

We're getting what we ordered

What food additives say about us as consumers.

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If you are reading this article, you probably don't grow your own food. But consider what you've eaten today. Do you know where it came from? What was added to it? How old it is? In this age of mad cow disease and genetically modified corn, you cannot simply assume that your health is held above profit. As we consume ever greater amounts of food processed with additives, we need to be aware how we are subtly affecting our bodies and the environment with the food we eat.

But before we blame those that feed us, let's remember that they give us, generally, what we ask for. Additives are put in food in response to the main qualities we ask for in food: low cost and convenience. In surveys we ask for pristine food, but in stores we buy the cheaper, labor-saving options. When a consumer buys a package of sandwich meats or a jar of salad dressing, they are announcing their lifestyle choices as much as they are feeding themselves.

As farmers embrace efficiency and consolidation, the consumer must keep an eye on how their food is produced. Farmers don't set out to poison or pollute – many are heavily invested in sustainable agriculture, but their strategies are set by what we choose to pay for. Food is cheap and plentiful despite predictions that the world would starve, but tremendous change has been done to the environment and the very way we eat.

From Cheese to Cheese Product

Food has been sold for a very long time, but the application of the industrial revolution to food production has produced radical change in modern times. That the term 'home made' can be used to describe cooking that takes place in restaurants with enormous stainless steel kitchens is evidence to how far we've come. The line between natural and artificial has become blurred over hundreds of points in our lives and food is no exception.

In the factory kitchen, the mass production of food allows for efficient planning and significant cost cutting. But with it comes the expectations and problems of the factory. Flavor is still prized, but consistency becomes paramount. To accomplish this, 'food scientists' will vary a recipe thousands of times to discover the essential and variable elements. Differences from the standard are seen as problems to solve. The chosen tools for these problems are food additives.

Despite their bad reputation, food additives are not wantonly inflicted on the population, but carefully chosen to accomplish specific goals. Let's look a few to see how they work and why they are used.

Food Immortality

Preservatives are used to stop food from spoiling, that is, to stop bacteria from growing on them and leaving toxins behind. The bacteria *Clostridium Botulinum* (Botulism) in unpreserved meat has killed millions of people throughout history. A popular preservative, Sodium nitrate, keeps meats from turning a hamburger-gray, allowing it to retain its original pink color. But it also reacts with stomach acid and other chemicals to create nitrosamines, which many people believe cause cancer. There was a concern about this in the late 1970's, but further studies have shown that the levels of nitrosamines are probably too low to have much effect, and further, that our bodies themselves produce nitrates. Nitrate additive levels were reduced, with vitamin C used as a replacement.

The furor over nitrates in the 70's was one of the big food additive scares and has left us with a general uneasiness with food additives. In the era of 'Silent Spring' and the Three Mile Island disaster, people's faith in technology was profoundly shaken. The abrupt awakening from the optimism of the future of the 50's left the consumer-citizens feeling betrayed.

But are we prepared to live without preservatives? Enormous aspects of our lifestyles depend on food preservation, it being one of mankind's longest projects. Many cultures live without chemical preservatives, but all go through great lengths to preserve food. Food is seasonal, and while in modern times it can be bought the day it will be cooked, it must otherwise be preserved for months. Fresh produce cannot be bought cheaply in bulk and requires more preparation, often preventing the cook in the family from holding a job.

Regular fresh food is a modern convention. In the past, the brief times of plenty were consumed by preserving the food for the long months of scarcity. Meat was dried, smoked, and salted to reduce bacteria; vegetables were pickled and brined. In many cases, the flavor and nutrition was lost during the preservation process. Replacing preservatives with refrigeration increases the environmental effects by using more energy, and also increases the greater danger of spoilage by mishandling. Even eating fresh produce all year round produces tremendous amounts of exhaust as airplanes fly from another continent.

Design for Convenience

Xanthan Gum is an emulsifier, used to bind together elements that otherwise separate, such as dairy products and salad dressings. Hollandaise sauce, for example, would separate into its ingredients long before it got to the table; salad dressings would become sad bottles of oil and vinegar on grocery store shelves.

