Genetically modified foods – friend or foe

Food & Diet, Genetically Modified Food

In 1998 the first genetically modified (GM) food was approved for public consumption. Since then GM foods have become part of the world’s food supply and are produced in several countries. While horror stories in the 90s promised dire consequences for introducing GM foods to the populace most of those problems have failed to arise as promised. Some scientists say that GM foods are completely safe and the proof might be that we are all still here to debate the point. GM foods are not labeled in the United States and chances are that most Americans have already eaten GM foods. Still, how much is known about the GM foods that Americans are unknowingly feeding to their families? Is managing to survive the experiment the only yardstick we should use to measure risk? Genetically modified foods might be dangerous and more testing is desperately needed to avoid health hazards.

While the FDA and their scientists say that GM foods are safe, the U. S. government is already aware that there have been problems with GM foods. Even before genetic modification became the industry it is today there were problems linked with hormonally enhanced foods. Small changes in our food supply can cause large results. Of course, the problems are just a small percentage of the whole.

In 1998 Harvard Medical School released a study (as cited by Larsen, 1998, ¶ 1) showing evidence that a product known as Recombinant Bovine Somatotropin (rBST) increased the chances of humans developing cancer. Bovine Somatotropin is a hormone produced by cattle which is also known as Bovine Growth Hormone. The Recombinant status means it was synthetically produced using recombinant DNA technology. The synthetic chemical is injected into cows to stimulate milk production.

Milk cows in the United States and England were once treated with this chemical but England banned its use after the link between rBST and cancer was shown (Larsen, 1998). The Federal Drug Administration (FDA) says that the chemical is safe and not only approves of its use but does not allow labeling of the products that come from the cows that are injected with rBST (Epstein, 1996; FDA Consumer, 1999). Of secondary concern when dealing with rBST injected cattle is the worry of infection. The more milk a cow produces the more likely it becomes that she will suffer from udder inflammation. This inflammation is regularly treated with antibiotics to which the cows are developing a resistance to over time.

Not only can this resistance be passed along to the humans who drink the milk but humans can also have allergic reactions to the antibiotic traces left in the milk (Epstein, 1996). In 1989 approximately 5000 individuals became suddenly ill. This illness was later traced back to a health food supplement that had been created using GM enhanced bacteria. Of those 5000 people, 37 later died and 1500 were permanently disabled. The toxin which caused the problem was present in only 0.

01% of the product. One percent is below the level that would have caused concern or a halt of production. In 1996 a company created a B2 vitamin to be sold with GM bacteria and the FDA approved it as long as any contaminants were not found at greater than 0. 01%.

With that standard in place the 1989 toxin problem would not be detected even if it happened today (Antoniou, 1996, ¶ 5-6). While the FDA does set the standards there is very little actual oversight of the biotech companies.

As of 1992 (as cited by Whitman, 2000) the FDA policy is that biotech companies may voluntarily ask for a consultation with the FDA. The consultation is not compulsory and even if used the company does not have to follow the FDA recommendations. The United States Department of Agriculture (USDA) has the power to quarantine crops that are a danger but the biotech companies do not require a permit from the USDA as long as their product meets a short set of standards created to ensure the safety of the crop itself.

To put it simply, the FDA is responsible for food safety and the USDA is responsible for plant and crop safety (Whitman, 2000, ¶ 32-35). The FDA sets the requirements that GM foods must meet to be declared safe. The main requirement for safety is that the modified food being judged is substantially equivalent to the original non-modified food (Physicians and Scientists for the Responsible Application of Science and Technology [PSRAST], 2006). For example, if a biomed modified potato is found to still be substantially equivalent to a regular potato then no further testing is needed.

The theory is that being substantially equivalent gives them the same level of safety. For a food to be judged substantially equivalent it must be similar on several points, which are chosen by the manufacturers themselves. There must be no overt difference between the GM food and the non-GM food in regard to taste, appearance, and several points selected by the manufacturer in the areas of chemical composition and nutritional composition. The only other test required is to do an analysis looking for

allergen markers. If the computers find no reason to believe that the product can cause allergies then the product is approved.

Human testing is never required (PSRAST, 2006, ¶ 20-25). If genetically altering foods is an inherently safe procedure then the above tests are a perfectly logical way to test GM foods. If the foods are as unsafe as some claim then it is a dangerous policy for the biotech companies and the U. S. government to decide upon. In 1994 the FDA stated that modified foods were as safe as their non-modified counterparts and policy decisions have been based on that statement.

