Antibiotic resistance in *Staphylococcus aureus* from hogs raised with and without antibiotics

Monday, April 4th | 2301 McGavran-Greenberg Hall | 2:00 PM

Antibiotics are used in food animal husbandry in the United States for the treatment and prevention of disease and for growth promotion. Our aim was to study the potential effects of antibiotic use in animal husbandry. We isolated *Staphylococcus aureus* from the heads (mouth and nares) of recently-slaughtered hogs in order to compare antibiotic resistance profiles of hogs raised without antibiotics (RWA; N=115 isolates) to those raised with antibiotics, conventionally raised (CR; N=98 isolates). All hogs were obtained from the same slaughterhouse, limiting exposure differences in the hogs after leaving their respective operations. We found overall higher proportions of resistance in tested CR hog isolates than tested RWA hog isolates. A significantly higher proportion of multidrug-resistant *S. aureus* isolates were found from CR hogs than from RWA hogs (92% and 7.0%, respectively, p<0.0001). Additionally, CR hog isolates were significantly more often resistant to antibiotic classes sold and distributed mostly for food animals (98% in CR; 7% in RWA, p<0.0001), demonstrating the effect of antibiotic usage on patterns of resistance. These findings suggest a relationship between the use of antibiotics in food animals and antibiotic resistance. This is the first study to compare *S. aureus* communities in recently-slaughtered hogs processed in the same slaughterhouse, but raised in different environments of antibiotic use (RWA vs. CR), in North Carolina.


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