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Holistic Pediatric Veterinary Medicine

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KEYWORDS

• Holistic • Pediatric • Veterinary medicine • Treatment

KEY POINTS

- An increasing number of clients are seeking holistic care for their pets.
- Holistic veterinary medicine treats the whole patient including all physical and behavioral clinical signs.
- Herbal and nutritional supplements can help support tissue healing and proper organ functioning, thereby reducing the tendency toward disease progression over time.
- Many herbal and nutraceutical companies provide support for veterinarians, assisting with proper formula selection, dosing, drug interactions, and contraindications.

HOLISTIC PERSPECTIVE

Holistic medicine is a way of practicing not a modality. *Holistic* is defined as “characterized by comprehension of the parts of something as intimately interconnected and explicable only by reference to the whole.”¹ In medicine, the term is also used to describe the treatment of the whole patient, including physical, mental, and social symptoms of a disease. A veterinarian can practice as holistically as possible regardless of the techniques they use. However, some modalities lend themselves much more readily to a holistic approach than others. Therefore, practitioners interested in using a holistic approach will benefit greatly from learning these modalities.

Individual Nature of Health and Disease

As veterinarians, we see some patients only for routine examinations and vaccinations, whereas others present repeatedly for ailments. These patients’ ailments often relapse when treatments are discontinued. Sometimes a patient exhibits a specific pattern of disease that moves from one location to another. For example, one might see a puppy for vaginitis, later otitis externa, and then subsequently for enteritis. A sudden onset of inflammation, odor, pain, and discharge might be present in this

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patient each time, whereas another individual might experience slow smoldering signs and lethargy whenever sick.

Progression of Disease

Most veterinarians are well educated in proper diagnostic methods and judicious use of medications. A cat presenting with signs of cystitis only receives antibiotics if warranted by a urinalysis. Using thorough diagnostic protocols to select appropriate medicines often leaves simpler effective treatment lacking for relatively common maladies. Relapses of a condition after discontinuing medication can be concerning. Diarrhea might respond quickly to a bland diet and kaolin and then relapse needing more extended treatment. With time, the returning condition may require strong medicines (with significant potential side effects) to achieve what 3 days of a bland diet had initially achieved. Even with proper treatment, sign severity often progresses from very mild to severe over time. We can often predict the pattern of progression without effectively averting it. The only choice seems to sequentially apply increased suppression to the signs. The temptation arises to apply the big guns to the first outbreak of mild imbalance. This practice often extends the time until the signs return. However, when they do recur, their severity may increase more rapidly.

Treating Whole Patients

Through studying alternative therapies, one can become proficient in simpler yet effective forms of treatment that nourish patients (and their organs) and reverse this tendency to worsening. These techniques address all aspects of a patient's illnesses at the same time. A cat that often vomits, has a greasy coat with pruritus, is anxious with a tendency to become irritable, and presents for sterile cystitis no longer has 3 to 4 separate conditions. Improvement of each sign that is being treated is assessed but not as if separate from the others or the overall wellbeing of the patient. Signs are clues to the big picture of patient's basic imbalance or weakness. Their expression is related to one another as is their treatment. The author presents a very brief overview of modalities she uses as well as some basic treatments that may be useful for beginning holistic practitioners and conventional practitioners interested in integrating a new holistic approach into their practice.

DESCRIPTION OF COMMON COMPLEMENTARY AND ALTERNATIVE VETERINARY MEDICINE MODALITIES

Traditional Chinese (Veterinary) Medicine

Diagnosis and treatment using Traditional Chinese Medicine (TCM) emphasizes the functional aspects of health and disease. Disorders are grouped based on which organs are affected as well as the nature of the affection. Some practitioners are confused by the English translation of descriptive terms used in categorization. Some disregard the modality as valid because of its attempt to acknowledge conundrums and alternating states, whereas others find this one of its biggest strengths. Recognizing that terminology is merely an attempt to describe what is routinely seen clinically is exceedingly helpful. Reading a TCM colleague's diagnosis of toxic heat may sound exceedingly foreign; but when viewed as a description of the functional disturbances occurring within the body, this can be more readily understood. This label would be appropriate in conditions such as food poisoning or upper respiratory infections. It is an acknowledgment that the condition is creating increased heat in the body (as we know inflammation/infection does). It is also recognizing that the level of toxins in the body is high. We recognize that inflammation creates toxins; we can see toxic

neutrophils on a complete blood count, and we can identify toxins caused or released by pathogenic organisms.

