

Household bugs -- a risk to human health?

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Superbugs are not just a problem in hospitals but could be also coming from our animal farms. Research published in BioMed Central's open access journal *BMC Microbiology* indicates insects could be responsible for spreading antibiotic resistant bacteria from pigs to humans.

Ludek Zurek and collaborators from Kansas and North Carolina State Universities isolated [bacteria](#) from farm pig feces and compared them to the bacteria present in the [intestines](#) of the house flies and German [cockroaches](#) caught on those farms. They subjected the bacteria to a range of different antibiotic resistance testing and [genetic analysis](#) and discovered that not only were the same types of bacteria carried in the intestines of all the insects and pigs, but also that there was a high prevalence of [antibiotic resistance](#). In particular, the common [gut bacteria](#) *Enterococcus faecalis* and *Enterococcus faecium* were found to be frequently resistant to tetracycline, erythromycin, streptomycin, and kanamycin – common antibiotics used to treat human infections.

Dr. Ludek Zurek explains that the significance of these findings could be very important for public health. He said, "In the USA, antibiotics are widely used in pig farming as growth promoters; they cause the pigs to gain weight faster. As a result, the digestive tract bacteria in pigs are often exposed to selective pressure and many become resistant to antibiotics. Consequently, there's a risk that these bacteria might be transferred – by common livestock and urban pests such as house flies and cockroaches from pig farms to humans". "Moreover, since we found such a good match between enterococci from pig feces and insects, it is possible that flies and cockroaches carry other microbes originating

from swine feces with even greater public health importance and may transport them to the surrounding urban environment".

While there is thought to be no risk to humans from eating properly cooked pork meat, the widespread use of antibiotics in confined swine production is likely to only increase the selection and evolution of antibiotic-resistant bacterial strains. While farm pigs continue to share their homes with insects, the risk of these resistant strains being transferred to humans via cockroaches and flies is an ever-present possibility. Effective management strategies aimed at reducing insect pest populations should be an important component of pre-harvest food safety efforts on animal farms.

More information: Insects in confined swine operations carry a large antibiotic resistant and potentially virulent enterococcal community, Aqeel Ahmad, Anuradha Ghosh, Coby Schal and Ludek Zurek, *BMC Microbiology* (in press).

Provided by BioMed Central

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