Continuing effectiveness

How, then, does one explain the continuing effectiveness of ionophores under commercial conditions after many years of continuous use (Chapman et al., 2010)?

The answer is twofold. First, because of the fact that ionophores allow some development of subclinical coccidiosis by ionophore-sensitive coccidia, even at the highest approved concentration of the respective ionophore, the level of genetic selection pressure exercised against field strains of coccidia has probably plateaued, and such coccidia strains can probably not become totally resistant to ionophores, unlike resistance to the chemical anticoccidials — where the genetic selection pressure is much higher and the genetic basis for resistance is much simpler.

Second, although a degree of resistance to the ionophores can be developed through selection in the laboratory, the extent of resistance is limited by the fact that feed intake is reduced at ionophore concentrations in the feed above the highest approved level, therefore limiting the ability to increase the genetic selection pressure by increasing the ionophore concentration in the intestines of the birds used to propagate the selected strains of coccidia.

Thus, when used in commercial broiler production, the ionophores allow for continuous low-level infections of coccidia while preventing damaging clinical coccidiosis. This, in turn, provides the basis for the development of protective immunity to coccidiosis in broilers, even when medicated with the highest approved level of the ionophore (Chapman, 1978).

In summary, classical anticoccidial sensitivity tests cannot mimic what has, over time, become the perfect host/parasite relationship between broiler chickens and coccidia though the long-term use of ionophore-based anticoccidial programs.

The periodic examination of randomly chosen broiler chickens for lesions due to coccidiosis remains the most effective way to monitor anticoccidial programs (Feedstuffs, Jan. 23, 2012).

References


