.

People purchase organic foods for different reasons. A 2010 Nielsen wire poll found that indeed 76 percent purchase organic foods because they believe (erroneously it is claimed by critics) "they are healthier"; 53 percent so they "can avoid pesticides and other toxins"; 51 percent because "they are more nutritious"; and 49 percent because organic farming is better for the environment (the "sustainability" argument).

How many times have YOU been derided by friends, relatives or acquaintances who insist that organic foods are an over-priced scam and that you are merely an unreconstructed, scientifically illiterate flower child?

Their worldview was buttressed by a 2012 study from Stanford University that purported to show that organic foods were no different from regular groceries from the standpoint of nutritional content. At that time, even Dr. Oz caught flak

from organic devotees after he opined that maybe organic foods were not what they were cracked up to be and that especially people on tight budgets should simply eat more fruits and vegetables, whatever their provenance.

I instantaneously pounced on that Stanford study and shared my reservations with *Intelligent Medicine* listeners and readers. The study had a hole in it big enough to drive a truck through. Did no one see it?

The researchers concluded that fruits and vegetables labeled organic were, on the average, no more nutritious than their conventionally grown counterparts *based on an analysis of their vitamin and mineral content*. The researchers simply compared levels of vitamin C, vitamin E, vitamin A, calcium, iron, protein and magnesium and found equivalent levels in conventional versus organic. The only difference they detected was that certain organic produce had more phosphorus, which is no big deal because you get plenty of phosphorus from animal protein anyway.

Do you see the problem here, folks? OK, I'll give you the answer: The nutritional attributes of plant foods cannot be evaluated merely on the basis of their vitamin and mineral content alone. The ineffable benefits of fruits and vegetables are delivered via a class of potent antioxidant compounds called polyphenols.

Until recently, lab methods had not caught up to the task of quantifying polyphenols, so the Stanford researchers used an outmoded way of rating the nutritional value of the foods they analyzed. As a result they came to a faulty conclusion.

And, oh, by the way, the media buried the lead in publicizing the Stanford study in 2012 because an important fact went virtually unheralded: The organic produce tested showed 30 percent less pesticide contamination, and children fed exclusively organic foods for a mere five days had

significantly lower pesticide residues in their urine—no small detail!

I'd say that's pretty important and in itself a powerful rationale for choosing organic, unless you buy the premise of Big Agriculture and its subservient handmaiden, the Environmental Protection Agency, who constantly seek to assure us that the innumerable farm chemicals we inadvertently consume daily are perfectly safe.

But the 2012 Stanford study left unaddressed the question of the nutritional superiority of organic foods.

Cue the latest study, published this month in the *British Journal of Nutrition*.

Like the previous Stanford study, the 2014 paper was a meta-analysis, or a study of studies, comprising 343 peer-reviewed papers comparing organic to conventional produce. This time, they looked not at vitamins and minerals but at polyphenol compounds, which deliver the antioxidant benefits of fruits and vegetables.

What they found totally contradicted the 2012 study. The nutritional superiority of organic produce was indisputably affirmed. Average total antioxidant activity was 17 percent higher in organic versus conventional crops. For some individual antioxidants, the differences were much greater—69 percent higher levels of flavanones, 28 percent higher levels of stilbenes, 50 percent higher levels of flavonols and 51 percent higher levels of anthocyans.

Moreover, the *British Journal of Nutrition* researchers found that organic crops had on average 48 percent lower levels of the toxic heavy metal cadmium than conventional crops. This is important because cadmium can accumulate over time in the human body and its health effects include kidney damage, hypertension, cardiovascular problems and neurological disease.

Moreover, the study concluded that organic foods offered even more robust protection against pesticide exposure than the Stanford study acknowledged: The occurrence of pesticide residues in conventional food is about four times higher than in organic food.

Reducing our cumulative exposure to pesticides is vital because they can disrupt prenatal development and pose unique risks to infants, children and even adults—especially the elderly or those with compromised immune systems or impaired detoxification systems. Pesticide exposure has been linked to heightened risk of autism, ADHD, asthma, food allergies, Parkinson's disease, diabetes and even overweight. Exposure to pesticides is a particular risk to both men and women of reproductive age because it has been demonstrated to undermine fertility and increase the risk of birth defects, miscarriages, and the health and IQ of offspring.

So what accounts for the nutritional superiority of organic produce? We can easily see how literal-minded scientists could accuse fans of natural foods of being irrational airheads, overcome by exuberant sentimentality for the Earth Goddess. After all, what's the difference between an organic peach and one that's been sprayed with pesticide and boosted with chemical fertilizers? The conventional one might even look better—larger, more symmetrical, unblemished by assaults from insects or fungal blight.

Well, there is one way of telling: bite into that perfect-looking conventional peach and brace yourself for the disappointment. Its form screams "peach," but it's pulpy flavorless interior yields meager satisfaction; it is but a bland facsimile of an organic peach, ripened to perfection in an old-fashioned orchard.

Why should this be the case? Simply because the very polyphenols that confer a nutritional advantage upon organic produce also are the vehicles of taste sensation. Millions of

years of mammalian co-evolution with plants have conferred upon us a preference for delicious fruits and vegetables that bear the flavor signature of nutritional superiority. Just as we retch at poisonous or spoiled food that can make us sick, our taste buds rejoice at eating delicious natural fresh produce that's good for us!

Plant breeders and agronomists have for decades acknowledged the "dilution effect" to explain why artificially boosted produce packs less nutritional value. When more extensive use of nitrogen fertilizers revved crop yields in the 20th Century and pesticides began protecting plants from the stunting effects of bugs and infectious agents, fruits and vegetables got bigger but less nutritious. It's as if they're "on steroids"—they're bulked up with caloric sugar and starch, but ounce-for-ounce, they deliver less in the way of nutritional value.

Another way that pesticides compromise the nutritional value of crops is by limiting the production of "phytoalexins" by plants. Phytoalexins are compounds that are produced when plants are allowed to be stressed naturally—by extremes of temperature, by limited soil nutrients, and by challenges from insect and fungal invaders. This may sound counterintuitive, but resveratrol is an example of a phytoalexin, and oenophiles know that the best wine cultivars come from regions where there's an occasional cold snap and fungus called "noble rot" is even allowed to lightly dust grapes to impart better flavor. Allowing a little stress may be a good thing nutritionally!

So the next time an organic skeptic gives you heat, be forearmed with the facts: organic trumps conventional big-time, and it's worth paying a slight premium and going out of your way to source organic foods whenever possible. If you're daunted by the price differential or live in a "food desert" and can't always eat organic, check out the Environmental Working Group's list of the "Dirty Dozen" foods that are most

often pesticide-laden, as well as EWG’s “Clean Fifteen” where subbing conventional for organic won’t make that much difference for your pesticide burden.