Traditional Chinese (veterinary) medicine terminology

Some examples of terms correlated with conventional medical concepts are listed next. These terms have been simplified and are not intended to provide a comprehensive understanding of the concepts they describe.

Qi: active metabolic expression and movement (potential and consumed energy)

Yin: substance, fluid, cold, inactivity, anabolism

Yang: insubstantial functional energy, dry, heat, activity, catabolism; qi that is heated up

Damp: fluid accumulation (ie, cellulitis, ascites, edema)

Wind: signs sudden and changeable, involve movement, or move around the body (ie, seizures, pruritus, wandering limb pain), acute infections

Phlegm: mucus, congealed accumulations, tumors

(Blood or qi) stagnation: a blockage of normal homeostasis or metabolism resulting in uneven distribution of microcirculation causing areas of deficiency and/or pooling

Deficiency: weakness, insufficiency

Excess: overactivity

Treatment using the traditional Chinese (veterinary) medicine model

Herbs and acupuncture point stimulation are studied in relation to their effects using functional categorization. *Bupleurum* has antiinflammatory, antipyretic, and edema-protective effects on the liver.² In TCM, it is described as a cooling herb for the liver that relieves liver stagnation.³ Proper selection of herbal formulas depends on the practitioner's ability to properly diagnose (categorize) the condition. Treatment of dermatitis characterized by pruritus and dandruff in chilly, anxious, thirsty patients will require a different formula than dermatitis involving moist eruptions and odor in irritable/aggressive thirstless patients who easily overheat.

Homeopathy

Law of similars

Samuel Hahnemann discovered homeopathy in the late 1800s. Hahnemann was a medical physician with expertise in chemistry. He wrote a standard chemistry text and translated many medical texts. While translating a text, he noted that the effectiveness of cinchona in the treatment of malaria was attributed to its bitter and astringent qualities. He questioned this assessment recognizing that other bitter and astringent substances had no effect on malaria. Curious as to its action, he took cinchona and developed symptoms similar to that of malaria, which subsided when the herb was discontinued. This experience led him to hypothesize that it was instead the fact that the herb stimulated a similar reaction as the disease that catalyzed improvement in patients with malaria.⁴⁻⁶ He performed extensive clinical trials administering substances to healthy individuals and recording the symptoms that were repeatedly induced. He used this information along with the known effects of the substances (ie, primary effects and side effects of medications) to select medicines. By administering medicine known to cause a particular set of symptoms to patients suffering from similar ailments, he found this form of treatment to be effective.

Medicinal (primary) action induces curative (counter) action

This effect correlates with our knowledge of homeostatic mechanisms. The homeopathic medicine, being similar to (mimicking) the disease, will increase the

homeostatic imbalance. This imbalance stimulates a response within the body to maintain balance. With homeopathic prescribing, substances with a short duration of action are used. Once the medicine is no longer active in the body, the heightened counteraction can more effectively restore health.

Medicine selection

Homeopathic prescribing is determined solely by signs. Signs are matched as specifically as possible to the signs known to be treated by the medicine. The more detailed the correlation, the more likely the remedy will initiate the physiologic reactions needed to restore homeostasis. A conventional diagnosis is included, but treatment often varies as does the sign expression of individual patients with a given diagnosis. For example, a kitten with a herpes virus infection causing thick yellow oculonasal discharge and sneezing requires a different prescription than one with increased thirst, corneal ulceration, and clear oculonasal discharge that irritates the tissues it contacts. Because proper treatment selection depends on sign evaluation, homeopathy is not compatible with treatments that strongly suppress or alter patients' signs.

Homeopathy definitions

Many clients frequently misuse the term *homeopathy*. They will often use it to describe any natural or alternative medicine (ie, herbal, nutraceuticals). Many laypersons as well as practitioners will use the term *homeopathy* to describe any use of substances that have been prepared homeopathically. Homeopathic preparation of substances involves extended vigorous agitation and succussion of the substance, which causes repeated molecular collisions, changing their electromagnetic dynamics. When Hahnemann coined the term *homeopathy*, he meant it to describe the method of treatment using medicines that induced signs similar to the disease as described previously. Late in his career, Hahnemann developed the homeopathic preparation of substances and then focused his clinical trials on their use; his earlier clinical trials using homeopathy involved substances common to medical practice of the time, which would have been prepared conventionally. Hahnemann used the term *allopathy* to describe the use of medicines whose effects do not match patients' symptoms. Because of the confusion created by practitioners describing widely varying techniques as *homeopathy*, many people now use the term *classical homeopathy* to denote the original definition given to homeopathy.

