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Newly discovered bacterium eats antibiotic to protect itself, get nutrition

By Michael Fielding on 12/10/2012



New research has uncovered another possible mechanism of antibiotic "resistance" in soil. In a paper published Dec. 6 in the *Journal of Environmental Quality*, a group of Canadian and French scientists report on a soil bacterium that breaks down the common veterinary antibiotic, sulfamethazine, and uses it for growth.

Certain soil bacteria are already known to live off, or "eat," agricultural pesticides and herbicides, says the study's leader, Ed Topp, a soil microbiologist with Agriculture and Agri-Food Canada in London, Ontario. The work was funded by Agriculture and Agri-Food Canada.

The microbes' presence in farm fields can cause these agrichemicals to fail.

To Topp's knowledge, this is the first report of a soil microorganism that degrades an antibiotic both to protect itself and get nutrition.

"I think it's kind of a game-changer in terms of how we think about our environment and antibiotic resistance," he <u>said</u> in a news release.

The researchers cultured from treated plots a new strain of *Microbacterium*, an actinomycete that uses sulfamethazine as a nitrogen and carbon source. Extremely common in soil, actinomycete bacteria are known to degrade a wide range of organic compounds. Two other sulfanomide-degrading *Microbacterium* strains have been reported, Topp said: one from soil and another from a sewage treatment plant.

Taken together, the findings suggest that the capability to break down sulfanomides could be widespread. If it's true that "the microbiology in the environment is learning to break these drugs down more rapidly when exposed to them, this would effectively reduce the amount of time that the environment is exposed to these drugs and therefore possibly attenuate the impacts," Topp added.

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