Alternatives to drugs in poultry feed and their impact on food safety

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Summary
Public demand for safe, healthful food is at an all-time high. Consumers want meat from animals raised without drugs to the greatest extent possible.

Poultry is no exception. For poultry producers, however, food safety issues present a challenge. Raising healthy birds without drugs and remaining economically viable requires finding new ways to manage disease.

One of the most serious, widespread and costly diseases in poultry is coccidiosis, the result of infection with the protozoan parasite Eimeria spp. Traditionally, coccidiosis has been controlled with the use of in-feed drugs. Today, more producers are turning to vaccination for control of the disease, which enables birds to build immunity against the parasite naturally.

Vaccination for coccidiosis enables poultry producers to eliminate the use of drugs known as anticoccidials — the last category of antimicrobial feed additives that will be allowed in Europe until the year 2006. After that time, all in-feed antimicrobials will be prohibited from use in poultry as well as other species. The change will benefit the image and perception of poultry meat by consumers.

When vaccination is coupled with good management, particularly high quality nutrition, it greatly reduces or eliminates the need for drugs used to control coccidiosis as well as other conditions in birds. At the same time, it allows producers to be as cost competitive as when they used anticoccidials.

Schering-Plough Animal Health Corporation, headquartered in the United States, is the manufacturer of the Paracox® lines of coccidiosis vaccines for poultry. The vaccines, along with backup support developed by Schering-Plough Animal Health, are enabling an increasing number of poultry producers to protect their flocks from serious disease and, at the same time, provide a return on investment by improving poultry health, performance and profit.

Introduction
Public demand for safe, healthful food is at an all-time high. Although the campaign for drug-free food production is a worldwide trend, Europeans have led the way and the trend is expected to continue far into the future.

Poultry products are no exception to the trend. Consumers want poultry meat and eggs from birds raised without drugs to the greatest extent possible. For livestock producers, food safety issues present a challenge. Raising healthy animals without drugs and remaining economically viable requires finding new ways to manage disease.

One of the most serious, widespread and costly diseases of poultry is coccidiosis, the result of infection with the protozoan parasite Eimeria spp. The parasite causes intestinal tissue damage and it interferes with food digestion and the absorption of nutrients, which results in weight loss and bloody droppings. Many birds can die. If birds live, they are predisposed to other gut infections such as a serious condition known as necrotic enteritis, caused by the bacteria Clostridium perfringens.

Traditionally, coccidiosis has been controlled with the use of in-feed drugs known as anticoccidials. Consumer desire for more natural meat, however, as well as Eimeria resistance, which is lessening the effectiveness of anticoccidials, is prompting more poultry producers to look for alternative methods of controlling coccidiosis.

Many poultry companies are turning to vaccination, which enables birds to build immunity against Eimeria parasites naturally. When vaccination is coupled with good management, particularly high quality nutrition, it greatly reduces or eliminates the need for drugs.
Schering-Plough Animal Health Corporation, headquartered in the United States, is the manufacturer of the Paracox® line of coccidiosis vaccines for poultry. Paracox (known as Paracox-8 in some countries), is used in breeders and layers and was introduced 15 years ago; it was the first commercially licensed coccidiosis vaccine in Europe. Paracox-5, introduced in 2000, is a sister product for use in broilers. The vaccines, along with backup support developed by Schering-Plough Animal Health, greatly reduces the need for in-feed drugs. In fact, vaccination is enabling an increasing number of poultry producers to protect their flocks from a serious disease and, at the same time, provide a return on investment by improving poultry health, performance and profit.

Food safety concerns

Public concern about the use of drugs in animals has focused largely on the use of antibiotics administered in feed to promote growth rather than to treat disease. In-feed antibiotics such as avilamycin and flavomycin have served an important role in maintaining and promoting good poultry health, but evidence has emerged that their use in animals ultimately could contribute to the development of resistant bacteria in people. Even though this correlation has been a controversial scientific issue, the use of in-feed drugs in animal feed in the European Union will be prohibited as of January 01, 2006.

Another type of in feed product administered to animals are the so-called ionophore antibiotics, such as monensin sodium, lasalocid and salinomycin sodium, which are primarily used to control coccidiosis in chickens. The use of these anticoccidials in livestock doesn’t seem to be related to the development of resistance in humans. However, their toxicity to non-target species and the potential contamination of meat, animal feed and the environment with residues have made a growing number of poultry producers discontinue their use in favour of drug-free alternatives such as vaccination.

Antibiotic ionophors have been also used in-feed as growth promoters in cattle and swine production due to their antibacterial effect. The use of these drugs as growth promoters will be among the drugs prohibited in the European Union from 2006 onwards.

There are practical examples of how these concerns affect the Industry. Residues of lasalocid have been found in eggs in the United Kingdom and other European countries, even though the product is forbidden for use in laying hens. Consumer organizations have raised concern that lasalocid may be toxic. It is thought that some birds may have incorrectly received lasalocid due to human error or errors made at the feed mill, according to the United Kingdom's Food Standards Agency.

