

MRSA found in British pig meat

The first evidence that British-produced supermarket pig meat is contaminated by MRSA has been found in new research commissioned by The Alliance to Save Our Antibiotics [1]. MRSA of livestock origin can cause serious and invasive human infections like blood poisoning, pneumonia, bone infections and heart infections. This study indicates that consumers eating pork twice a week may be exposed to MRSA every three months.

Helen Browning, chief executive of the Soil Association, said; *“The Alliance to Save our Antibiotics have been warning for years that UK pig farms could develop MRSA, as they have done across Europe, and that government should be testing routinely for this. It is vital to absolutely minimise the use of antibiotics in farm animals, and encourage systems that keep animals healthy without these drugs. Government must now take this issue seriously, and act to protect public health.”*

The emergence and spread in animals of antibiotic-resistant bacteria like MRSA is linked to overuse of antibiotic in farming. Animals are often given antibiotics routinely even when no disease has been diagnosed, creating favourable conditions for the survival of resistant bacteria which then can be passed to humans.

Research published this month has shown that the use on pig farms of cephalosporin antibiotics, which are classed as critically important in human medicine, “is strongly associated with MRSA in pigs” [10]. Unfortunately, the use of these antibiotics in British farming has been increasing for over a decade and is currently at close to record levels.

Cóilín Nunan, Principal Scientific Adviser to the Alliance, said: *“Livestock-associated MRSA is evolving and more dangerous variations are emerging. Scientists are warning it could ultimately lead to a pandemic spread in humans as so many animals carry the superbug” [2].*

The research was carried out by scientists at Cambridge University led by Dr Mark Holmes, and found that two samples of pig meat out of 52 bought from English supermarkets were positive for MRSA. One sausage sample had two different MRSA strains, and a third strain was found in pork mince. Genetic analysis (whole-genome sequencing) of the bacteria showed that the three MRSA were of livestock-origin and of a type called ST398.

Dr Mark Holmes said: *“Our findings indicate that MRSA ST398 is established in UK pig farms. The presence of this MRSA in retail meat clearly demonstrates a potential pathway for the transmission of antimicrobial resistance from livestock to the broader human population, and not just to those with direct contact with farm animals”.*

While adequate cooking will kill the MRSA, the threat lies in the fact that the bacteria can be transferred to people's skin when it is handled before cooking, potentially causing an infection at a later date.

People directly in contact with affected farm animals, including farmers and vets, are most at risk. However, an increasing number of cases are occurring in people with no direct livestock contact suggesting spread from retail meat, the environment or from human to human [8].

The Alliance to Save our Antibiotics is calling for the Government to tackle inappropriate use of antibiotics in farming, including steps to phase out routine preventative use of antibiotics, a ban on mass medication of animals in feed or drinking water where no disease has been diagnosed, and restrictions on the use of the critically important antibiotics.

Philip Lymbery, Chief Executive at Compassion, says: *"While the dangers of overusing antibiotics in human medicine are well documented, the impact of farm use has been generally under-publicised - which is surprising, given that animals currently account for around 45% of UK antibiotic use.*

"The causal link between on-farm antibiotic use and resistance in human infections is nevertheless widely recognised by organisations including the WHO and the EFSA."

Zac Goldsmith MP said *"In the light of these findings, ambitious targets must be set to tackle the misuse of these precious resources in farming, accompanied by a shift towards good husbandry, animal welfare and hygiene practices which reduce the need for drugs in the first place."*

In the light of these findings, the Alliance to Save Our Antibiotics is encouraging retailers to review standards for meat and animal products and to set clear specifications around the use of antibiotics and good animal husbandry. Members of the public can join the call for action from supermarkets by following the Alliance's twitter campaign - @ASOAntibiotics.

Notes for Editors

The Alliance is calling on major UK retailers to address antibiotic use in their supply chains. The following specifications should be set for nationally sourced UK meat and animal products in the first instance, followed by a widening of these specifications throughout the supply chain to ensure this covers imported meat:

- No modern cephalosporins used in pig production, poultry production or for dry-cow therapy. No off-label use of these antibiotics in any species.
- No fluoroquinolones used in poultry - including off-label use.
- Producers must demonstrate plans to phase out routine prophylactic on-farm use of antibiotics. This should include a commitment to stop all mass medication in feed or drinking water where no disease has been diagnosed in any of the animals in the group being treated.

MRSA ST398 first emerged in Dutch pigs over a decade ago, before spreading throughout the European pig industry, and is also widely found in poultry and intensively farmed veal calves [3][4]. Several human deaths have been reported in Denmark and Germany [5].

MRSA ST398 has been found in diseased pigs in Northern Ireland and England within the last year [6], but in contrast to many other European countries which regularly carry out monitoring surveys, the UK has consistently refused to carry out any systematic survey of British pigs [7]. The Alliance's supermarket meat survey therefore provides the first evidence of the spread of MRSA in the British pig industry.