Chiropractic Therapy

Chiropractic is the use of specific manipulations to the spine and extremities to restore range of motion. Range-of-motion palpation of all joints is performed to determine the location of hypomobile and/or hypermobile joints. There are a wide variety of chiropractic techniques available to restore normal range of motion in patients. A modified Gonstead technique is likely the most commonly used in animals. This technique involves the application of a low-impact, high-velocity thrust at a specific contact point in a specific line of drive to gently increase the range of motion to hypomobile areas. In spinal areas, the restoration of range of motion has secondary effects, including improved nerve conduction, improved nutrient delivery to intervertebral disks, and increased toxin clearance from tissues.

Manual Therapy

Other hands-on methods to restore normal musculoskeletal and spinal nerve functioning include the application of digital pressure to spinal lever points, using digital pressure to initiate reflex relaxation of tightened muscles, isometric stretches to restore normal muscle tone, acupressure, and massage. The goals of these

techniques are generally to remove abnormal tension patterns, alleviate abnormal nerve conduction, improve tissue circulation, alleviate pain, and restore freedom of movement. In addition to the physical responses seen with these treatments, significant improvement in emotional and behavioral disorders can be seen. How grumpy are you with a stiff and painful neck?

TREATMENT OF DISEASES IN PEDIATRIC PATIENTS

Gastroenteritis

In puppies and kittens, diarrhea and vomiting are most commonly associated with viral infections, bacterial infections, endoparasites, dietary sensitivities, and dietary indiscretion.^{7,8} Signs vary from mild to life threatening. The holistic approach treats the signs of gastroenteritis while at the same time attempting to eliminate the root cause. In the case of infectious and parasitic gastroenteritis, treatment addresses the imbalance leading to susceptibility. In the case of dietary sensitivity, it addresses the abnormal immune function; in indiscretions, it addresses the abnormal hunger that led to the unhealthy consumption. It is important to evaluate the location most affected in a given individual in order to identify organs that exhibit deficiencies. For example, in a litter of puppies showing a positive fecal evaluation for ascarids, one individual may show poor weight gain, another severe diarrhea, another vomiting, another vomiting and diarrhea, and another may be normal. From a holistic perspective, each of these individuals requires a different treatment plan.

Infection-associated gastroenteritis

In puppies and kittens life threatening disease is commonly associated with viral infections. Parvovirus type 1 is considered pathogenic in puppies under 6 weeks old.^{9,10} Parvovirus type 2 and distemper virus are more commonly seen in puppies 6 weeks and older. In kittens common viruses associated with vomiting and diarrhea are feline panleukopenia, feline infectious peritonitis, feline leukemia virus, and feline immunodeficiency virus.^{7,8} As morbidity for all viral diseases is less than 100%, individuals must be susceptible to an organism to develop signs. Healthy individuals with proper nourishment and husbandry born to a healthy immune dam or queen have lower susceptibility to these viruses. Thorough history taking regarding the previous health of the patient, health of the patient's mother, husbandry, health of littermates, and nursing/dietary intake will help to identify individuals at higher risk. Appropriately timed vaccination of healthy individuals will help to reduce the risk to severe life-threatening signs. It stands to reason that patients with susceptibility to a given virus would have increased susceptibility to the virus introduced in an altered form (vaccine). In these patients, acute manifestation of pathogenic infection may be avoided via vaccination; however, care should be taken to monitor for and treat any subacute signs correlated with vaccination, such as otitis, ocular discharge, skin eruptions, vomiting, or diarrhea.

Bacterial infections, similar to viral infections, result in susceptible hosts. Most bacteria associated with vomiting and diarrhea in puppies and kittens can be found in normal carriers. Puppies and kittens are more likely to exhibit severe signs in correlation with positive pathogenic fecal bacterial cultures or a polymerase chain reaction than adults.

