

# Manage, not ban antibiotics

ANTIBIOTICS are an important component in human and animal medication. Their use in the agriculture sector cannot be banned but needs to be monitored closely to reduce unnecessary usage.

In developed countries, antibiotics are used widely to treat diseases in animals and humans.

As with humans, the initial purpose of using antibiotics in animals is to treat bacterial infections.

However, antibiotics use has been extended to prevent infections and as a growth promoter.

Antibiotics that are used widely without control in livestock and aquaculture industries may cause side effects to the animals, humans and also the environment.

Currently, the use of antibiotics in livestock and aquaculture industries in the world is difficult to regulate as each country has different registration requirements and monitoring programs.

However, for most countries including Malaysia, the use of antibiotics in livestock, including

poultry, is monitored by the Veterinary Services Department, by which its use is disallowed one week before the animals are processed.

The emergence of antibiotic-resistant bacteria in animals may cause risks to the general health. Such bacteria can be transferred to humans, especially among farmers and slaughterhouse workers.

Bacteria transfer may also occur through improperly cooked meat.

Also, the existence of antibiotic-resistant bacteria may act as a reservoir to antibiotic-resistant genes which can be transferred to animals and human pathogens.

The use of antibiotics may also disrupt microbes in the environment. This is especially so when large amounts of antibiotics used in farm animals are excreted into their urine and stool which will later spread into the soil, air or other environment surfaces.

This practice will encourage the production of antibiotic-resistant microorganisms in the environment.

The increase of antibiotic-resistant bacteria and antibiotic residues can be addressed through the development and innovation of bacterial vaccines and alternative therapies.

Vaccines are the best approach to prevent infectious diseases but cannot be used to treat existing infections. Furthermore, bacterial vaccines of importance to the livestock and aquaculture industries are still lacking.

Vaccines against pathogenic bacteria have many benefits since the immune responses produced can prevent bacterial colonization and infections.

Hence, vaccines prevent infections and reduce dependency on antibiotics.

The Norwegian government has reduced the use of antibiotics in salmon - the main source of the country's food and exports - through the use of vaccines against bacterial infections.

This policy has reduced significantly, the use of antibiotics in Norway's aquaculture industry without affecting its production.

Alternative therapies are plant-based products (phytobiotics), prebiotics and probiotics as supplements for the animals.

However, the use of phytobiotics as a supplement in the feed is not widely practiced. Most phytobiotics are only effective against certain bacteria and are less effective than antibiotics.

Useful microbe-based products such as prebiotics, probiotics and bacteriophages can prevent pathogenic bacterial infections and subsequently, reduce the use of antibiotics to treat infectious diseases in animals.

Currently, the Institute of Bioscience, Universiti Putra Malaysia, is developing several innovations, namely vaccines, phytobiotics, probiotics, prebiotics and antimicrobial peptides which are being tested for their effectiveness against pathogenic bacteria.

To reduce dependency on antibiotics, farm cleanliness must be improved while infected animals should be isolated and given proper action.

Uncontrolled use of antibiotics

in intensive livestock and aquaculture industries may lead to the spread of bacterial diseases due to the emergence of antibiotic-resistant bacteria in animals and humans as well as the side effects which pollute the microbes in the environment.

Although alternative therapies have potential, they are unable to replace the use of antibiotics in animals. More research funding is needed to start early research into a new class of antibiotics, effective vaccines and alternative therapies against bacterial pathogens which are commonly found in farm animals, including fish and shrimps.

Improved surveillance is also crucial in determining the extent of antibiotic use in a given sector.

More programs are also needed to better explain the issues concerning antibiotics use in livestock and aquaculture industries.

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