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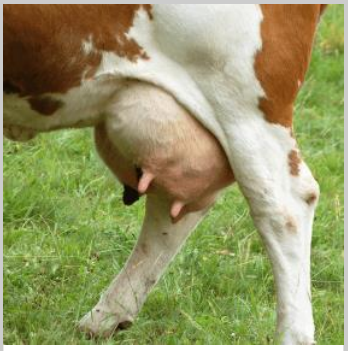
Bovine Somatotropin



Bovine Somatotropin, often referred to as BST, is a hormone naturally produced by a cow's pituitary gland. Using recombinant DNA technology, scientists have discovered a way to synthesize an artificial form of this hormone. The product of this procedure, known as recombinant BST or rBST, is widely used by American dairy farmers to increase the milk production of their cows. Although the use of rBST has been banned in Canada, Australia, New Zealand, Japan, and all countries in the European Union, the U.S. Food and Drug Administration (FDA) ruled in 1993 that it was not harmful and could be injected into cows to improve their milk production. In the United States, the debate continues over whether or not rBST is truly safe for humans and animals. While many claim that the hormone is not only safe, but also provides important economic and environmental benefits for farmers and consumers, a significant contingent of skeptics provides a growing market for dairy products labeled "rBST-free."

Marketed under the name Posilac, rBST works by artificially extending the length of time that lactating cows produce milk. Proponents of the growth hormone claim that cows that have not been treated with Posilac produce an average of eight gallons of milk per day, whereas Posilac-treated cows usually produce nine gallons per day. Supporters also claim that Posilac makes the cows' digestive systems more efficient. According to Monsanto, the company that manufactures Posilac, dairy farmers that inject their cows with rBST can essentially get seven cows' worth of milk from six, thus reducing the amount of food, water, and living space required to raise the cows. Monsanto estimates that, over the course of a year, rBST-injected cows eat more than 3 billion pounds less food than untreated cows. Because they believe that Posilac allows for more efficient milk production, farmers who treat their cows with rBST claim that they save money, and that these savings are passed on to consumers.

In addition to economic advantages, Monsanto also estimates that the use of Posilac benefits the environment.The company claims that for every million cows treated with rBST each year, 6.6 billion gallons of water are conserved. Additionally, Monsanto argues that manure production is decreased by about 3.6 million tons, reducing the chances of runoff getting into waterways and groundwater.

The results of a 2008 study even suggest that the use of Posilac causes a reduction in greenhouse gases. The basis for such a claim is that a digestive bacterium lives in cows' stomachs and causes them to belch methane, a gas that significantly contributes to global warming. If farmers can use fewer cows to produce the same amount of milk, the logic goes, then there will be a reduction in the cow population and thus a reduction in global warming. The study found that for every million cows treated with rBST in one year, greenhouse gas emissions are lowered by 30,000 metric tons. Or, to couch these findings in slightly different terms: if U.S. farmers injected their dairy cows with bovine growth hormone, it would take just 843,000 cows to produce the same amount of milk as one million untreated animals, potentially reducing the global warming impact by the equivalent of 400,000 cars.

When one hears that the use of rBST has been approved by the FDA, that it has economic benefits for farmers and consumers, and that it benefits the environment, it can be hard to understand why so many people are opposed to drinking milk from cows that have been injected with rBST.

Yet skepticism about these claims may well be in order. Many critics have noted that Monsanto has a vested interest in advertising the benefits of Posilac, since it is the company that manufactures it and stands to profit from its widespread use. Proponents of rBST respond to this criticism by pointing

out that the 2008 study suggesting Posilac has environmental benefits was led by scientists at Cornell. But a little digging uncovers the fact that the study was conducted by a scientist, Roger Cady, who is also the rBST technical project manager for Monsanto. In addition, the lead scientist, nutritional biochemist Dale Baumanof Cornell University, has been a paid consultant for Monsanto since the 1980's, though he declined to disclose how much the company has paid him over the years. These conflicts of interest have led people to ask how trustworthy the results of the study actually are.

In addition to these conflicts of interest, critics of the recent study charge that it was based on a faulty premise: that there is an increase in feed efficiency. The study assumes that Posilac increases the ability of individual cows to produce more milk from the same amount of feed, but the FDA has ruled that this is not actually the case. And if the FDA ruling suggests that the use of Posilac does not necessarily increase the efficiency of milk production, what does this imply about the touted economic benefits for farmers and consumers? So perhaps the evidence claiming that rBST benefits the environment and the dairy economy is not so conclusive after all.

But the heart of the debate is not whether the use of rBST has environmental or economic benefits, but whether there are valid health risks associated with treating cows with it. The National Institute of Health has concluded that milk from rBST-treated cows is essentially the same as that of untreated cows, and the FDA has concluded that it has no legal basis to require special labeling of food products derived from rBST-treated cows.However, the FDA did find evidence in submitted clinical trials that rBST-treated cows have a slightly increased incidence of mastitis, an udder infection that is treated with antibiotics. This raises concerns that antibiotic treatments for mastitis could lead to increased antibiotic residues in milk and the evolving resistance of bacteria to the drugs.
Furthermore, some skeptics argue that the FDA is a notoriously overworked, understaffed organization without high credibility among consumers. For these non-believers, the FDA stamp of approval means very little.

Like so many modern controversies, the dilemma over bovine growth hormone stems not from a dearth of information on the part of consumers, who seem relatively well informed, but from a fundamental difference in people's underlying beliefs. Depending on whether a person believes that reduced farm costs will translate to reduced prices for consumers, the argument about Posilac's economic benefits can be either convincing or suspect. And depending on whether or not a person believes that a scientist's corporate affiliations can taint his or her research, the results of a study can be either trusted or dismissed. Depending on whether a person views the FDA as a reliable governmental agency or as an organization with a poor track record for consumer advocacy, the FDA's approval can be either noteworthy or meaningless. Although there is plenty of information about rBST available, the one thing missing from the debate is the highly valuable test of time. It may be that, just as with cigarettes or radiation, we cannot know the true health risks of this practice for years to come.