

7.1

Milk from rbGH-treated cows may increase risk of cancer and other diseases

“W*e feel fairly confident in being able to demonstrate that the safety of European citizens who consume [rbGH] products cannot be guaranteed.”¹*

—Fredrich-Wilhelm Graefe zu Baringdorf, former Vice President of the Agriculture Committee of the European Commission

1. Monsanto’s genetically engineered bovine growth hormone is injected into dairy cows in the United States and elsewhere, to increase milk production.

2. Milk from treated cows has much higher levels of IGF-1, a hormone considered to be a high risk factor for breast, prostate, colon, lung, and other cancers.

3. The milk also has lowered nutritional value, increased antibiotics and more pus from infected udders.

Monsanto inserted cow genes into bacteria to produce recombinant bovine growth hormone (rbGH), a drug that increases milk production in cows.² Approved in the United States in 1993, by 2002 it was used on 22% of the nation's dairy cows.³ It is also used in South Africa and Brazil, but is banned in the European Union, Canada, Australia, New Zealand, and Japan.

Dairy products from treated cows carry several health risks, the most serious of which is higher levels of the hormone insulin-like growth factor 1 (IGF-1). It is one of the most powerful growth hormones in the human body and is naturally present in cows' milk. One study showed a 10% increase in the free levels of IGF-1 in subjects that drank milk; the controls showed no change.⁴ Analysis of the diets of more than 1,000 nurses revealed that the food most associated with high IGF-1 levels was milk.⁵ Neither of these studies used milk from cows treated with rbGH. If they had, the results may have been considerably more significant, since levels of IGF-1 in milk from treated cows can be up to 10 times higher,⁶ and detection methods may underestimate the amount and impact of this increase by up to fortyfold.⁷

High levels of IGF-1 raise cancer risk

IGF-1 causes cells to divide; more than three dozen studies unequivocally link high levels to increased cancer risk.⁸ A Harvard study of 15,000 white males found those with elevated blood levels to be four times more likely to get prostate cancer than average men.⁹ In a *Lancet* study, premenopausal US women below age 50 with high IGF-1 levels were seven times as likely to develop breast cancer. "With the exception of a strong family history of breast cancer," the authors warned, "the relation between IGF-1 and risk of breast cancer may be greater than that of other established breast-cancer risk factors."¹⁰ The *International Journal of Cancer* described a "significant association between circulating IGF-1 concentrations and an increased risk of lung, colon, prostate, and pre-menopausal breast cancer." It concluded, "Lowering plasma IGF-1 may thus represent an attractive strategy to be pursued."¹¹ A 1999 European Commission report concluded: "Avoidance of rbGH dairy products in favor of natural products would appear to be the most practical and immediate dietary intervention to . . . (achieve) the goal of preventing cancer."¹²

One way that IGF-1 may promote cancer is by reducing programmed cell death (apoptosis) in tumor cells. IGF-1 also inhibits the ability of various anti-cancer drugs to kill cultured human breast cancer cells.¹³

Rat pups fed IGF-1 in milk increased the growth of their brains and livers.¹⁴ And IGF-1 boosted the expression of the

prion protein gene in rat cells, raising "unresolved questions on the possible effects of increased IGF-1 levels on susceptibility to bovine (BSE) and human prion disease (CJD)."¹⁵

Increased antibiotics, reduced nutrition

There are more than 20 side effects to cows listed on Monsanto's rbGH label, including cystic ovaries, uterine disorders, decreased gestation period, decreased calf birth weight, and increased twinning rates.¹⁶ Udder infection (mastitis) is the most widely reported. This painful disease increases the pus (somatic cells) in milk; milk from treated cows has 19% more.¹⁷ To manage infections and pus levels, farmers using rbGH typically treat their herd with extra antibiotics, which increases antibiotic residues in milk.

