

Cancer drug may help in fight against superbugs

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A common treatment for breast cancer may help the body to kill antibiotic-resistant superbugs, a study reports.

As deadly strains of bacteria, such as MRSA and *E. coli*, become increasingly resistant to conventional drugs, scientists are seeking alternative ways to kill the infections. Some experts forecast that the bacteria could kill 10 million people around the world each year.

Tamoxifen, a hormonal therapy for several types of breast cancer that is also given routinely to women at high risk of the disease, could be an unexpected ally in this battle. Treating white blood cells with the drug appears to increase their response to bacteria.

American scientists discovered that a class of human white blood cells known as neutrophils became more effective at seeking out and eliminating bacteria when stimulated with tamoxifen. The white blood cells also churned out three times as many traps, or knotty bundles of DNA, antibiotic compounds and enzymes that form a second prong in their attack on harmful bacteria.

The scientists infected a batch of mice with MRSA, which kills hundreds of Britons every year. All of the mice that received no treatment died within 24 hours but more than a third of the mice given tamoxifen survived for more than five days.

The approach has yet to be tested on people, but the researchers believe it shows promise as a way of boosting the immune response to bacteria. Writing in the journal *Nature Communications* yesterday, they said a better understanding of the chemical pathways involved could lead to more powerful ways of rallying the immune system.

There are some risks, however. Victor Nizet, professor of pharmacy at the University of California, San Diego, one of the senior authors, warned that if white blood cells turned out too many traps under the influence of tamoxifen it could raise breast cancer patients' risk of developing other diseases.

"While known for its efficacy against breast cancer cells, many other cells are also exposed to tamoxifen," he said. "The off-target effects we identified in this study could have critical clinical implications given the large number of patients who take tamoxifen, often every day for years."