Endoparasite-associated gastroenteritis

Endoparasites are associated with diarrhea, lack of weight gain, vomiting, bloating, and, in some cases, anemia (ie, hookworms and whipworms).^{7,8,11} As with most causes of gastroenteritis, signs may vary from normal carriers to life-threatening illness.

Helminth Infestations

Ascarids are ubiquitous in the environment, and can be transmitted transplacentally and transmammary.^{7,8,11} Puppies and kittens are routinely treated prophylactically for helminth infestations postnatally. Studies of stray dog populations show a decrease in prevalence of ascarid infections with increased age.^{11–15} Adult individuals also tended to have lighter worm loads indicating natural immunity.^{14,15} Individuals with difficult-to-clear or recurrent infestations should be evaluated for chronic disease.

Protozoal Infections

Giardia is normally encountered in the environment, and its presence does not indicate that it is the cause of signs.^{7,11,16} Heavy overgrowths of this organism can contribute to signs and tissue damage.

Coccidial infections are generally self-limiting, and overgrowth of these organisms is generally secondary in nature.

Treatment of Gastroenteritis

Viral-, bacterial-, and endoparasite-associated diarrhea is most effectively treated by reducing the patients' susceptibility, protecting tissues from injury, and supporting the healing of damaged tissues. Holistically speaking, the disease occurs before infection or infestation. The question arises as to whether the initial damage to tissues is a result of pathogenic organism reproduction or if the reproduction of pathogenic organisms is made possible by damaged tissue. Regardless, the methods of treatment that restore health to damaged tissue will reduce organism reproduction and reverse impairments. Therefore, the practitioner may find it more useful to view these conditions as overgrowth rather than infections or infestations. The primary focus of treatment is restoring an environment within the patient that is no longer supportive for pathogenic organisms.

The treatment of underlying health issues, correcting husbandry deficiencies, and reducing stress before exposure will help reduce susceptibility to infections and parasitism. For patients presenting with evidence of existing infection or parasitism, proper treatment to reduce susceptibility will result in more rapid and effective resolution of infection with fewer residual signs. Although methods to reduce the number of pathogenic organisms or parasites are used as needed, restoration of normal immune system and gastrointestinal (GI) tract function is often all that is required to clear signs and associated organisms. Methods of treatment with the mildest side effects are chosen. In addition, treatments that strongly suppress signs without resulting in improved tissue health are discouraged. By using these methods, the patients' susceptibility remains unchanged or may, in fact, worsen. As a result, relapse on discontinuation of such methods or repeated infections are common.

Homeopathics, Herbs and Nutritional Supplements

Homeopathy has an advantage in patients with inappetence and medication avoidance because dosing is generally less frequent and homeopathic remedies are relatively tasteless. They are available in forms that allow for the easy administration and absorption without causing upset in patients who can have nothing by mouth. The remedy that best fits the signs in the patients is used.

Slippery elm is demulcent, emollient, and soothing to the alimentary canal.^{2,17} Unfortunately, slippery elm populations are dwindling because of overharvesting for herbal use.¹⁸ Ethical wild crafters recommend first gauging the amount needed and then stripping the bark from one-fourth or less of the branches.¹⁸

Marshmallow root is often used as an eco-friendly alternative to slippery elm. It contains bioadhesive and mucilaginous polysaccharides that create a mucinlike coating on irritated tissues.¹⁹ It has also been shown to have antibacterial activity against pathogenic bacteria.^{20,21} It has anticomplementary activity.² This fact may be beneficial in allergic, sensitivity, and noninfectious inflammatory states but raises concerns about its use during the active phase of viral infections. It has immune-stimulating effects and stimulates phagocytosis,² which may help to offset the effects of the anticomplementary activity. It has a hypoglycemic effect.²

Pill curing (Kang ning wan) treats nausea, vomiting, and diarrhea.^{22–24} It is especially useful in dietary indiscretions and other acute forms of gastroenteritis. Pill curing has also been shown to have an effect against protozoal infections. The classic formula is not intended for long-term use. Modifications of this formula appropriate for chronic administration are available. These formulations can also be useful in reducing the GI effects of other herbs or medications.

