
Titanium dioxide

TECHNOLOGY

# The Tiniest Bites

## Doughnuts dusted with nanopowder? Blech! But is it harmful?

**There are nanosize particles** in your food. Does this make you nervous?

Food companies have been interested in using nanotechnology to intensify flavors and make products creamier without added fat. But that has nothing to do with the titanium dioxide nanoparticles, less than 10 nanometers across, that were found recently in the powdered-sugar coating on doughnuts from Dunkin' Donuts and the now defunct Hostess. The microscopic flakes may have ended up there by happenstance—a result of the milling process used on the powdered-sugar mixture. We may have been ingesting them for years.

The environmental health group As You Sow found the nanoparticles in samples it sent to an independent laboratory. The tiny particles are worrisome, health advocates argue, because they are so small they can enter cells throughout the human body more readily than larger particles. If the particles are toxic in cells, they could cause trouble. So far no one knows whether these titanium dioxide particles or other nanomaterials in food or food packaging pose a health risk. The European Union requires foods that contain nanomaterials to be labeled, and the U.S. Food and Drug Administration has said it did not have enough information to determine if such products are safe.

Many companies appear not to know if their food contains nanoparticles or may be reluctant to submit to scrutiny. As You Sow attempted to survey 2,500 food companies for its report. Only 26 responded, and only two had specific policies regarding nanoparticles. Ten of the companies did not know whether they used nanoparticles, and two admitted to intentionally incorporating them in packaging. "We plan to work with scientists to understand if they will leach into food," says As You Sow chief executive Andrew Behar.

As You Sow is now trying to crowdfund further testing of M&Ms, Pop-Tarts, Trident gum and other comestibles—all likely to employ the same titanium dioxide found in the doughnuts and equally likely to be unintentional. "What are the health implications of nanomaterials that we know are in our food supply?" Behar asks. "How do we set up a system to make sure that they are safe?" As You Sow argues that nanoparticles of any kind have no business in food until safety testing is done.

*—David Biello*

MEDICINE

# A Cure Is Born

## A fetus's unique immune system may help it cope with HIV

**Earlier this year** doctors reported that they had cured, for the first time, a child born to an HIV-infected mother after a swiftly administered course of drugs. If the advance holds up to further scrutiny (some wonder if the child was perhaps never infected or is not actually cured), it may be at least partly because the immaturity of a newborn's immune system enables it to cope better with HIV, says Joseph M. McCune, a professor of experimental medicine at the University of California, San Francisco, who was not involved in the research.

Previous work shows that the inflammatory response mounted by an immune system under threat can make the HIV virus multiply more readily. The inflammation brings more immune cells to the site of injury or infection, increases cell division and boosts the production of proteins called cytokines that cells use to communicate. The HIV virus has evolved to take advantage of each of these processes—because the virus spreads from cell to cell, rapid division nearby helps HIV replicate quickly, McCune says.

Inside the womb, a fetus's immune system is set to "calm" because it "doesn't want to make an inflammatory response against the mother," McCune explains. That "do not respond" signal may hold over to the first few days of the newborn's life, robbing the new HIV infection of additional fuel. The delay, combined with a short course of aggressive treatment, may give the body enough of a head start to eradicate the virus on its own.

The case, reported in March at the Conference on Retroviruses and Opportunistic Infections in Atlanta, raises multiple questions, and the National Institute of Child Health and Human Development has put out a call for research proposals related to the new findings. "Now people are aware of this and can bring other children to our attention," says Lynne Mofenson, chief of the institute's Maternal and Pediatric Infectious Disease Branch. "Within a year or two we hope to have better answers."

*— Marissa Fessenden*

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