Small animal *Review*

Summary: This month's Small Animal Review explores issues relating to additives in pet food, how diet can be used therapeutically in canine epilepsy, and the evidence for herbal treatments in dogs with skin problems.
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Safety of additives in pet food

Additives are virtually omnipresent in processed pet foods, and a recent paper by Craig (2021) reviewed their safety, efficacy, labelling and ethical concerns regarding existing toxicity testing in laboratory rodents. It is argued that LD50 studies are not useful for determining how much of an additive can be eaten safely by a person or domestic pet, but the more appropriate feeding studies are conducted much less commonly. Additive testing procedures are often outdated and reported in secret dossiers by, or on behalf of, the company seeking authorisation, taking no account of interactions with other additives and dietary components.

Effects on the microbiome are not typically investigated, despite studies indicating that additives can induce microbiota-mediated adverse effects on the host. In both dogs and humans, disruption of the gastrointestinal microbiota (dysbiosis) may be associated with clinical disorders, not only in the gastrointestinal tract but also in the brain, skin, joints, and immune system. Emulsifiers, widely included in pet food to prevent separation of ingredients, and create the gravy or gel in canned, sachet and other moist pet foods, have been found to cause obesity and metabolic abnormalities in mice, and may increase the risk of inflammatory bowel disease and other chronic inflammatory diseases in people.

Some substances included in animal feeds are not classified as 'additives', for example, propylene glycol (PG), classified in the EU as a feed material, appears not to be prohibited in cat food in the EU despite a demonstrated association between PG and haematological abnormalities in the cat.

This review suggests ways to address these and other concerns. Replacing synthetic additives with more natural ingredients may be helpful, but sometimes the distinction between natural and synthetic can be blurred when 'naturally-derived' substances are synthesised in a laboratory or extracted using a high level of physical and chemical processing. Independent studies, free of influence from manufacturers, are warranted to assess safety and efficacy, and additives should be tested both alone and in combination, with the results freely available for independent scrutiny.

Dietary intervention for canine epilepsy

Idiopathic epilepsy is common in people and dogs, but many individuals are inadequately treated by medication or have severe, unacceptable side-effects to their drugs. Ketogenic diets, which promote the use of ketone bodies, rather than glucose, for cellular energy, have been used to treat people with epilepsy for over 100 years, but there has been limited investigation of these diets in dogs. One study of 21 dogs found that seizures were reduced significantly in dogs fed a proprietary ketogenic diet for 3 months. Anecdotally, there are reports of successful treatment in epileptic dogs fed a raw meaty bone-based diet.

Two case reports of using diet to treat canine epilepsy have now been published (Masino et al, 2019). The first was of a 12-year-old neutered male Crossbreed dog with years of refractory seizures, and no improvement on either phenobarbital and potassium bromide therapy or a low fat diet. Following withdrawal of potassium bromide and a change to a high-fat diet (1.07:1 fat:carbohydrate + protein), improved behaviour and reduced seizure frequency were reported, allowing a reduction in the daily dose of phenobarbital from 40 mg to 8 mg.

The second was a neutered male Husky showing severe side-effects on a dose of 3 mg/kg phenobarbital every 12 hours. The owners stopped phenobarbital and changed the diet to one that reduced commercial products, added whole foods, and eliminated additional carbohydrates and treats. This diet was not ketogenic but one with more whole foods, and within a month, seizures and previously frequent myoclonic jerks had resolved completely. Both dogs achieved complete cessation of seizures for extended periods, and medication was either greatly reduced or eliminated. Despite the differences between diets, a strong link between diet and canine epilepsy is suggested.

Medicinal plants as therapeutic options in canine dermatology

Amid worsening antimicrobial resistance in dogs and cats, there is growing interest in therapies that avoid systemic and topical antibiotics, and even topical antiseptics such as chlorhexidine. A recent review by Tresch et al (2021) evaluated four herbs for potential therapy in pyoderma, canine atopic dermatitis, otitis externa, wounds and dermatophytosis in dogs. The study, based on a literature search and a survey of vets specialising in phytotherapy, revealed extensive evidence-based knowledge on marigold, St John's Wort, chamomile and sage. All had beneficial effects including anti-bacterial and anti-fungal potential and, according to the authors, may be useful as first-line topical treatments for primary and secondary skin and ear infections.

Marigold, St. John's Wort and chamomile were found to have wound-healing properties. St. John's Wort and chamomile had the most promising anti-inflammatory effects, with both showing benefits even on healthy skin.

For otitis externa and other painful skin conditions, the authors concluded that topical St. John's Wort and chamomile should be considered. Sage was shown to be effective against a range of bacteria and fungi relevant to skin disease. Several studies have shown these plants to be safe in humans, whereas others have reported some safety concerns. The authors concluded that these plants should be considered for the treatment of dermatological diseases in dogs, at least in future clinical research.

References

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