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## Recombinant Bovine Growth Hormone (rBGH)

**Recombinant bovine growth hormone (rBGH)**, also known as **recombinant bovine somatotropin (rBST)**, is used by some dairy farmers to increase milk production in cattle (cows). It was first approved for use in the United States by the Food and Drug Administration (FDA) in 1993, but its use is not permitted in the European Union, Canada, and some other countries.

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### What is recombinant bovine growth hormone (rBGH)?

**Recombinant bovine growth hormone (rBGH)** is an artificial growth hormone that is made in a lab using genetic technology. **Growth hormone** (also called **somatotropin**) is a protein made by the pituitary gland in humans and other animals. It's important for growth and cell replication.

**Bovine growth hormone (BGH)**, also called **bovine somatotropin (BST)**, is the natural form of this hormone in cattle, while rBGH is the artificial (lab-made) form. Some rBGH products on the market differ chemically from a cow's natural growth hormone by one amino acid.

Both the natural and recombinant forms of the hormone stimulate a cow's milk production by increasing levels of another hormone known as insulin-like growth factor

(IGF-1). IGF-1 is a hormone that normally helps some types of cells to grow.

## What have been the health concerns in humans?

There are 2 main concerns about possible health effects on humans from milk and meat produced using rBGH.

The first concern focuses on whether drinking milk or eating meat from rBGH-treated cows increases blood levels of growth hormone or IGF-1 in people, and if it does, if there are any health effects, including increasing the risk of cancer.

Another health concern has been that cows treated with rBGH tend to develop more udder infections (mastitis). These cows are given more antibiotics compared to cows not given rBGH. Whether this increased use of antibiotics leads to more antibiotic-resistant bacteria remains a concern, but it has not been fully studied in humans.

## IGF-1 in milk and meat from rBGH-treated cows

It's important to know that BGH is not active in humans, so even if rBGH were absorbed from drinking milk or eating meat, it wouldn't be expected to cause health effects.

While BGH levels are not significantly higher in milk and meat from rBGH-treated cows, their milk and meat have higher levels of IGF-1. Several studies have found that IGF-1 levels at the high end of the normal range may influence the development of certain tumors.

Some early studies found a possible link between blood levels of IGF-1 and the development of [prostate](#)<sup>1</sup>, [breast](#)<sup>2</sup>, [colorectal](#)<sup>3</sup>, and other cancers, but later studies have failed to confirm these reports or have found weaker relationships. While there may be a link between IGF-1 blood levels and cancer, the exact nature of this link remains unclear.

In summary, it's not clear that drinking milk or eating meat produced with rBGH increases blood IGF-1 levels into a range that might increase cancer risk or have other health effects. The FDA and many other (but not all) health and food safety organizations and national regulatory agencies agree that since BGH is not active in humans, milk and meat from cows treated with rBGH is safe for humans to eat.

## Regulatory status

The use of rBGH is approved in the United States. However, many grocery store chains don't carry milk from cows treated with rBGH. A United States Department of Agriculture survey conducted in 2014 found that fewer than 1 in 6 cows (15%) were being injected with rBGH.

## Summary

The available evidence shows that the use of rBGH can cause health effects in cows (such as an increased risk of udder infections). The evidence for potential harm to humans is not conclusive. It's not clear that drinking milk produced using rBGH significantly increases IGF-1 levels in humans or adds to the risk of developing cancer. More research is needed to help better address these concerns.

The increased use of antibiotics to treat rBGH-induced mastitis does promote the development of antibiotic-resistant bacteria, but the extent to which this might affect humans is unclear.

The American Cancer Society (ACS) has no formal position regarding the use of rBGH.

## Hyperlinks

1. [www.cancer.org/cancer/types/prostate-cancer.html](http://www.cancer.org/cancer/types/prostate-cancer.html)
2. [www.cancer.org/cancer/types/breast-cancer.html](http://www.cancer.org/cancer/types/breast-cancer.html)
3. [www.cancer.org/cancer/types/colon-rectal-cancer.html](http://www.cancer.org/cancer/types/colon-rectal-cancer.html)

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Last Revised: May 29, 2024

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