Campylobacter researchers look for antibiotic resistance

ANTIBIOTICS are common tools for fighting pathogenic bacteria in swine production.

Iowa State University researchers have found that certain antibiotics encounter more resistance from Campylobacter coli than other antibiotics, with some variation of resistance among farms. Researchers are still looking for more clues to determine the significance of the variations.

“If we can eventually figure out what the actual risk factors are associated with resistance, we’ll be able to manage that and reduce the risk,” said Qijing Zhang, an Iowa State professor of veterinary microbiology who managed the project for the Food Safety Consortium.

Zhang’s team, in collaboration with Irene Wesley at the U.S. Department of Agriculture’s National Animal Disease Center, gathered C. coli isolates from different production phases at two Iowa swine production farms and tested their ability to resist five different antibiotics. The pathogens were unable to resist two antibiotics — gentamicin and meropenem — but there were varying levels of resistance to three other antibiotics.

Their abilities to stave off C. coli varied among each antibiotic and between the two farms. The levels ranged from 65% of C. coli isolates on one farm resisting one antibiotic to 7.3% on the other farm. The antibiotic doxycycline encountered the most resistance, with the antibiotics erythromycin and ciprofloxacin encountering lower resistance rates.

“Two of the three antibiotics to which we noticed campylobacter developed a resistance were those that are used fairly often in swine production,” Zhang said.

The researchers also noticed that campylobacter is prevalent within both swine and poultry production systems. “That has nothing to do with the production management,” Zhang noted. “It just that campylobacter is naturally associated with swine and poultry.”

The Iowa State researchers are considering following with another phase of research into the subject.

Northern Beef plant opening delayed again

ONCE scheduled to open last summer and then this spring, the Northern Beef Packers plant in Aberdeen, S.D., is now set to open this August or September, according to its principal backer, Dennis Hellwig.

The plant dealt with flooding delays last year and is now working through about $7 million in liens on construction, equipment and general services, according to court documents.

“The $40 million plant will handle cattle born and raised in South Dakota and will produce ‘South Dakota Certified Beef,’ with a capacity for 1,500 head per day and a workforce of 650 people,” Hellwig and his sons own Hub City Livestock Sales in Aberdeen.

Collaboration collects sheep germplasm

By TIM LUNDEEN

GATHERING blood and semen samples from heirloom sheep breeds requires the efforts of a diverse collection of people and organizations.

Both the Mount Vernon Ladies’ Association with operations at Washington’s estate, and the Colonial Williamsburg Foundation, which operates Colonial Williamsburg in Virginia, maintain flocks of heirloom sheep — Hog Island sheep at Mt. Vernon and Leicester Longwool at Colonial Williamsburg.

The rare and unique genetic traits of these sheep are being preserved by Agricultural Research Service scientists with the National Animal Germplasm Program (NAGP) in Ft. Collins, Colorado.

NAGP facilities house germplasm for sheep, cattle, chickens, pigs, aquatic animal species and other livestock. The annual collection contains more than 51,000 samples, many donated by livestock producers throughout the U.S.

“A lot of livestock genetic resources are privately owned, yet their preservation is a public good,” said NAGP program manager Dennis S. Guest.

Scientists preserving rare and unique genetic traits of sheep breeds.

Unique traits could be useful for new breeds and genetic diversity helpful for species survival.

COLONIAL SHEEP: The Agricultural Research Service’s National Animal Germplasm Program is helping preserve heirloom sheep breeds kept at Mt. Vernon. Shown is an example of the Hog Island breed at Mt. Vernon.

Campylobacter researchers look for antibiotic resistance

Four recently patented nontoxic strains of a fungal organism called an endophyte discovered by University of Arkansas professor Charles West and other researchers could provide significant benefits to livestock producers in the “fescue belt,” which includes Arkansas and neighboring states.

The patents resulted from research by West and Piper as University of Arkansas System division of agriculture scientists, in cooperation with undergraduate David Speer at the University of Missouri.

Tall fescue is a cool-season grass mostly grown in Arkansas and Missouri. Beef cattle producers rely on as a fall, winter and spring forage and hay crop. The dominant variety since the 1950s has been Kentucky 31 (KY31), thanks to its ability to survive drought and persist for many years, West said.

KY31 fescue is infected by an endophyte that makes it resistant to many pests and tolerant of drought conditions. However, the endophyte produces a toxic alkaloid in the grass, which lowers calving rates and weight gain in livestock.

The recently patented endophyte strains are described as nontoxic because they do not cause fescue toxicity in cattle, but they still provide the benefits of pest resistance and drought tolerance, which helps the grass persist as a forage crop, West said.

Field tests have shown that fescue infected with any of the patented strains is as persistent during summer droughts as KY31, West said. Cattle performance trials with three of the patented endophytes showed that the infected fescue plants did not cause fescue toxicosis symptoms, he added.

No genetic transformation was conducted to develop the patented endophyte strains, West said. They were identified by a rigorous process over about 12 years of collecting and testing hundreds of naturally occurring endophytes. West collected the patented strains and others with similar characteristics from plants found growing in meadows and pastures in the Mediterranean region.

Several seed companies have expressed interest in commercial licensing rights to the patented endophytes, West said. One or more new varieties of nontoxic endophyte-infected fescue could be available in small quantities by 2010 and widely available by 2011, he added.