

# Magnetic nanoparticles detect and remove harmful bacteria

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Researchers in Ohio report the development of magnetic nanoparticles that show promise for quickly detecting and eliminating *E. coli*, anthrax, and other harmful bacteria. In laboratory studies, the nanoparticles helped detect a strain of *E. coli* within five minutes and removed 88 percent of the target bacteria, the scientists say. Their study is scheduled for the Nov. 7 issue of the *Journal of the American Chemical Society*.

Xuefei Huang and colleagues point out that ongoing incidents of produce contamination and the threat of bioterrorist attacks have created an urgent need for quicker, more effective ways to detect bacterial decontamination. To meet that need, they developed a “magnetic glyco-nanoparticle (MGNP),” a unique compound that combines magnetic nanoparticles with sugars.

Sugars (or carbohydrates) on cell surfaces are used by many bacteria to attach to their host cells in order to facilitate infection. The scientists exposed a group of *E. coli* bacteria to the sugar-coated nano-magnets to mark the microbes so they could be easily identified and removed by a magnetic device. The researchers also used the particles to distinguish between three different *E. coli* strains.

The study represents “the first time that magnetic nanoparticles have been used to detect, quantify, and differentiate *E. coli* cells,” the researchers state.

Source: American Chemical Society

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