

In Defense of Food Science

Food scientists make “fake foods” or “foodlike substances” through the process of adulteration... The most important thing about any food is not its nutrient content, but its degree of processing, and “refining” is especially deleterious, or so says author Michael Pollan in his book *In Defense of Food*.

For Pollan, refined flour is the first industrial fast food. But the desire for white bread predated the invention of roller mills, as did processes for separating the starchy endosperm from the bran. In a recent paper in *Journal of Food Science*, colleagues confirmed consumer preferences for refined over whole-wheat bread. We make white bread because that’s what people want.

Pollan erroneously believes that grains are refined to extend their shelf life by making them less nutritious to pests. However, refining was often done initially to remove anti-nutritional factors from plant foods, and to his credit, Pollan provides the example of soy processing to inactivate trypsin inhibitor.

Pollan believes that we have an ancient evolutionary relationship with the seeds of grasses and fruits of plants. Anthropomorphically speaking, “I’ll feed you if you spread around my genes.” With the exception of succulent fruits, the co-evolution of plants and animals has been a struggle, with plants doing their best to evolve ever greater defense mechanisms to deter animals from eating them.

It’s ironic that the book’s cover illustration is lettuce, which we eat at a very young stage to avoid an abundance of bitter compounds produced by the plant as it matures. Pollan suggests we eat only those items that would be recognized as food by our great-great grandmother. Many of the plant foods my great-great-grandmother ate were made edible through selective breeding programs to detoxify them. The 14,000 or so years since the Neolithic revolution are but a blink in evolutionary time. The co-

My biggest criticism of the book is Pollan’s selective use of science to support his opinions.

evolution of plants and humans during this period has largely been directed by the latter, as was so eloquently explained in Pollan’s *Botany of Desire*.

My great-great grandmother, and I suspect Mr. Pollan’s too, survived the winter months mainly on stored root crops. With the invention of canning, generations from my great-grandmother to the present have “put up” more perishable fruits and vegetables to extend their seasons. But despite the provenance and the satisfaction one derives from it, home canning is hardly an option for many.

One non-food, as defined by Pollan, that my great-great grandmother certainly did not eat often or at all is chocolate in its present form. Perhaps I’m

partial to this one as chocolate making is among my professional expertise. Chocolate is “refined” using steel roller mills, and despite cacao’s ancient origins predating the Mayan culture, solid-eating chocolate is a “food-like substance” as defined by Pollan.

Pollan impugns scientific research suggesting cacao may have health benefits, referring sarcastically to the Mars Corporation’s endowment of a faculty chair in “chocolate science” at the University of California-Davis, but readily accepts

“abundant scientific evidence for the health benefits of alcohol.” My biggest criticism of the book is Pollan’s selective use of science to support his opinions.

Though critical of the methodology used in the *Nurse’s Health Study* and the *Women’s Health Initiative*, which involved over 100,000 women followed for eight years or more, Pollan accepts unquestioningly the science of Kerin O’Dea, who observed 10 Australian aborigines for seven weeks. The apparent genius of the study was that when it was over, O’Dea had no idea what caused the improvements in the group’s health, though Pollan readily accepts the diet-disease link, ignoring the possibility that an increase in physical exercise

or even the placebo effect could have explained the short-term results. An alternative hypothesis is that the group’s health improved because they gave up alcohol and ate foods mostly of animal origin, contrary to Pollan’s dietary suggestions.

Along with the Neolithic revolution, modern food preservation seems to have become man’s second fall from grace. But with an expanding world population, food science will become increasingly important for better utilization of finite resources. That’s why the World Food Prize selected Philip E. Nelson, former IFT President, as its 2007 laureate.

The complexity of human-food interactions is undeniable, but the same science that led to the solution for deficiency diseases has also implicated *trans* fats in present maladies, and can contribute to improved health. Though he plays fast and loose with the science, Pollan’s dietary advice—*eat food, not too much, mostly plants*—will probably do no harm. Thirty years ago, a food science instructor of mine needed only two words—*variety* and *moderation*—but added that two words hardly a book make (and they certainly cannot be sold for \$21). However, for what it says about our profession, *In Defense of Food* is a book every food scientist should read. **FT**

Gregory R. Ziegler, Ph.D., is Professor of Food Science, Penn State Univ., 341 Food Science Bldg., University Park, PA 16802 (grz1@psu.edu).