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Medication Control from 1900 to the Present

by Thomas Tobin, MVB

About 95 years ago prohibitions against the use of performance-altering drugs in horses were first introduced into racing. This concept was expressed in the simple rule that the detection of any substance foreign to the natural horse was an offence against the rules of racing.

Since then, the development of modern analytical chemistry and improvements in veterinary science have made this simplistic concept unworkable. Nowadays, we have well-established thresholds for dietary and environmental substances, several thresholds/cutoffs/detection levels for therapeutic medications and a detailed classification scheme for about 1,000 foreign substances found or likely to be found in horse urine.

More recently, the American Association of Equine Practitioners (AAEP) has listed about 50 therapeutic medications that veterinarians routinely use in the treatment of horses. It is important that these medications be available for the proper care of horses in training and that treatment of horses in training not be inhibited by fear of detection of ineffective residues or "tell-tails" of therapeutic medications.

In this regard, the Association of Racing Commissioners International (ARI) has recommended that all chemical identifications be reviewed by a veterinarian to prevent the "calling of positives" on such ineffective traces of therapeutic medications. Beyond this, research programs are in place that are developing data on detection times and analytical/pharmacological relationships to guide practicing veterinarians in their administration of these medications, and regulatory veterinarians in their review of trace therapeutic medication identifications.

Judging from some contemporary prints that have come down to us from 150 years ago, racing regulators in those times did not take notable exception to the "medication" of horses before a race. One of my favorite prints from this time shows the preparation for a match race in which both horses are being openly administered materials presumably medicinal from bottles within minutes of post time. In those days, of course, pharmacology was much less well developed than it is today, and analytical chemistry, in terms of drug detection, was, for all practical purposes, non-existent. In those days, therefore, you could probably medicate your horse with anything you could get your hands on and the chances were that little or nothing ever would or could be done about it.

This situation, however, did not last for long, and in the early 1900s things began to change. Around this time a group of American trainers who were skilled in the use of some of the then newly identified/purified drugs (morphine and cocaine) began to transfer their attention to Europe. These trainers were outstanding horsemen, but they were also skilled in the use of these new medications. As a group, they were remarkably successful in Europe, where they became known as "The Yankee Alchemists," and they proceeded to win what some considered to be more than their fair share of races.

In England, the British Jockey Club was warned about these new practices but initially chose to pay little attention. Eventually, however, the leading English trainer of his day, the Hon. George Lambton, had seen enough, and he decided to act. His approach was simply to publicly announce that he was going to — continued on p. 25

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Medicating Horses with the new American "dopée." Mr. Lambton announced that certain horses in certain specified races would be medicated with these "dopées," and he won a sufficient number of races that the British Jockey Club took notice. Early in 1923, the British Jockey Club issued a rule to banish the medication of a racehorse if it was found. The penalty for being in violation of this rule was to be "warned off" the track, which meant that one could not participate in any way.

The history of mind from this period continues with Mr. Kenner's horse, and was training in the United States. Mr. Kenner, who had been having a very successful season, became ill one day, as he was saddling his horse in the paddock, a Russian racing official approached him with a Russian chemist in tow. The chemist took a saliva sample from Mr. Kenner's horse; inflicted it into a frog, and a bucket of frogs that he just happened to have on hand. He proceeded to pronounce the results of one frog as "most unusual." This culminated in a medical examination being declared, which resulted in Mr. Kenner being "warned off" the track.

Another horse called Bourgogne, owned by Malibis LaFitte, was found to contain illegal substances. This led to the first testing of the drug in racing. In 1926, the first drug was found to be the beginning of the century, however, the science of analytical chemistry was much closer than in 1926. In the early 1900s, the science of analytical chemistry was in its infancy, and analytical methods were much less effective than they are now. The drug testing, in fact, started with saliva testing, with the simple aim of detecting drugs residues in the saliva of horses that had just been treated orally with drugs. This history lives on in the common jockey track name of the drug testing facility, the "Spit Box."

During the 1930s, there was a considerable expansion of racing in North America. At this time, however, there was no "in track" medication control, or drug and medication use. One could reason the point that the 1930s were a very lenient era full of the problems that would catch the attention of the federal authorities.

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that began at the University of Kentucky led to the introduction of Enzyme Linked ImmunoSorbent Assay (ELISA) technology into equine drug testing. This technology, which is an adaptation to racing of the home pregnancy test technology, proved highly successful. Like home pregnancy tests, these test are simple, inexpensive, fast to perform and highly sensitive. When they were first introduced into medication control they yielded a large number of identifications of what had, up until then, been essentially undetectable. The introduction of this technology rapidly stopped significant patterns of abuse, thereby substantially improving the art of equine medication control.