After the emergence of MRSA and other antibiotic-resistant bacteria in Dutch farm animals, authorities in the Netherlands set ambitious targets for reducing overall antibiotic use.

Total farm antibiotic use in the Netherlands subsequently fell by 63% in six years, and a fall in the number of human cases of MRSA ST398 also occurred, providing evidence of a link between farm antibiotic use and antibiotic resistance in human infections [9].

Dutch scientist, Professor Jan Kluytmans, who first identified MRSA in Dutch retail pig meat in 2006 said: *“These findings in retail meat are highly suggestive for a reservoir in British pigs and a thorough investigation is warranted. Livestock-associated MRSA is able to cause serious and invasive infections in humans and is clearly related to an extensive reservoir in animals in the Netherlands and other countries”*.

Three key results, proving that consumers are not only aware, but genuinely concerned about antibiotic-resistance are from a recent Avaaz TNS public poll:

- 62% of Brits are alarmed about the risks of antibiotic-resistance.
- Two thirds (67%) of Brits respond that farmers should change their practices so that their animals don't routinely need antibiotics.
- 76% of the Brits think ministers should ensure that farmers only use drugs on sick animals, even if that reduces meat production

The Alliance to Save Our Antibiotics is an alliance of health, medical, environmental and animal-welfare groups working to stop the over-use of antibiotics in animal farming. It was founded by the Soil Association, Compassion in World Farming, and Sustain in 2009, and is supported by the Jeremy Coller Foundation. Its vision is a world in which human and

animal health and well-being are protected by food and farming systems that do not rely routinely on antibiotics and related drugs.

Compassion in World Farming is Europe's leading farm animal welfare organisation working to end factory farming and to achieve humane and sustainable food. With headquarters in the UK, we have offices in France, Italy, the Netherlands and Poland, Brussels and the Czech Republic, as well as operating in the US, China and South Africa.

The Soil Association was founded in 1946 by farmers, scientists, doctors and nutritionists to promote the connection between the health of the soil, food, animals, people and the environment. Today the Soil Association is the UK's leading membership charity campaigning for healthy, humane and sustainable food, farming and land use. Their aim is to see that good food should be available to everyone, wherever, or wherever they are. To find out more visit www.soilassociation.org

Sustain- the Alliance for better food and farming advocates food and agriculture policies and practices that enhance the health and welfare of people and animals, improve the working and living environment, enrich society and culture and promote equity. We represent around 100 national public interest organisations working at international, national, regional and local level.

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1. Hadjirin et al. 2015, Detection of livestock-associated meticillin-resistant *Staphylococcus aureus* CC398 in retail pork in United Kingdom, February 2015, *Eurosurveillance*
2. European scientists recently warned that a new subpopulation of MRSA ST398 is “serious hazard for humans” and may lead to a “pandemic spread in humans”. See Van der Mee-Marquet et al. 2014, Emergence of a novel subpopulation of CC398 *Staphylococcus aureus* infecting animals is a serious hazard for humans, *Frontiers in Microbiology*
3. In the UK, MRSA ST398 has been found on a poultry farm and in bulk milk from dairy cattle.
4. Köck et al. 2014, The impact of zoonotic MRSA colonization and infection in Germany, *Berl Munch Tierarztl Wochenschr.*
5. see <http://www.ssi.dk/English/News/EPI-NEWS/2014/No%2024a%20-%202014.aspx> and http://registration.akm.ch/2009eccmid_einsicht.php?XNABSTRACT_ID=83009&XNSPRACHE_ID=2&XNKONGRESS_ID=94&XNMASKEN_ID=900,
6. Hartley et al., 2014. Confirmation of LA-MRSA in pigs in the UK, *Veterinary Record*
Hall et al. 2015, Livestock-associated MRSA detected in pigs in Great Britain, *Veterinary Record*

7. In 2009, an EU mandated survey of pig farms tested dust samples for the presence of MRSA. No MRSA was found on UK farms. However, most EU countries have carried out additional national surveys, where swabs taken directly from the pigs are tested.
8. Deiters et al. 2015, Are cases of Methicillin-resistant Staphylococcus aureus clonal complex (CC) 398 among humans still livestock-associated?, Int J Med Microbiol.
9. Data on number of cases of MRSA ST398 in Dutch people is available from the National Institute of Public Health and the Environment
10. Dorado-García et al. 2015, Dose-Response Relationship between Antimicrobial Drugs and Livestock-Associated MRSA in Pig Farming, Emerging Infectious Diseases
11. The Alliance to Save Our Antibiotics is an alliance of health, medical, environmental and animal-welfare groups working to stop the over-use of antibiotics in animal farming. It was founded by the Soil Association, Compassion in World Farming, and Sustain in 2009, and is supported by the Jeremy Coller Foundation. Its vision is a world in which human and animal health and well-being are protected by food and farming systems that do not rely routinely on antibiotics and related drugs