Integrons hold key to antibiotic resistance crisis

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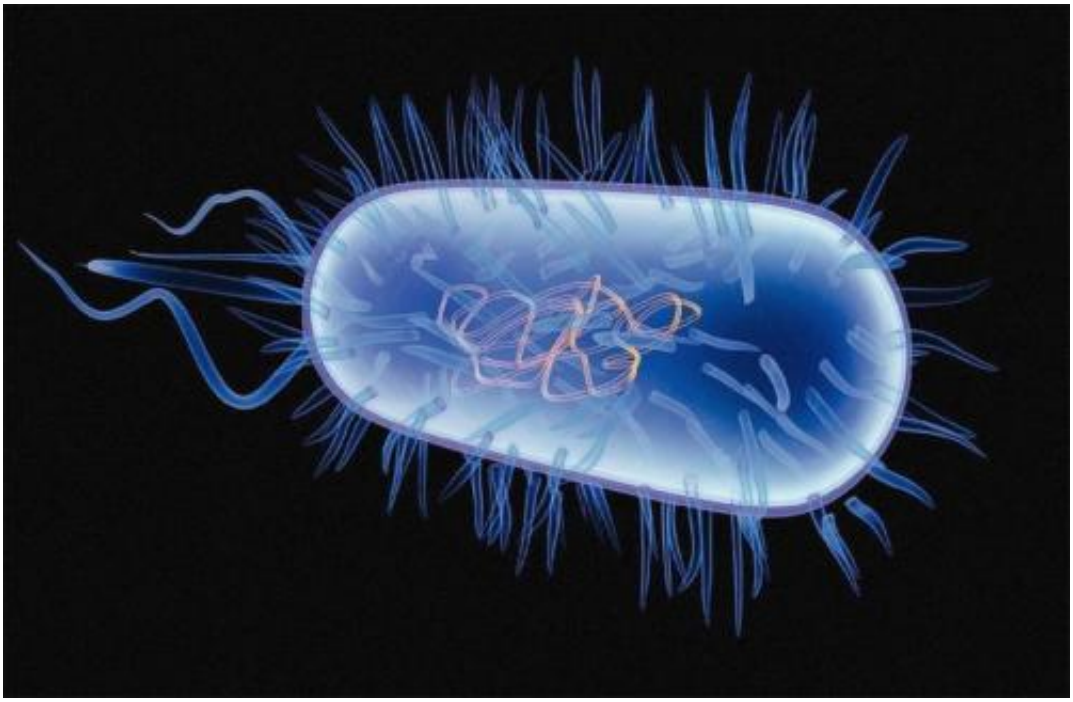

In Mexico the sale of antibiotics for human consumption is controlled to prevent misuse, although in the veterinary sector failure in the implementation of the Official Mexican Standard NOM-064-ZOO-2000, "Guidelines for veterinarian products prescription", has prompted common bacteria such as Escherichia coli and Salmonella spp to become resistant to regular drugs such as streptomycin, trimethoprim, ampicillin, gentamicin, and tetracycline as a

result of excess drug use.

The use of antibiotics without prescription for veterinary use is a problem that may seem minimal, but the importance is that each improper administration of these drugs, is conducive to bacteria normally present in the intestinal tract of animals are being subjected to a selective pressure, causing them to acquire different mechanisms for its survival.

In order to discover the origin of bacterial resistance, Martín Talavera Rojas, professor at the Centre for Research and Advanced Studies in Animal Health of the Autonomous University of the State of Mexico (UAEM), analyzed different isolates of bacteria from animals for human consumption and reports that such resistance is due to the presence of various resistance genes specific for each class of antibiotics.

The results of the studies were used to detect the presence of genetic fragments (integrons) that cause resistance to various antibiotics, due to the insertion of genes in these structures, which results in increased resistance and prevent income of bactericidal agents, said the scientists.

The cause of bacterial strains that have become more resistant to drugs is that there is not a controlled sale of antibiotics in veterinary and in using them indiscriminately causing bacteria acquire resistance factors that allow it to survive affecting food production.

UAEM researcher concluded that the damage caused by the infection "superbugs" such as Escherichia coli serovar O157: H7 causes bloody diarrhea, severe abdominal pain and in some cases can cause kidney and neurological complications, including uremic syndrome hemolytic; while Salmonella causes bleeding blood and fever.

Talavera Rojas said the isolates of Salmonella spp where resistant to

various antibiotics and integrons were present in 40 percent of the isolates (31/77). Afterwards the bacteria were subjected to trimethoprim-sulfa antibiotics, tetracycline, ampicillin, and streptomycin, to check resistance to these drugs.

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