

The advantages of antibiotic testing

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Antibiotics have signaled a major medical breakthrough over the past half century and are now widely used by veterinarians on dairy farms. However, for all their inherent benefits they have not been without difficulties.

With issues surrounding antibiotic resistance increasingly under the media microscope as well as problems associated with antibiotic residues in foodstuffs of animal origin – how can the negative effects of widespread antibiotic use be avoided?

Any antibiotics used on dairy farms carry the risk of contaminating milk and milk products.

Prevention of antibiotic residues in milk is, therefore, a key concern for all farmers who want to avoid the penalties associated with contaminated milk.

This depth of concern has put the spotlight on antibiotic residue testing on products of animal origin, especially milk and milk products. Can on-farm testing play an essential role in contamination prevention and help to allay concerns over the effects of antibiotic use?

All about antibiotics

First discovered in 1928 by Alexander Fleming, antibiotics have been used to treat a range of human illnesses to great effect since the

1940s. Soon after, their success in human medicine was transferred to veterinary science. Veterinarians quickly recognised that these substances – able to destroy bacteria or slow down their growth

– could also be used to treat animals as well as improve their general health.

Not only that but they could even be used as production enhancers.

Today, veterinary antibiotics are not just used on the farm for disease prevention or to destroy pathogens which cause illness.

Other applications include diminishing the effects of illness, such as reducing inflammation. Intramammary treatment at dry off illustrates how antibiotics can be used to prevent infection – in this case during the high risk involution period.

Contamination consequences

However, antibiotic treatment of animals can have indirect and potentially negative consequences on food and beverages of animal origin.

In milk and milk products in particular, the presence of antibiotic residues can be particularly problematic and inhibit the acidification process by acting upon the lactic acid bacteria required to create cultured dairy products.

This means that the contaminated milk and milk products used in this process must be discarded, causing huge losses for processors. More often than not, these costs are referred back to the producer.

Concerns over the effect of antibiotic residues in milk and milk products have also spread to their impact on human

health.

Research is currently underway into allergic reactions resulting from residual antibiotics, such as penicillin, found in food and beverages of animal origin following a number of cases.

What is more, recent studies have also indicated that antibiotic residues in food products can have an effect on bacterial flora in the human digestive tract – affecting overall health.

These health considerations, alongside increased antibiotic resistance, have led to regulations – such as official MRLs (maximum residue levels) and waiting periods after treatment – to safeguard the dairy industry and protect the wholesome image of milk.

With milk and health intrinsically linked, this positive perception must be maintained to sustain the integrity and the economic value of the industry.

Prevention planning

So, how do we reduce these levels of risk and avoid the associated financial penalties? A complete ban on antibiotics is, under current conditions, impossible.

At the very best it is impractical and would set veterinary science back many years. However, due to the financial penalties involved, dairy farmers must work hard to reduce risk levels and take preventative measures to safeguard their income.

Risk analysis is key to any prevention strategy and contingency plans must be in place on the farm.

An understanding of the form of antibiotic and the treatment period is fundamental for dairy farmers.

Antibiotics can have different effects on the animal dependent on its type, the dose administered and the methods of administration and elimination.

For example, antibiotics often affect all

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milk produced by a cow – even if only one quarter of the udder has been treated.

In addition to a greater understanding of antibiotic use and prevention planning, antibiotic residue testing is vital to reduce contamination and as a result, avoid financial penalties.

By taking veterinary advice on antibiotic use, understanding withdrawal periods and respecting protocols, farmers can help prevent contamination.

However, testing milk, both from the individual animals and in the tank, is still neces-

sary to ensure that milk is antibiotic residue free. Broad spectrum antibiotic residue tests offer dairy farmers the added security they require.

Microbiological tests, such as Delvotest from DSM Food Specialties, Dairy Ingredients, are effective in preventing contaminated milk entering the food chain.

These cost effective and easy to use tests detect the presence of a wide range of antibiotics thanks to a bacterial strain – *Bacillus stearothermophilus*.

This test changes colour when no antibiotic residues are present or when they are

below the sensitivity level of the test. Used all around the world, Delvotest has been developed especially to guarantee milk is safe, wholesome and ready for processing. What is more, this test meets most international regulatory requirements.

DSM has created a 10 point plan for Delvotest to advise dairy farmers on the best way to prevent contamination incorporating valuable guidance on reducing and evaluating risks, identifying treated animals and testing methods to ensure cost efficiencies.

The Delvotest 10 point plan can help farmers to avoid contamination on the farm and ensure cost efficiencies.

The Delvotest 10 point plan

- Prevent diseases with a full and detailed contingency plan.
- Understand the length of treatments and use the correct antibiotic dosage.
- Be aware of withdrawal time.
- Clearly identify which animals have been treated.
- Discard the milk from all four quarters, even if only one quarter was treated.
- Isolate any dry animals.
- Confirm the estimated withdrawal period – whatever the treatment.
- Keep accurate treatment records for each animal.
- Check for any antibiotic residues in milk.
- Evaluate risk to prevent future contamination.

Summary

Antibiotic residue testing is vital for farmers to prevent contamination. Valuable dairy cows will always be at risk of illness and effective treatment is vital.

However, with concerns growing over the effects of antibiotic residues on humans and their impact on the dairy industry, farmers must be sure their milk is of the highest quality and is residue free.

Delvotest provides an effective solution and the implementation of the Delvotest plan can help farmers prevent contamination and importantly avoid economic losses. ■