

# Thanks to scion nanoparticles, *Klebsiella pneumoniae* bacterium is killed in food and human cells

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High levels of resistant *Klebsiella pneumoniae* bacterium in antibiotics in samples from several dairies and hospitals, mostly in Neiva City and QuirÃ³s, reveals a new strategy for the elimination of the bacteria that causes over a hundred million people to contract several different types of antibiotics resistance every year.

To demonstrate this new method, researchers found strong levels of *Klebsiella pneumoniae* resistance in refrigerated pasteurized milk and in a few samples from HÃ©ctor Garajas Comprehensive Cancer Center.

Besides the fact that *Klebsiella* is at the highest risk from bacterial diseases, the bacteria used in the study were resistant to antibiotics. This type of bacteria is highly antibacterial and does not respond well to antibiotics. In fact, last year, as a report in the daily El PaÃs explained, *Klebsiella* had always been registered as resistant to antibiotics in Europe, Australia and the United States. Although *Klebsiella* is typically not found in hospital samples, this bacterium, by comparison, is incredibly tough to kill.

The study was conducted in cooperation with biotechnology and nanotechnology company INNiscobi and private laboratory Estagio Bio Laboratories (EVANscience) which shared samples from hospitals as well as from supermarkets and two dairies.

The study focused on the antibiotic resistance of the *Klebsiella*. By the use of specialized specialized catheters, called robotic probes, the researchers were able to find in the dairies that the disease-causing bacterium resistant to several antibiotics, including sulfonamide, and in a few samples from hospitals that the antibiotic-resistant bacterium was resistant to multiple types of antibiotics.

The key principle: scion nanoparticles

By the use of specialized specialized catheters, called robotic probes, the researchers were able to find in the dairies that the disease-causing bacterium resistant to several antibiotics, including sulfonamide, and in a few samples from hospitals that the antibiotic-resistant bacterium was resistant to multiple types of antibiotics. When used for this study, the antibiotic-resistant bacterium found was of *Klebsiella pneumoniae*, which has the highest burden in the world. The study demonstrated the effectiveness of scion nanoparticles to target and kill infections of *Klebsiella pneumoniae* from the dairies and the hospitals, which are the most difficult diseases to treat in these hospitals, according to research group ICGROUP.

Dr. JosÃ© MarÃa CÃrdenas, a scientist involved in the study, explained: "As a proof of the effectiveness of these techniques, we established that we were able to kill the *Klebsiella* and more than twice the scion nanoparticles were contained. We proved a procedure of use, which allows to transfer bacteria to be killed to human cells, further in order to study infection resistant bacteria."

Hospital and Dairies Used For Study:

In the study, the scientists were able to study a large number of antibiotic-resistant bacteria pathogens, ranging from *Klebsiella pneumoniae* to *E. coli* to *S. aureus*. They were able to find several variations and levels of resistance of the bacteria. Some of the parts of the resistance are very resistant to antibiotics and are sometimes cured by removing another antibiotic. However, it took some time before the study showed that from milk and human cells, the researchers were able to destroy the resistance.

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Another Innovation: Mass Based Biocompatibility Testing

Another novel procedure adopted by this research group is to perform mass-based biocompatibility testing, whereby the bacteria is killed in the test tube without affecting the health of the lab-ridden animal. The same results can be obtained for pregnant women and for sensitive individuals.

The study was conducted in collaboration with the Institute of Bio-Research and BioSecurity at ONAREPAM in Neiva and with the Biotechnology Regulatory Institute in QuirÃ³s. The results of the study have been published in the monthly journal Biosafety in Parasitology.



A Black Cat Sitting On Top Of A Wooden Bench