By the start of the 1990s, therefore, the techniques and the technology of equine medication control had improved to the point that it was now possible to detect traces or residues of many widely used therapeutic medications long after their pharmacological and therapeutic effects were over. Additionally, a century of advances in pharmacology had provided veterinarians and horsemen a large number of therapeutic medications for use in horses in training.

In this regard, in the early years of this century it would have been reasonable to say that foreign substances found in saliva and/or urine of horses were likely to represent improper medications. One of the reasons that this assertion could be safely made was that analytical chemistry had relatively limited detection capabilities. On the other hand, by the end of the twentieth century virtually everything has become detectable, and sometimes for quite long periods after administration.

In summary, therefore, by the end of the century the number of chemicals, drugs, therapeutic agents, dietary substances and environmental contaminants that can be detected in horse urine has increased enormously. The practical result of these changes is that the simple rule of "no substance foreign to the natural horse" has to be modified if racing is to proceed. Numerous approaches have been taken to this problem, and we will have to review the processes and administrative procedures being developed and implemented to modify the simple medication rule that was adopted at the beginning of this century.

The most important administrative change is recognition of the principle that if the substance



has a dietary source to which many horses are exposed, then the only way this problem can be approached is to set a "threshold" for the substance. Common examples of dietary substances for which plasma or urinary thresholds have been set are dimethylsulfoxide (DMSO), salicylate, arsenic and theobromine. Other dietary substances for which thresholds are needed are hordenine (from brewer's grains and certain grasses), bufotaxine and possibly morphine, which is reportedly found in hops as well as in the opium poppy.

A second group of substances for which thresholds would be useful are the environmental contaminants. Caffeine, the most widely used psychoactive drug among humans, brings relatively little concern in human athletics. Its detection in the urine of a racing horse, however, can be a significant regulatory problem. The solution of at least one Far Eastern jurisdiction is to have a threshold for caffeine in plasma and urine, below which concentration an identification is not reported. Similarly, low concentrations of morphine metabolites in human samples are clearly recognized as possibly being of dietary origin, although similar recognition for morphine metabolites has not yet been formally extended to the horse.

The question arises as to what to do about the 4,000 or so common prescription medications available around the world. For this large group of substances, two main approaches have been developed. In the first place, one needs to know what the possible performance effects of a specific agent are, and secondly, if the agent is a legitimate therapeutic medication, one needs some basis for determining the amount of the substance present in the horse and its possible pharmacological significance.

The answer to the first question — how to judge the possible performance effects of a drug or medication — has been provided by the Association of Racing Commissioners International (ACI) Uniform Classification of Foreign Substances Guidelines. This

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table categorizes about 1,000 common prescription drugs/medications into five classes, with Class 1 having the highest potential to influence the performance of a horse and Class 5 having the least. (See page 41.)

We should emphasize that the antibiotics and antihelmintics (wormers) are not listed in the RCI classification. This non-listing of these substances is deliberate and is intended to reflect the fact that these substances have no direct effect on performance of a horse; as such, they are considered to be outside the scope of the RCI classification system and thus outside of the scope of equine racing chemistry.

The development of the RCI Foreign Substance Classification has been a major advance in the area of equine medication control. Whereas previous discussion in this area rapidly became bogged down in the individual details of up to 1,000 different drugs and medications, now regulators and scientists have data on these agents summarized into a simple five-tier classification system. This system has made it possible for all concerned to confidently discuss the regulatory implications of the identification of any one of the approximately 1,000 classified substances in a racehorse or other performance horse. As such, this system has greatly facilitated the development and implementation of more understandable and equitable regulatory processes.

Finally, what of the situation where a horse has been treated with a legitimate therapeutic medication several days before a race and a "trace" or ineffective concentration of the medication or metabolite is found in the post-race urine sample? How should a late-20th-century regulator approach this information?

In the first place, if the medication in question is on the American Association of Equine Practitioners' list of recognized therapeutic medications, then there may well have been a legitimate reason for the administration of this agent to a horse in training. In fact, if the medication is being prescribed to promote the health and welfare of the horse, their failure to administer this medication is to deny the horse proper health care. The veterinarian and horsemen are therefore under a requirement to administer this medication to the horse, and they should not deny or modify their prescribing based on regulatory concerns or considerations.

In this case, all that remains to be determined is whether the pharmacological or toxicological effects of the agent in question have caused sufficient regulator concern that some of the remaining traces of the medication in question are still racing's point of view, insignificant. Therefore, a number of research programs are working to establish detection times, withdrawal times and/or analytical/pharmacological relationship data bases for common therapeutic medications. The goal of these research programs is to provide chemists, veterinarians and regulators with relevant information to avoid taking medications based on the detection of insignificant, insignificant traces of legitimate therapeutic medications in post-race plasma or urine samples.

SUGGESTED READING

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Tobin, Thomas, *Drugs and the Performance Horse*, Springfield, Illinois: Charles C. Thomas, Publishers, 1981, 480 pages.

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