Actions for the food industry

Reducing antibiotic resistance will require collaboration between primary producers, manufacturers, retailers, the pharmaceutical industry, regulators and consumers. Alternate strategies will be required in animal production and aquaculture systems as the use of antibiotics for growth promotion is phased out. This has already occurred in the EU. However developing countries are likely to maintain antibiotic use in animal production techniques and practices.

Alternatives to antibiotics are moving into the global animal production arena. Approaches that include probiotics, prebiotics, dietary modifications and the use of essential oils. Farmers and suppliers will need to identify and implement control measures.

A thorough risk assessment must be carried out based on the inherent risks unique to the country or region. In the meantime, what can individual food companies do to get antibiotic resistance on the radar of your business?

In the meantime what can individual food companies do to get antibiotic resistance on the radar of your business?

Minimize the risk:

• Increase supply chain transparency and traceability to identify the true source of the meat to expose the inherent risks unique to the country or region.

• Carry out a thorough risk assessment based on:
  • Product type
  • Livestock origin
  • Agricultural production systems used
  • Rigour of on-farm quality assurance programmes
  • Strength of governing regulations and compliance to MRLs
  • Presence of resistant bacteria

• Country and region specific control measures:
  • Insist the source of supply to approved suppliers
  • Know your suppliers and understand their animal production techniques and practices
  • Request compliance to rigorous primary producer assurance schemes which specify the use of registered agriculture chemicals, appropriate training, the implementation of accurate chemical treatment records and a process to ensure adherence to pre-processing withholding periods
  • Request certificates of analysis for antibiotic residue testing or screening processes for antibiotic-resistant bacteria

• Request compliance to rigorous primary producer assurance schemes which specify the use of registered agriculture chemicals, appropriate training, the implementation of accurate chemical treatment records and a process to ensure adherence to pre-processing withholding periods

• Require certificates of analysis for antibiotic residue testing or screening processes for antibiotic-resistant bacteria

• Conduct independent analytical microbiological testing for resistant bacteria

• Reward industry progress.

• Certification bodies will be part of the mix to recognize and reward industry progress

• Paddock-to-plate assurance schemes and the introduction of rigorous primary producer schemes, you can help manage antibiotic resistance in the food supply chain and deliver a better product to your customers.

Food retailers will also then exert pressure on supply chains to provide greater transparency around antibiotic use and antibiotic resistance. Non-transparent supply chains which do not have robust and reliable certification bodies will be part of the mix to recognize and reward industry progress.

In the meantime what can individual food companies do to get antibiotic resistance on the radar of your business?

In the meantime what can individual food companies do to get antibiotic resistance on the radar of your business?

References:


Antibiotic-resistance bacteria are predicted to kill 10 million people every year by 2050.¹ No country will be immune as common pathogenic bacteria are rapidly becoming resistant to many of the antibiotics used in human health. The overuse and misuse of antibiotics in humans and the widespread use of antibiotic-products together with the prolonged use of antibiotics in our animal production systems has led to the inevitable emergence of antibiotic-resistant bacteria.

With the advent of antibiotics, the mid-20th century saw a lowering of morbidity and mortality rates as they were hailed as a ‘wonder drug’ and an ‘instant treatment’ for bacterial infections. The use of antibiotics in agriculture has been similarly developed and the long term efficacy of antibiotics in question. There is little doubt that antibiotic usage would have been much more pronounced in both humans and animals had it not been for resistance.

Resistance is a natural evolutionary process involving random genetic mutations where bacteria with exposure to levels of antibiotics eventually develop resistance against a specific antibiotic or group of antibiotics. The dilemma is that the main use for antibiotics, whether in humans or animals, the less effective they become.

Antibiotic use in animal production systems

The problem isn’t simply that antibiotics have been used in animal production systems. It’s the way they have been used, with variations in use over an extended period of time. Many developed and developing countries are facing an antibiotic resistance problem today. The use of antibiotics leads to a greater variety of the antibiotics the bacteria is exposed to over time and this increases the pressure on the bacteria to evolve resistance. This can then be passed from food or the environment on to humans and is very difficult to control. In some cases this has led to resistant bacteria in the food supply chain.

There are several ways multi-resistant bacteria can be transferred from one animal species to another and from animals to humans. The effectiveness of antibiotic use in animal production systems in three different ways:

1. Treating animals with acute bacterial infections (therapeutic use)
2. Preventing infections (prophylactic use)
3. Modifying (growth promotion)

Antibiotic residues

The therapeutic use of antibiotics in food producing animals will continue as the foreseeable future as they provide a cost-effective solution to acute disease. However, the standards in most countries define the maximum levels of antibiotic residues that can be present in food-producing animals and humans using antibiotics over their time. As the human population increases, so does the global demand for animal proteins. However, this is leading to a declining dependence on antibiotics in animal production. The continued use of antibiotics in animal production systems still provide a cost-effective solution to acute disease in different animal species. However, the therapeutic use of antibiotics in animal production systems has led to the inevitability of antibiotic resistant bacteria in food producing animals.