Milk from cows treated with rbGH has higher levels of bovine growth hormone (methionyl-rBST),¹⁸ a thyroid hormone (tri-iodothyronine),¹⁹ lactose and long chain fatty acids (up to 27%),²⁰ and less casein and short and medium chain fatty acids.²¹ One reviewer said that the composition changed "in directions detrimental to the nutritional quality of milk. Health risks to individual consumers . . . would thus depend on how much of the milk consumed was from cows treated with [rbGH]."²²

Regulators pressured for drug approval

One FDA scientist said he was fired after expressing concerns about insufficient data in the rbGH analysis. Other FDA employees sent an anonymous letter complaining of "fraud" and "conflict of interest" in relation to the drug's approval. They claimed, for example, that a Monsanto-researcher-turned-FDA-employee raised allowable levels of antibiotics in milk one-hundredfold, to pave the way for rbGH approval.²³ And when Canadian government scientists analyzed how the FDA approved rbGH, they wrote that the "evaluation was largely a theoretical review taking the manufacturer's conclusions at face value. No details of the studies nor a critical analysis of the quality of the data was provided." Because critical studies were not conducted, "such possibilities and potential as sterility, infertility, birth defects, cancer, and immunological derangements were not addressed."²⁴

The Canadian scientists also testified before the Senate that they were pressured to approve rbGH by their superiors, that documents were stolen from a locked file cabinet and that Monsanto offered them a bribe of \$1-\$2 million to approve the drug without further study.²⁵

7.2

Milk from rbGH-treated cows likely increases the rate of twin births

T*he more IGF, the more the ovary is stimulated to release additional eggs at ovulation.”²⁶*

—Gary Steinman, obstetrician, multiple birth expert, Albert Einstein College of Medicine

1. Higher IGF-1 levels increase the rate of twin births.

2. Since milk drinkers increase their IGF-1, correspondingly they have higher twinning rates.

3. Milk from cows injected with bovine growth hormone has higher IGF-1 levels.

4. Drinking milk from injected cows should increase the twinning rate even more.

5. The number of twins grew at twice the rate in the United States compared to the United Kingdom, where rbGH is banned.

Higher levels of blood IGF-1 increase the tendency to have fraternal twins. The hormone increases ovulation and appears to support embryo survival.²⁷ Cows with high twin rates have IGF-1 levels 1.5–2 times higher than normal.²⁸ It is also noteworthy that the gene in cows that produces IGF-1 is located in close proximity to the genes that control the rate of twinning.²⁹

In human populations, African Americans have higher IGF-1 levels than Caucasians, who in turn have higher levels than Asians. Correspondingly, the twinning rates for African Americans are 30% higher than Caucasians and 83% higher than Asians.³⁰

Milk consumption increases IGF-1 levels. As mentioned in the previous section, one study showed that a glass of milk each day for 12 weeks increased blood IGF-1 levels by 10%.³¹ Vegan women who do not drink milk have 13% less IGF-1 levels.³² Male vegans have 9% less.³³

Since milk increases IGF-1 and IGF-1 increases twinning rates, one would expect that milk consumption increases twinning. This is confirmed by several studies. For example, twinning rates in 15 European countries correlated with average milk consumption.³⁴ The rate of twins in some countries also dropped when dairy consumption fell during World War II.³⁵ A study in the *Journal of Reproductive Medicine* reported that mothers who consumed milk were five times more likely to give birth to fraternal twins, compared to vegans (1.9% compared to .4%).³⁶

Bovine growth hormone increases twinning rates

Cows injected with recombinant bovine growth hormone (rbGH) have elevated IGF-1, increased ovulation and more embryos available.³⁷ Monsanto lists on its rbGH label that increased twinning rates is one of the possible side effects of use. Gary Steinman, an expert on multiple births and assistant clinical professor of obstetrics at the Albert Einstein College of Medicine, contends that since dairy products from injected cows have higher IGF-1 levels, they should likewise increase twinning rates among milk drinkers.³⁸

Twinning rates have tripled over the last 30 years, in part due to the increased amount of *in vitro* fertilization and the tendency for women to have children later in life. Between 1992 and 2001, however, the rate of twins born in the United Kingdom increased by 16% while the increase in the United States was 32%. A significant difference between the two populations is that a large number of dairy cows in the United States are treated with rbGH, whereas the drug is banned in the United Kingdom and throughout Europe.

Steinman says, “Because multiple gestations are more prone to complications such as premature delivery, congenital defects and pregnancy-induced hypertension in the mother than singleton pregnancies, the findings of this study suggest that women contemplating pregnancy might consider substituting meat and dairy products with other protein sources, especially in countries that allow growth hormone administration to cattle.”³⁹