Lidocaine Patches

Lidocaine patches are being used in humans for a variety of painful conditions. This 2-part study evaluated the pharmacokinetics of 5% lidocaine patches in dogs. In the first study, 1 patch was applied for 12 hours to the lateral side of the thorax after the hair was removed either by clipping or by application of a depilatory. The study had a 2-way crossover design with a 1-week washout period. No potential adverse effects from the patches were observed in either group. In dogs with clipped hair, the mean peak plasma lidocaine concentration of 62.94 ng/ml was achieved after 10.67 hours, and the concentration peaked at 103.55 ng/ml at 9.27 hours in the dipilatory group. In the second experiment, the patches were applied for 60 hours to clipped skin. The mean peak plasma lidocaine concentration of 43.18 ng/ml occurred after 24 hours and the final value of 29.37 occurred at 60 hours. Further studies are needed to evaluate the clinical efficacy of lidocaine patches. Most pain relief probably results from a topical effect by direct penetration, and it is unclear whether the low systemic absorption can achieve any systemic analgesic effects.

COMMENTARY: Transdermal patches have become an effective and increasingly popular vehicle for drug delivery. This study is the first to show the pharmacokinetics of topical lidocaine absorption with the application of a commercially available, transdermal product approved in humans. Further studies are needed to demonstrate the clinical utility of this particular route of administration, but it may prove to be a valuable tool for managing cutaneous neuropathic pain and providing systemic analgesia.—Bess J. Pierce, MZS, DVM, Diplomate ABVP & ACVIM


Effects of Lactobacillus in Cats

Probiotics are being used therapeutically for gastrointestinal (GI) disease. Microflora in the GI tract are vital to GI health, aiding in digestion, nutrient metabolism, and vitamin production as well as limiting colonization by pathogenic organisms. Many factors can change the gut population, including nutrition, stress, antimicrobial administration, predisposing illness, and immunosuppression. Dietary interventions to enhance colonic microflora would be helpful to maintain GI health. This study evaluated the effect of dietary supplementation with a strain of Lactobacillus acidophilus DSM13241 in healthy adult cats. For a baseline period of 5 weeks, 15 cats were fed a nutritionally complete dry food. They were then fed the same food supplemented with the probiotic strain for 4.5 weeks, after which they were returned to the base diet for 4 weeks. Fecal samples were collected in the final 2 weeks of each phase, and blood samples were collected 5 days before the end of each phase. The probiotic supplementation did not change the health status of the cats. Fecal quality was excellent throughout the study. There were increased numbers of L. acidophilus organisms in the feces, indicating survival through the GI tract. There were decreased numbers of Clostridium species and Enterococcus faecalis, indicating an alteration in the GI tract flora. Systemic and immunomodulatory effects were seen, including enhanced phagocytic capacity in the peripheral granulocyte population. These and other changes suggest that administration of this probiotic results in beneficial systemic and immunomodulatory effects in cats. Study by the Waltham Centre for Pet Nutrition

COMMENTARY: Previously published articles have made many small animal practitioners skeptical of diets professing to contain probiotics. This longitudinal study looks at the health-related effects of incorporating a probiotic into a dry diet fed once daily to 15 healthy adult cats for approximately 1 month. While no changes in health status or food intake were noted, fecal analysis during supplementation indicated some modest alterations in the GI bacterial microflora (most notably reductions in Clostridia populations while receiving probiotic supplementation and reductions in coliform and enterococci populations after probiotic supplementation). There was no significant change in the number of lactobacilli populations cultured while the pet was receiving probiotic supplementation, but fermentation patterns indicated that some of the supplemented bacteria survived GI transit, and molecular enumeration indicated significant increases in various fecal lactobacilli populations. Some variations in cytologic profile and in vitro function (including increased granulocyte ingestion of bacteria during and after probiotic supplementation), plasma endotoxin concentration (reduced during probiotic supplementation only), and red cell fragility (reduced both during and after probiotic supplementation) were noted. Whether these effects are clinically beneficial remains to be evaluated.—Scott Campbell, BVSc, MACVSc (Small Animal), Diplomate ACVN