Multi-drug-resistant bacteria

Pathogenic bacteria cause disease. When antibiotics are administered to animals in their feed, they can then be passed from food or the environment on to humans and are very difficult to control. In some cases this has led to the emergence of antibiotic-resistant bacteria in our food.

Antibiotic residues

The presence of antibiotic residues in animal-derived food has been a known human health risk due to low-level antibiotic exposure, resulting in the emergence of antibiotic allergies. These low-level exposures can cause allergic reactions in some individuals. Antibiotic allergies are found in both animals and humans. In most countries, MRLs define the maximum concentration of residue that is considered safe for animal-derived food. The actual MRLs for various substances may vary between countries and the scale and frequency of the testing program varies considerably. While raw meat is routinely tested for the presence of antibiotics, this is not the case with animal-derived food. The evolution of antibiotic-resistant bacteria will continue with the culture used in meat production and disease diagnosis.

Foodborne infection outbreaks where antibiotic-resistant Salmonella and E. coli are known to cause an estimated 50,000 antibiotic-resistant infections in the United States alone each year. “Antibiotic-resistant” or multi-drug-resistant Salmonella has been found to be resistant to the in vitro tests, even in patients in hospital, “tolerated by ground-beef and poultry” in USA in 1995, 2005, 2010 and 2014. Antibiotics are also used extensively in aquaculture. Formed fish production in Asia has increased dramatically, with over 75% of the world’s aquaculture products being produced in farmed shrimp and carnivorous fish. Depending on the quality of farmed shrimp and the husbandry practices, antibiotic levels may exceed the tolerance levels of the aquaculture operations. In the wild, antibiotics are used to stimulate growth and enhance animal health.

Our products and services

Why BSI?

We believe the world should be supplied quality food that is both safe and sustainable. We’re leading a food safety certification provider with extensive auditing for a wide range of food safety standards across the entire food and beverage supply chain – including Global Food Safety Initiative recognized standards. Our services for the food sector include certification, training, assessment and supply chain solutions. Combined, they can help assure your customers and make your organization more resilient by enabling you to manage the risks and opportunities associated with your products, processes, people and respective supply chains. With over 2,800 food and ag-food standards in our portfolio, we’re well positioned to support the industry and the challenges faced by the supply chain including food safety, food security, land usage, energy and water and corporate social responsibility issues.

For more information visit bsi.group.sg or email info.sg@bsigroup.com

¹. Foodborne infection outbreaks where antibiotic-resistant Salmonella and E. coli are known to cause an estimated 50,000 antibiotic-resistant infections in the United States alone each year. “Antibiotic-resistant” or multi-drug-resistant Salmonella has been found to be resistant to the in vitro tests, even in patients in hospital, “tolerated by ground-beef and poultry” in USA in 1995, 2005, 2010 and 2014. Antibiotics are also used extensively in aquaculture. Formed fish production in Asia has increased dramatically, with over 75% of the world’s aquaculture products being produced in farmed shrimp and carnivorous fish. Depending on the quality of farmed shrimp and the husbandry practices, antibiotic levels may exceed the tolerance levels of the aquaculture operations. In the wild, antibiotics are used to stimulate growth and enhance animal health.

Our products and services

Why BSI?

We believe the world should be supplied quality food that is both safe and sustainable. We’re leading a food safety certification provider with extensive auditing for a wide range of food safety standards across the entire food and beverage supply chain – including Global Food Safety Initiative recognized standards. Our services for the food sector include certification, training, assessment and supply chain solutions. Combined, they can help assure your customers and make your organization more resilient by enabling you to manage the risks and opportunities associated with your products, processes, people and respective supply chains. With over 2,800 food and ag-food standards in our portfolio, we’re well positioned to support the industry and the challenges faced by the supply chain including food safety, food security, land usage, energy and water and corporate social responsibility issues.

For more information visit bsi.group.sg or email info.sg@bsigroup.com

Antibiotics and the emergence of antibiotic-resistant bacteria in the food chain

Knowledge

The core of our business revolves around the knowledge that we create and impart to our clients. Knowledge is power. In the standards arena we continue to push the boundaries of our expertise by creating a body of work that is recognized at both regional and international levels. In fact, BSI was originally created around the knowledge that we create and impart to our clients.

Accuracy

BSI is an independent international standards organization. We are the world’s top 12 management systems standards provider.

Compliance

To experience real, long-term benefits, our clients need to ensure ongoing compliance to a regulation, standard or framework that is tailored to their particular industry. We provide a range of services and differentiated management tools that help facilitate this process.