More recently, the impact of antibiotic feed additives on public water systems has come into the spotlight. In the United States, a Colorado State University study showed that monensin, salinomycin and other, similar drugs, were making their way into public waterways. It is not yet known if there is any potential toxic danger to people or impact on the development of resistant infections, but the study has put the spotlight on pharmaceuticals in urban wastewater.

Another concern about the use of antibiotic ionophores is the development of drug resistance affecting animals. The sensitivity of *Eimeria* parasites to ionophore anticoccidials is declining; these in-feed products are not as effective as they once were, resulting in less than ideal coccidiosis control in poultry.

Animal welfare is an additional concern associated with the antibiotic ionophores. Since they are not completely effective, result of the widespread resistance, medicated birds may suffer from mild or subclinical cases of the disease, and are particularly susceptible during the mandatory withdrawal period. Vaccinated birds, on the other hand, are completely immune from the infection, thus enjoying greater animal welfare.

In-feed anticoccidials can present other practical problems for producers. They must be withdrawn from feed a predetermined number of days before animals are sent to market, limiting the producer’s flexibility in meeting market demand.

To respond to these concerns and problems, the European Union has completely revised rules about the use of anticoccidials, which take full effect in 2008. It is anticipated that by 2012, the use of in-feed anticoccidials will be completely prohibited.

Some poultry companies are not waiting for further restrictions on in-feed antibiotics. They are voluntarily eliminating the use of these products. Public desire for more natural food is further evidenced by the growth of the organic food industry.
The solution: Vaccination

Vaccination against coccidiosis provides a way for poultry producers to control coccidiosis without the use of in-feed antimicrobials. It enables animals to naturally build immunity against disease and eliminates concern about antibiotic resistance and residues in food. Only one application of Paracox, for instance, which is sprayed onto feed or directly onto chicks, provides solid protection against coccidiosis.

In several European countries, Paracox-8 for breeders and layers is already well established. In Western Europe alone, almost 100% of breeders receive the vaccine. Paracox-5 for broiler chickens is steadily gaining ground as more producers learn about its advantages.

Numerous studies have shown that the Paracox vaccines are not only safe for birds, but that birds receiving coccidiosis vaccination perform just as well or better than birds raised with in-feed drugs for coccidiosis control. Paracox vaccines are already helping scores of poultry producers raise chickens more efficiently and, at the same time, meet social demands for safe foods, including residue-free eggs.

Vaccination has other advantages for the poultry industry: It eliminates the problem of Eimeria resistance that has occurred with in-feed anticoccidials. In addition, there is no withdrawal time with the vaccine as there is with drugs, so producers can be flexible about when they send their birds to market and can better meet market demand as it arises.

BACK-UP SUPPORT

Vaccinating birds against coccidiosis is not a new concept but, in the past, administering the vaccine evenly to chicks was difficult; not all chicks received the vaccine, which prevented producers from achieving the best results. This problem has been solved largely through the development of new technology.

The SpracyCox® spray cabinet, developed by Schering-Plough Animal Health, enables producers to administer the vaccine evenly to chicks and the company strives to continually improve the equipment. The more recently developed SprayCox® II features dual angled nozzles that provide “down and in” alignment for even more complete, uniform coverage. An AirMix system recently was developed that improves mixing of the vaccine before administration.

Because proper use of Paracox vaccines is necessary to achieve optimal results, Schering-Plough Animal Health provides strong technical help to poultry producers. Representatives from the company provide producers with one-on-one training on proper vaccine application and personal assistance to any producers that encounter problems.

The company has developed the IDEA Program, a nutritional plan that fosters healthy development of the intestinal tract and immune system at an early age. The program improves feed efficiency and growth in vaccinated birds. Good nutrition helps minimize or eliminate health problems such as necrotic enteritis, which is more likely to strike birds with an unhealthy intestinal tract and traditionally was controlled with in-feed antibiotics.

The IDEA Program enables poultry producers to save money on feed costs at the end of the grow-out period. Since birds have a healthier gut developed early in life, producers do not need to use more expensive diets for as long throughout the production cycle; they can switch to a less costly withdrawal diet, also known as finisher feed, sooner.

Conclusion

Schering-Plough Animal Health is committed to helping poultry producers find ways to raise healthy bird without drugs. Vaccination against coccidiosis is an important way that producers can protect their flocks against coccidiosis and meet public demand for more natural meat. Vaccination eliminates worries about residues in poultry meat and eggs. It gives producers more flexibility in marketing their birds.

Numerous studies and experience at top European poultry companies have shown that birds properly vaccinated against coccidiosis perform just as well or better than birds that receive traditional in-feed anticoccidials. When producers provide vaccinated birds with good management, including a sound nutritional plan that fosters healthy development of the intestinal tract at an early age, other serious problems such as necrotic enteritis an also be curtailed or prevented.