Wednesday, February 11, 2015

INSIDE SCIENCE NEWS SERVICE

# Study Says Organic Milk Offers No Nutrition Boost



**Image credit:** USDAgov via flickr | http://bit.ly/1AcyKDg
**Rights information:** http://bit.ly/NL51dk

## Organic farming techniques don't increase milk's nutritional value.

**Originally published:** Feb 11 2015 - 3:00pm

**By:** Leigh Cooper, Contributor

(Inside Science) – Two bottles of whole milk sit side-by-side in a supermarket refrigerator. One costs $3.46 per gallon while the other costs $7.08 per gallon. The difference? The second bottle of milk is labeled organic.

People choose organic dairy products for any number of reasons, including their perceptions on the environmental impacts of dairy farming, the treatment of cows, and the safety of milk from cows given antibiotics or extra hormones. Consumers may also think organic milk offers better nutritional content than conventional milk. However, in a review of almost 200 scientific studies, researchers showed that experiments comparing organic and conventional milk have not agreed on any significant nutritional differences between the two milks. Other factors affect the milk's composition much more.

Numerous studies have attempted to compare organic and conventional dairy products, but the studies' findings often contradict each other.

"For every paper that shows a small increase there is another that shows no change at all or the opposite change," said Scott Rankin, professor and chair of the food science department at University of Wisconsin - Madison, who was not associated with the study. "And you might get a push of one nutrient in this direction and another nutrient will go in that direction."

Results varied because milk composition changes with factors like diet, cattle breed, lactation cycle, and even

RELATED ARTICLES

Pressure Prepares Lobsters for Long-Distance Deliv
Smelling the Way to Better Mosquito Management
Easy Fix For Threatened Sea Turtles?
Making Drugs Inside the Body
Mussels' Stickiness May Lead to Smarter Medical Gl

MORE FROM THIS DEPARTMENT

Mussels' Stickiness May Lead to Smarter Medical Gl
Smelling the Way to Better Mosquito Management
Pressure Prepares Lobsters for Long-Distance Deliv
Protozoa Show Potential For Cosmetic Testing
Easy Fix For Threatened Sea Turtles?

FROM THE CURRENTS BLOG

Measuring The Earth With A Wire
2014 Inside Science Superlatives
Hydrodynamics, Or When To Escape From Alcatraz
Were Online Critics Too Harsh With Interstellar's Science?
Will US-China Climate Agreement Make Global Accc More Likely?

EDITOR'S PICKS

Dinner At Piso's
Time Of Day Could Impact Athletes' Performance Pe
Black Hole Cores May Not Be Infinitely Dense
The Science Behind 'Beatboxing'
Every Black Hole Contains a New Universe

weather. The researchers found that most studies didn't control for all of these factors when comparing the two types of milk.

The new study only reported on milk's natural components; it did not cover components like antibiotics or extra growth hormones.

"In very good comprehensive detail…the paper says there is no conclusive study out there that demonstrates a [nutritional] difference in organically and non-organically produced milk," said John Lacey, a dairy chemist at the University of Wisconsin - Madison, who was not an author on the paper.

In the United States dairy farms must earn the "organic" label. Organic cows receive 100 percent organic feed, which includes a requirement that they feed at pasture for about four months each year, and receive almost one-third of their food during that time. The farmer cannot give extra growth-promoting hormones or antibodies to the herd, but the cows can receive organic vitamin and nutrient supplements. And farmers must raise the cattle with these standards for 12 months prior to labeling their products "organic."

These organic guidelines do not mean all organic milk is the same, and one of the biggest factors affecting the nutritional composition of any type of milk is a cow's diet.

"Just look at a cow as a milk-making machine – what you put in is what you get out at the other end," said Donald Otter, a food scientist at Auckland University in New Zealand. Otter and his colleagues published their findings in the *Journal of Dairy Science* in January.

For example, diet, along with cow genetics, helps determine the ratio of fatty acids in milk. Cow milk contains both omega-3 and omega-6 fatty acids, compounds humans need to build healthy cells and for proper nerve functioning. Because humans cannot synthesize these compounds naturally, we need to ingest them. The Academy of Nutrition and Dietetics suggests people increase their intake of both fatty acids, in particular omega-3s.

The study found that pasture-fed cows often produce milk richer in omega-3 fatty acids – found in grasses – than do cows fed high-energy food mixtures containing cereal grains; fats and oils; by-products from animals, sugar beets, and sugarcane; and usually vitamin and mineral supplements. Although the amounts of both fatty acids comprise far less than 1 percent of total milk fat, a cow's diet does seem to change the ratio.

But consumers shouldn't assume that "organic" automatically equates to more pasture time.

"Although eating grass is a component of organic, you can be non-organic and still have your cattle eat a lot of grass," said Lacey. A cow, organic or conventional, living in warmer climates may graze on grass practically year-around while a Wisconsin farmer must provide her cows with a barn and concentrates during cold winter months. Even in warm climates, a drought that shrivels pasture grasses will cause a farmer to supplement their cows' diet with concentrates.

Otter and his colleagues found no clear differences in total fat content, protein concentration, lactose concentration, calcium content, and naturally-occurring hormones between organically and conventionally produced milk. On the other hand, concentrations of iodine and selenium, both essential nutrients for human health, varied with geography. Organic cow milk from some regions contained lower concentrations of these minerals, because the cattle only fed on grass from nutrient-poor soils and did not receive supplements.

"It's actually amazing the amount of dirt that a cow in a paddock eats in a day. It's kilo[gram]s worth!" said Otter.

Taste also did not vary between organic and conventional milks, but allowing cows to graze in the pasture can add a grassy flavor to the milk.

With such a wide price gap between conventional and organic milk, consumers may be surprised by the actual lack of significant differences in nutritional value between the two milks.

"Most of the difference [between organic and non-organic milk] just came from being outside – the pasture fed versus grain diets," said Otter. "It's not a conventional versus organic difference, it's a farm system difference."

*Leigh Cooper is a science writer based in Santa Cruz, California. She tweets at @gdaycoop.*

**Science category:** Animals Chemistry
**News section:** Inside Science News Service

**Tags:** dairy organic agriculture Milk farming