The government believes so strongly in the safety of GM foods that they do not require labeling of any kind to differentiate GM foods from non-modified food sources (Whitman, 2000, ¶ 38-43). Since there is no way to differentiate GM from non-GM products there is no way for Americans to know if they are eating GM foods. In 2003 six countries produced 99% of the transgenic crops, also known as GM crops, sold in the world. Of these six countries the United States sold, by far, the largest percentage of these crops (James, 2003).

The chart below lists the acreage of these crops by millions. Figure 1 Obviously, not all is doom and gloom when looking at the above figures. Although biotechnology can do harm it can also help the world, maybe. According to Raney, Pingali, T. R, & R. R.

in 2007 a new variety of rice named Golden Rice was modified to produce beta-carotene. The rice was developed specifically to help the starving and

poor in third world countries who become ill from vitamin A deficiencies (p. 108). Three servings of Golden Rice a day will provide an adult with 10% of their daily requirement of Vitamin A. While this does not seem earth shattering it shows a company attempting to use biotech to help others.

Of course, even assuming the FDA is right and the problems caused by GM foods are an aberration there is the USDA's bailiwick to ponder. Are the crops safe for the biosphere itself? That is a difficult question to answer, as well. Just like the food safety issue there are people on both sides of this argument who are convinced that they are right. On one side are the scientists who fully believe that the creation of GM foods cannot harm the biosphere and on the other are the scientists who believe that cross pollination will cause problems.

According to the Department of Soil and Crop Sciences at Colorado State University (2004) a list of recommended separation distances for GM crops was released by the USDA. According to the USDA if the separation distance is maintained and divider crops are planted then the risk for migration or cross pollination is minimal. Divider plants are tall plants that will block the flow of pollen from wind caused migration. With these precautions in place biosphere damage is supposed to be minimal.

A photo taken by Percy Schmeiser and provided by The Nature Institute in 1994 shows that even if the worry of cross pollination or plant migration is overblown it is not an unproven phenomena. The field in the picture was planted with wheat in 1999. In the year 2000 they allowed it to lie fallow, in layman's terms they did not plant anything so to regenerate the soil. They

sprayed the soil twice with a weed killer known as Round Up but somehow an herbicide resistant strain of canola plants migrated into the field. The bushes in the below picture are all a GM crop that was never planted by the farmer. No one is sure how it appeared in the field (Holdrege, 2004, ¶ 11).

Figure 2 Even discounting the possibility of seed migration via accident or wind there is always the chance of cross pollination. With cross pollination one plant can pollinate or breed another plant via insect help or wind that it was not scheduled to pollinate. In this way a plant type that was supposed to be non-GM can be infected with GM genes without the farmer or company being aware of the problem. This has happened before to rice crops that were sold to Europe from the U. S.

and caused the temporary halt of rice exports to certain companies in Europe. The rice in question was not approved for human consumption and no one is sure how it appeared either in the field or the food supply (Vogel, 2006). Besides cross pollination and migration one other crop issue needs to be addressed. Monsanto has produced crop plants that either target the RNA in insects to kill off their larvae, are tolerant of herbicides like Round Up to kill off weeds, or produce pesticides of their own to kill predatory insects (Whitman, 2000, ¶ 4-5; Webb, 2007). While these functions are beneficial to farmers in that they save money and protect the crops, there are some concerns with these changes. There is always the possibility of cross breeding or cross contamination affecting a species for which these changes were not intended.

There is also the chance that the insect killing modifications will kill off non-pest insects like butterflies. Lastly, there is a chance that plants that produce pesticides will be toxic to the humans or animals that ingest it (Whitman, 2000, ¶ 18-22). While opinions still vary on GM food safety, what becomes obvious is that there are more questions than answers. More testing and more rigorous safety and control laws are needed to protect the populace from unmeant harm. While GM foods can be a boon to the world they can just as easily become a curse.

Disease, poisonings, and even dangers to the biosphere itself are just some of the risks we currently run. The best way to safeguard our future is to demand that congress takes our safety seriously. References Antoniou, M. (1996). Is GM food devoid of DNA safe. Retrieved January 21, 2008, from http://www.

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