

Control Of Antibiotic-Resistant Organism Sought

WOOSTER, Ohio — An antibiotic-resistant bacterium that produces one of the major foodborne illnesses in humans has two Ohio State University researchers looking for answers in the organism's most common host — chickens.

Campylobacter jejuni, a bacterium that harmlessly resides in birds, specifically poultry, produces campylobacteriosis, a gastrointestinal illness similar to Salmonella and E. coli in humans when infected with the organism. The most effective treatment involves antibiotics, known as quinolones, which are also used on poultry farms to keep the animals healthy. In recent years, cases of quinolone-resistant Campylobacter have surfaced, posing a potential threat to human health.

Qijing Zhang and Theresa Morishita, Ohio Agricultural Research and Development Center scientists, are conducting poultry farm-based studies to determine what factors contribute to Campylobacter resistance of quinolone and to develop effective education and management programs that may reduce the resistance. The project is being funded by a \$567,232 USDA grant.

Research has found that quinolones used on poultry farms no longer kill the Campylobacter bacterium, increasing the potential for contaminated chicken and illness in humans.

"Studies have shown that the use of quinolones on poultry farms is linked to quinolone re-

sistance in humans infected with Campylobacter," said Zhang. "Our goal is to identify management and environmental factors that contribute to the development and persistence of the resistance on farms and maybe we can reduce or eliminate that resistance."

Campylobacter is considered the most common foodborne pathogen in the United States. The Centers for Disease Control estimates more than two million people are infected each year with the organism, producing symptoms such as fever, abdominal cramps, and diarrhea. The illness can be life threatening to those with compromised immune systems.

People most commonly contract campylobacteriosis by drinking contaminated water or milk, mishandling raw chicken, or eating undercooked chicken. The FDA estimates that 80 percent of broiler chickens are contaminated with Campylobacter.

Zhang and Morishita plan to study the resistance of quinolone in both farm-based and laboratory settings to determine the rate of quinolone resistance in chickens under different production practices, how long the resistance to the antibiotic lasts after the animals are free of the antibiotic, and how much quinolone can be used in chickens before they develop a resistance to it.

The three-year project is a collaborative effort among Ohio State University, Ohio Poultry Association, poultry producers, and industry representatives.

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