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Hearing on H.R. 1549, the Preservation of Antibiotics for Medical Treatment Act of 2009
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Thank you for the opportunity to submit written testimony on this important issue. As scientists working for the National Food Institute at the Technical University of Denmark, we have long studied the looming public health threat of antibiotic resistance (our curriculum vitae are attached at the conclusion of this testimony). We work closely with the U.S. Centers for Disease Control and Prevention, World Health Organization, the European Union and other individual countries to track and study the growing crisis due to the overuse of antibiotics in humans and animal agriculture. This testimony focuses on a study we recently concluded on what has become known as the “Danish experience” – a ban by the government of Denmark on the nontherapeutic use of antibiotics in the feed and water of swine.

The U.S. uses more antibiotics on a per pound basis in the production of meat and poultry, than any other developed country (see Figure 1). We believe you will find our research findings to be particularly helpful as your Congress and new Administration deliberate how to stem the rising tide of antibiotic resistance. As you may be aware, representatives of organizations funded by U.S. agri-business have criticized and mis-represented the facts on the Danish ban of antibiotics since its inception. Our goal is to set the record straight by presenting our key findings in this testimony. The data have been publicly available in the English reports of our national monitoring reports of drug usage and animal health. Furthermore, we have recently compiled the data for a more extensive publication in a scientific journal in the near future.

As way of background, soon after their discovery in 1928, antibiotics were introduced in veterinary medicine to treat sick farm animals and later to promote their growth. Since the 1950s, antibiotics have been an integral part of industrial food animal production. However, due to rising concerns over antibiotic-resistant bacteria transmitting from animals to humans, efforts to promote prudent use of antibiotics in food animal production were launched in many countries in the 1990s. Both Denmark and the European Union (EU) have taken regulatory actions on the non-therapeutic use of antibiotics in food animals. It is important to note here that while both the Danish and EU bans prohibit the inclusion of non-therapeutic antibiotics in animal feed, the full arsenal of antibiotics remains available to veterinarians to treat sick animals and herds. The

other important aspect is that this use requires a veterinarians prescription, the bulk of the drugs are sold by the pharmacy, not the prescribing vet (to limit financial incentives to prescribe), and that flouroquinolones, which are particularly important for human medicine, only can be administered by injection, not by feed or water.

Denmark is a major provider of pork in the world, producing more than 26 million swine and exporting 90 percent of the production each year. In 1998, the Danish government instituted a voluntary ban on the non-therapeutic use of antimicrobials in pork production at the finishing stage. Faced with a tax of \$2.00 per pig if they did not comply with the voluntary ban, most producers did stop using antibiotics at the finishing stage. On January 1, 2000, Denmark banned non-therapeutic antimicrobials at both the weaning and finishing stages.

Key Findings:

- Total antibiotic usage for kg of pork decreased by more than 50 percent from 1992-2007 while overall swine productivity has significantly improved in total Danish pig production has increased by 43 percent (from 18.4 to 26.3 million pigs produced) and the average number of pigs produced per sow per year increased from 21 to 25 (an important indicator of swine health and welfare). (See Figure 2)
- The highest consumption of antimicrobials for swine occurred in 1992 (100 mg antimicrobial/kg pig produced) and the lowest in 1999 (31 mg/kg). Since then, the use has gradually increased to 47 mg/kg in 2007, in part due to the emergence and spread of a number of new infectious diseases. However, by way of comparison, the U.S. uses 250-300 mg/kg. (See Figure 1)
- Weaner mortality increased gradually from 1993 to 2003, but has reduced to pre-ban numbers. In addition, weaner average daily weight gain decreased slightly from 1992 to 2000, where after it has increased. Finisher mortality has been slowly increasing from 1993 to 2007. Finisher daily gain seems to be unaffected by the changes in drug usage. (See Figure 2)
- Although year-to-year variations in productivity of swine make it difficult to determine short-term impacts, it is clear that over the long-term, swine productivity has increased even as antimicrobial use has decreased.

These facts suggest that the discontinuation of non-therapeutic antibiotic use has not negatively impacted long-term swine productivity in Denmark. The facts outlined show that long-term swine production in Denmark has not been negatively impacted by the ban on non-therapeutic antibiotic use.

Please feel free to contact Professor Frank Møller Aarestrup, National Food Institute, Bülowsvej 27, DK-1790 Copenhagen V, Denmark for background materials or other information you may need.

Figure 1: Comparison of antimicrobial use on a pound per pound basis among top meat producing countries. On the U.S. line, the black bar is the estimate of 70 percent calculated by the Union of Concerned Scientists and the grey bar is the estimate calculated by the Animal Health Institute.

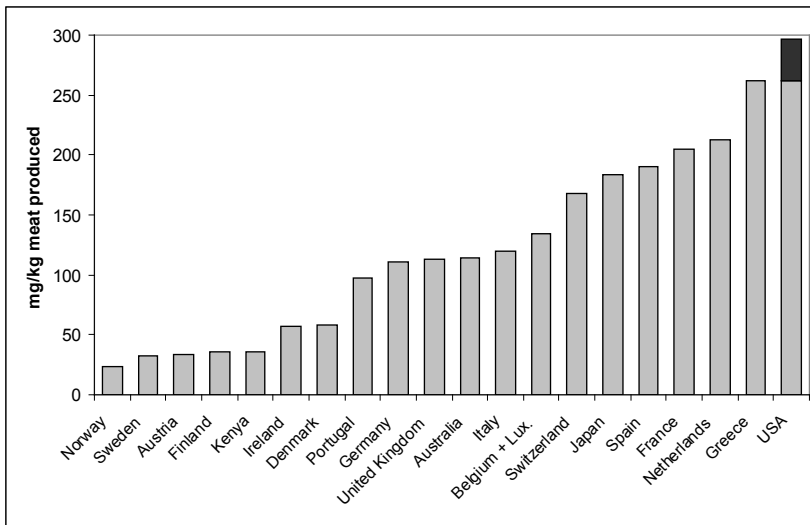


Figure 2: Selected productivity data from the Danish pig industry (<http://www.dansksvineproduktion.dk>) from October 1992 to October 2007. Each year indicated is from October to October, except the total production, which is the calendar year. Thus, the production for 1992 is given under 1991-92. The ban for finishers was April 1, 1998, and the ban for weaners was January 1st 2000. FE: feed units per kg produced meat.

