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So, Are Organic Foods Really Safer and Healthier For Us After All?

"Earth & Table" Law Reporter



Some of America's best organic and sustainable food research is being cond

ucted by the faculty, students and staff of Washington State University's *Center for Sustaining Agriculture and Natural Resources*.

As Washington's original and largest land grant university, WSU is fulfilling its mission and mandate "to teach such branches of learning as are related to agriculture. . . ." 7 U.S.C. 304.

A clear case in point is [Professor Charles Benbrook's detailed analysis and critique](#) of a recent Stanford study of organic versus conventional food consumption. The Stanford study—entitled *Are Organic Foods Safer and Healthier Than Conventional Alternatives? A Systematic Review*^[1]—appeared in a September 2012 issue of the *Annals of Internal Medicine* and immediately spawned eye-catching headlines in major newspapers, such as the *New York Times*, proclaiming that *Stanford Scientists Cast Doubt on Advantages of Organic Meat and Produce*.^[2]

The Stanford study came to two major conclusions:

- The published literature lacks strong evidence that organic foods are significantly more nutritious than conventional foods.

- Consumption of organic foods may reduce exposure to pesticide residues and antibiotic-resistant bacteria.

By way of background, organic foods are generally defined as those foods which are grown or raised without synthetic fertilizers, herbicides or pesticides and which have not been genetically modified through recombinant DNA engineering. Consumers typically pay a hefty premium for choosing and purchasing organic produce and meats over their conventional food counterparts.[3]

When read at a superficial level, the Stanford study suggests that consumers are being duped by investing their money in foods bearing the green USDA Organic logo.

But the more sensational headlines generated by the Stanford study are not supported by its limited findings. The Stanford study itself is a "meta-analysis." In other words, its authors did not conduct an independent, control group study to test the health and safety benefits of organic versus conventional food consumption.

Rather, Stanford researchers compiled and analyzed all available peer-reviewed, English-language studies if they pertained to "a comparative evaluation of populations consuming diets of foods grown organically and conventionally or a comparative evaluation of nutrient levels or bacterial, fungal, or pesticide contamination of fruits, vegetables, grains, meats, poultry, milk (including raw milk), or eggs grown organically and conventionally." [4]

Of a universe of 5908 potentially relevant articles, 237 studies met the Stanford study's inclusion criteria. These studies were then analyzed for what statistically significant findings and conclusions could be drawn from this collective body of research results.

Even though the Stanford study confirms that some measure of health and safety benefits can accrue from organic food consumption, those findings were overshadowed—indeed, overwhelmed in the popular press—by its general conclusion that no "clinically significant" evidence showed that organic foods are healthier for you than conventional foods.

Professor Benbrook's "Initial Reflections on the *Annals of Internal Medicine* Paper" offers some brilliant insights into the shortcomings of the Stanford study's meta-analysis. Since Professor Benbrook is one of a small group of research scientists who has actually read and analyzed many of the references included in the Stanford study, his viewpoint is well worth considering. Based on his longstanding work in this field, he comes to a far more robust conclusion about the benefits of incorporating organic food into one's diet:

When an individual decides to switch to healthy dietary choices from clearly unhealthy ones, and also consistently chooses organic foods, the odds of achieving "clinically significant" improvements in health are substantially increased.

The most significant, proven benefits of organic food and farming are: (1) a reduction in chemical-driven, epigenetic[5] changes during fetal and childhood development, especially from pre-natal exposures to endocrine disrupting pesticides; (2) the markedly more healthy balance of omega-6 and -3 fatty acids in organic dairy products and meat, and (3) the virtual elimination of agriculture's significant and ongoing contribution to the pool of antibiotic-resistant bacteria currently posing increasing threats to the treatment of human infectious diseases.

The Stanford team's study design precluded the assessment of much of the evidence supporting these benefits, and hence their findings understate the health benefits that can follow a switch to a predominately organic diet, organic farming methods, and the animal health-promoting practices common on organically managed livestock farms.[6]

Professor Benbrook's synthesis of organic food benefits should be welcome news to organic farmers, vendors and consumers. However, most scientific studies of nutrition fail to even mention, let alone analyze, perhaps the most important metric of them all: the consumer's psychological satisfaction—or sense of "well-being"—generated by purchasing and consuming organic instead of conventional foods. Just viewing an "organic" brand logo, for instance, can give rise to a "halo" effect; put another way, organic food may taste better because of the "priming" impact of seeing an organic food logo.[7] If food tastes better, presumably we will choose more of it.

How we emotionally respond to food and how that response affects our overall health and sense of well-being is only starting to be crudely understood, scientifically. The challenge for all nutrition and health studies in the 21st century will be to create a cross-disciplinary analysis and testing methodology that embraces the fields of psychology, sociology, and anthropology—in addition to those already being employed in the traditional "hard sciences."

[1] <http://www.ncbi.nlm.nih.gov/pubmed/22944875>.

[2] See http://www.nytimes.com/2012/09/04/science/earth/study-questions-advantages-of-organic-meat-and-produce.html?_r=0.

[3] For a more detailed background about the evolution of organic and natural food labels and their legal status, *Gastronomica: The Journal of*

Food and Culture, recently published an article prepared by this post's author entitled, "We Are What We Eat: The Origins and Current Legal Status of 'Natural' and 'Organic' Food Labels." See <http://www.gastronomica.org/we-are-what-we-eat/>.

[4] C. Smith-Spangler, *et al.*, 157 *Annals of Internal Medicine*, No. 5, at 349 (September 4, 2012).

[5] Epigenetics is not a household word. It "is the study of heritable changes in gene expression or cellular phenotype caused by mechanisms other than changes in the underlying DNA sequence." See <http://en.wikipedia.org/wiki/Epigenetics> ("The modern usage of the word in scientific discourse is more narrow, referring to heritable traits (over rounds of cell division and sometimes transgenerationally) that do not involve changes to the underlying DNA sequence.")

[6] C. Benbrook, "Initial Reflections on the *Annals of Internal Medicine* Paper 'Are Organic Foods Safer and Healthier Than Conventional Alternatives? A Systematic Review.'" (September 4, 2012), p. 2 (internal citations to reference materials are omitted), accessed on 10/10/12 at <http://www.scribd.com/doc/104931807/Are-Organic-Foods-Safer-and-Healthier-Than-Conventional-Alternatives-Benbrook-Review>.

[7] See generally, R. Deliza and H.J.H. MacFie, "The Generation of Sensory Expectations by External Cues and Its Effect on Sensory Perception and Hedonic Ratings: A Review," 11 *J. of Sensory Perceptions* (1996), 103-128.