Ingredients like emulsifiers define part of the difference between food and food products. 50 years ago, stores primarily stocked base ingredients. The modern supermarket is dominated by prepared foods elements and even prepared meals. Foods that would be difficult to prepare from scratch are available to the average cook, at a fraction of the effort and time. The availability of food products is due to the advances in preservatives and prompted as they can be priced higher than commodities. These food preparations, when made in the home or restaurant typically only sit around for a few hours, or even minutes. Many homemade salad dressings simply need to be shaken to be mixed, but a dressing that may sit on a shelf for months would not be bought if it separated into its components. Emulsifiers enable us to keep naturally opposing ingredients together, essentially freezing the moment of creation.

Just for the taste of it

The flavor enhancer MonoSodium Glutamate (MSG) embodies our age old desire for greater pleasure, as well as our new fear of chemicals. MSG is the sodium salt of the amino acid glutamic acid and a form of glutamate. Asians originally used a seaweed broth to obtain MSG, but today it is made by fermenting a starch, such as sugar beets, sugar cane, or molasses, creating a fine white crystal powder.

MSG does not have a distinct taste of its own, but rather enhances our ability to taste and how it adds flavor to other foods is not fully understood. Many scientists believe that MSG stimulates glutamate receptors in the tongue to augment meat-like flavors. People also had a scare over MSG, but further studies showed that it generally affects only people who are allergic to it. MSG has been used as a flavoring for thousands of years in Asia, but came to be feared in the west. The tension here could be simply one of perception. Associated with cheap Chinese food, which already had negative associations regarding its ingredients, this additive additionally had a 'chemical sounding' name. One wonders if its other name would have provoked the same reaction: "Asian Salt".

As pleasure has eclipsed nutrition as the primary quality developed nations use choose which foods they eat, food additives that enhance the flavor of food cannot be ignored. Like Saccharin, an artificial sweetener, MSG's effect on food answers one of our primal desires for food. As this additive is for pleasure, it's easy for purists to abstain, but any public health plan must take the desires of the vast majority of consumers into account.

Controlling Nature

Food additives are one instance in a pattern of dependence on manufactured nutrients and poisons to keep natural processes standardized. To ensure cheap and plentiful grains and meat, natural events like disease and pests must be controlled. Using chemical fertilizers and hybrid seeds, farmers were able to increase their yields dramatically. The negative side of efficiency is that it means requires growing the same plan or animal repeatedly. Large concentrations of crops or animals are a perfect breeding ground for disease, with a constant supply of identical hosts in close proximity. To combat this, the crops are sprayed with pesticides, animals are fed antibiotics.

For a long time, we have been altering nature to our purposes and indeed must to survive. The extent of the change we are enacting, however, will cause us more trouble later. To feed our growing population, we must keep increasing food production, but dramatically improve the way we produce our food. Modern Westerners do not seem to recognize that our goals: pleasure, health, cost control can conflict. We may currently live in the sweet spot, getting the benefits of our technology, without yet paying the costs. If there are costs.

Additives and Tradeoffs

Our moral heritage tells us that we cannot create technology without damage and that active-ingredients have side-effects, but the evidence is simply not clear yet. We must carefully balance the potential dangers with the rewards of our current lifestyle. A strict "hemp & granola" strategy, though safe, will not work if people are not enticed to follow it.

New ideas, such as 'precision' farming combine satellite imaging with soil testing to allow farmers greater yields with less fertilizer. Simply alternating rows of different crops has shown to dramatically cut down pests, reducing the need for pesticides. The centralization of factory farms may make it easier to produce sustainable foods. In this complex system of our planet, simply ignoring the complexity of feeding our population is not an option.

On a personal level, we must be not only aware of the potential dangers of food additives, but of their uses. Ignoring their reason for being, and the costs of the alternatives, will lead to unrealistic, failed replacements.

If we accept that we need to change how we produce our food, we must be ready to accept that it will effect how we live.

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