Is It Hypoadrenocorticism?

A sodium-to-potassium (Na:K) ratio of 27 has typically been used as a screening tool for hyperadrenocorticism (HA). A study was conducted to investigate the sensitivity and specificity of the Na:K ratio as a diagnostic aid and to determine whether there were any associations between venous pH and the Na:K ratio, plasma ionized calcium (iCa2+) concentration, or ionized magnesium (iMg2+) concentration in dogs with HA. Dogs were included if an adrenocorticotropic hormone (ACTH)-stimulation test confirmed a diagnosis of HA and the dog had a serum sodium concentration below the reference range or a serum potassium concentration above the reference range. Results indicated that the sensitivity and specificity of an Na:K ratio cutoff of 27 were 89% and 97%, respectively, with 95% of dogs correctly classified as diseased or not diseased. The sensitivity and specificity of an Na:K ratio cutoff of 27 were 89% and 97%, respectively, with 95% of dogs correctly classified. The sensitivity of an Na:K ratio of 30 was 100%, and the specificity was 84%; the sensitivity of an Na:K ratio of 24 was 79%, with a specificity of 100%. These results suggest that an ACTH-stimulation test in dogs with an Na:K ratio 24 is likely to confirm the diagnosis of HA. The authors also concluded that ACTH-stimulation tests in dogs with an Na:K ratio between 27 and 30 could be beneficial, even though most dogs with HA have a lower Na:K ratio. The likelihood of diagnosing HA in a dog with an Na:K ratio > 30 is low. An association between decreased venous pH and hyperkalemia was identified, suggesting that hyperkalemia impacts acid–base status in dogs with HA. In addition, these data confirmed that ionized hypercalcemia develops in dogs with naturally occurring HA and that serum iCa2+ concentration is inversely associated with venous pH.

**COMMENTARY:** The sensitivity and specificity data for different Na:K ratios presented in this study are interesting and help to confirm the conventional recommendation that an Na:K ratio cutoff value of 27 or 28 can be used to identify dogs that would benefit from further testing for hypoadrenocorticism. Although an Na:K ratio < 24 had 100% specificity (therefore no false-positive results) in this study, practitioners must keep in mind that numerous other causes of such low Na:K ratios have been documented, including anuric/oliguric renal failure, ruptured bladder or urinary tract obstruction, intestinal parasites, and intestinal salmonellosis, just to name a few. It should also be remembered that some dogs with hypoadrenocorticism do not have the classic electrolyte abnormalities. Thus, suspected hypoadrenocorticism must always be confirmed with an ACTH-stimulation test. — Robin W. Allison, DVM, PhD, Diplomate ACVP


Killing Canine Coronavirus

Canine coronavirus is an enveloped RNA virus. It causes gastrointestinal signs in puppies that can be severe or occasionally fatal, including diarrhea, vomiting, and dehydration. The virus is highly contagious and can be difficult to control once it becomes established in the environment. It is stable and not inactivated at low pH (3.0), is heat stable, and can be stored for years when frozen. Lipid solvents can inactivate the virus. In this study, the sensitivity of coronavirus to 3 chemical disinfectants that are commonly used in dog kennels was evaluated. Benzalkonium chloride, didecyl-dimethyl-ammonium chloride, and alkyl-dimethyl-benzyl-ammonium chloride were evaluated at different concentrations on cell cultures of coronavirus. Effects of the disinfectants were evaluated by detecting morphologic changes, counting infected cells, and by calculating the tissue culture infective dose. Cells were harvested and examined at various times up to 72 hours after exposure. Cell cultures showed that as concentration of disinfectants increased so did efficacy. This in vitro model showed that the sensitivity of coronavirus to disinfectants varies, and the differences are dose-dependent.

**COMMENTARY:** This study describes an in vitro model for testing disinfectants against canine coronavirus. It has applicability as an animal model for testing disinfectants against human pathogens (severe acute respiratory syndrome [SARS] coronavirus). Control of both human and canine infections is dependent on appropriate prophylaxis and identification of disinfectants that can control the spread of viruses. The take-home message in this study is that common used disinfectants are effective when used as directed. There are 3 key points when disinfecting an area: Remove gross organic debris, appropriately dilute disinfectants, and allow for the recommended contact time. The latter is often the weakest point in disinfection. Simply spraying and wiping an area is insufficient. — Karen A. Moriello, DVM, Diplomate ACVD