Preface

Clinical Pharmacology and Therapeutics

Seven years ago, Dr Dawn Merton Boothe served as guest editor of the last Clinical Pharmacology issue of the *Veterinary Clinics of North America: Small Animal Practice* (September 2006). Each of the topics addressed in that issue are still relevant today, and the current issue provides updates on many of these important topics. The authors of the articles in this issue are nationally and internationally recognized experts in their respective fields and their articles are packed with valuable information for veterinary students, practicing veterinarians, and clinical pharmacologists. The rationale for selecting the topics included in this issue is discussed below.

Recent events involving multiple human and veterinary patients receiving either contaminated or inaccurately compounded drugs have resulted in numerous deaths, national media coverage, and, in my opinion, long overdue legislative attention focused on compounded drug products. Because of the severity of these errors by compounding pharmacies, it is likely that the FDA’s role in regulating compounding pharmacies will change over the next several years. In the meantime, it seemed prudent to include information about use of approved and unapproved drugs for veterinary practitioners. Sanja Modric, DVM, PhD, of the FDA Center for Veterinary Medicine, provides important information for veterinarians to consider when deciding between an FDA-approved drug that has been tested for safety, efficacy, and quality versus an untested compounded product.

Since the last Clinical Pharmacology issue, awareness of the extent to which pharmacogenetics influences drug disposition has increased, not only in human medicine but in veterinary medicine as well. This is exemplified by the launch of the first Individualized Veterinary Medicine program at Washington State University College of Veterinary Medicine. This program is similar to the Personalized Medicine programs...
offered by many medical schools. This cluster of articles begins with an introductory article (applying pharmacokinetics to clinical veterinary practice) that reacquaints the reader with terminology first introduced in veterinary pharmacology courses. Lauren Trepanier, DVM, PhD, provides clinically relevant and easy-to-understand examples of how to adjust drug doses in response to changes in any of the common pharmacokinetic parameters (whether those changes are mediated by disease states, genetic differences, or drug interactions). Michael Court, BVSc, PhD, discusses the importance of cytochrome P450 enzymes in the context of pharmacogenetics and the likelihood that discoveries in the near future may allow prediction (and therefore, prevention) of some adverse drug reactions in canine patients. Dr. Court also examines differences in feline drug disposition as compared to that of dogs and humans. Although many drugs are eliminated more slowly in cats than in dogs or humans, some are actually eliminated faster. Dr. Court’s findings suggest that while metabolic conjugation reactions are slower in cats, some oxidation reactions may be more rapid in cats. The pharmacogenetic (molecular) mechanisms for some of these differences are described. Updates on the role of pharmacogenetics in idiosyncratic adverse drug reactions and the role of drug transporter pharmacogenetics are also included. The article on drug transporters provides information on MDR1 genetic testing for dogs (MDR1 genotyping is used to prevent life-threatening adverse drug reactions in dogs).

Because of the continued emergence of multidrug-resistant bacterial pathogens, veterinarians face increasing scrutiny in our use of antimicrobial drugs in all veterinary patients, even dogs and cats. A thorough understanding of susceptibility testing and how to interpret (Minimal Inhibitory Concentration MIC) data is more important now than ever. Mark Papich, DVM, MS, has provided 2 articles with up-to-date information on new veterinary-specific MIC data, newer concepts in susceptibility testing, and strategies for treating resistant bacterial infections.

Three therapeutic areas that seemed in need of an update are also included as separate articles. Although newer NSAIDs have enabled veterinarians to provide outpatients with improved pain control, NSAIDs are not the optimal choice for analgesia in all patients. An increasing number of human drugs are being used in an extralabel manner to treat pain in canine and feline patients. In some instances, very little evidence exists to support the use of these drugs in dogs and cats. Butch KuKanich, DVM, PhD, provides a clinically relevant, evidence-based review of outpatient analgesics that may be alternatives or adjuncts to NSAIDs. Since the last issue was published, more than 20 new studies involving seizure management in dogs or cats have been published. Many of these drugs are human drug products used in an extralabel manner so these studies provide critical information about the safety and efficacy of these drugs in dogs and cats with seizure disorders. Karen Muñana, DVM, MS, has provided a clinically relevant, evidence-based assessment of novel antiepileptic drug therapy in dogs and cats. Similarly, Katrina Viviano, DVM, PhD, has provided an update on immunosuppressive therapies for dogs and cats. Novel information includes an evidence-based assessment of the newer “topical” corticosteroids approved for human respiratory and gastrointestinal inflammatory diseases, tacrolimus, the accumulated data on cyclosporine, and a few other human immunosuppressive therapies.

Because of the popularity of using nutritional supplements as “hepatoprotectants,” a review of the literature using an evidence-based approach seemed overdue. Jean-Michel Vandeweerd, DMV, MSc, PhD, recently published a systematic review of the efficacy of so-called nutraceuticals for treating osteoarthritis. He was asked to provide a similar review for nutritional supplements promoted for use as hepatoprotectants in dogs.
Each of the authors is extremely busy with numerous demands placed on their time and I am grateful that they agreed to author articles in this issue.

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