Colostrum has been shown to promote proliferation and migration of gastric and small intestinal cells.^{25,26} It has been shown to reduce gastric injury and villus shortening caused by nonsteroidal antiinflammatory drug administration.²⁵ It shows immune modulating and antibacterial effects. It neutralizes lipopolysaccharide endotoxins.²⁷

Adjunctive therapy

A highly digestible diet relieves stress on the GI tract by reducing the demand for digestive enzymes. It reduces the amount of undigested food particles entering the colon. This reduction helps to minimize colonic irritability.

Acupuncture has antiemetic, antinausea, and appetite-stimulating effects. It is an effective pain reliever and promotes normal immune functioning.

Infection-Associated Respiratory Disease

The most common respiratory diseases in puppies are canine infectious respiratory disease (CIRD) also known as *kennel cough complex*. The organisms associated with CIRD in puppies are *Bordetella bronchiseptica* bacteria, parainfluenza virus, mycoplasma, adenovirus, distemper virus, influenza virus, and respiratory corona virus.^{28,29} In kittens, upper respiratory infections are commonly associated with herpes virus 1 and calicivirus.²⁹ Secondary bacterial overgrowth may result from these infections. Puppies and kittens generally have a higher risk of infection compared with adults. Signs vary from mild to life threatening.

CIRD

The common signs of CIRD in puppies are a harsh hacking to honking cough often accompanied by tracheal sensitivity and gagging or retching of expectoration. Other signs that may be present are oculonasal discharge and sneezing with or without fever. Most patients will remain healthy in appearance with a normal appetite and activity levels. In some patients, the signs may progress to a secondary bronchopneumonia. These patients are more likely to exhibit lethargy and abnormal respiratory parameters. Diagnosis is generally based on clinical signs and history of exposure to other dogs. Transmission is by aerosol and fomites. Dogs housed in close quarters in large numbers (ie, kennels and shelters) are at higher risk.

Treatment of CIRD

The treatments for CIRD are focused at restoring immune function, reducing airway inflammation, alleviating cough, and supporting tissue healing.

Herbal supplements

Gan mao ling: This herbal formula reduces inflammation of the pharynx and upper trachea. It also promotes clearance of mucous accumulation.^{17,21–23}

Ehr chen wan: This herbal formula dispels mucus, especially from the lower respiratory tract.^{17,21–23} The initial response may be accompanied by symptoms associated with increased mobilization of thinner expectoration. If this creates significant patient discomfort, the dosage should be reduced to the desired effect.

Fritillary and loquat syrup: It reduces the cough with associated tracheal irritation and clears expectoration.^{17,21}

Feline upper respiratory infections

Upper respiratory infections are common in kittens. Susceptibility to these organisms as well as the severity of signs in the individual is affected by age, nutrition status, husbandry, and coexisting disease. The common signs are sneezing and nasal discharge. Ocular lesions including conjunctivitis and corneal ulcers are associated with herpes virus infections. Calicivirus is associated with oral ulceration. Feline immunodeficiency virus and feline leukemia virus cause immunosuppression and may contribute to the severity or longevity of signs. In addition, alterations in immune function, mucus viscosity, mucociliary clearance, and tissue integrity associated with any of the aforementioned viruses can lead to secondary bacterial overgrowth.

Treatments for Feline Upper Respiratory Disease

Treatments are focused at restoring immune function, normalizing mucus viscosity and clearance, maintaining appetite, supporting tissue healing, and reducing scar-tissue formation.

Homeopathics, herbals and nutritional supplements

Homeopathy has an advantage in patients with oral pain or inappetence because dosing is generally less frequent and homeopathic remedies are relatively tasteless. The remedy that best fits the signs in patients is used.

Bi Yan Pian (nose inflammation tablet): This herbal formula is appropriate for upper respiratory infections in which sneezing and nasal discharge (especially mucopurulent) predominate.

Gan Mao Ling: This herbal formula is appropriate for patients in which pharyngeal and upper tracheal signs predominate.^{17,22,23}

Colostrum provides proteoglycans used during the immune response to viruses and bacteria. Levels provided by the normal diet may not be sufficient during times of increased consumption due to viral and/or bacterial infections. Colostrum is also therapeutic for oral and GI irritation and ulceration.

Cod liver oil can be applied topically to eyes in the case of conjunctivitis and corneal ulceration. This treatment helps soothe the tissues of the eye and promotes healing of corneal ulcers. Oral administration is helpful as an antioxidant and for immune support.^{17,30} However, because of its vitamin A content, dosing must be carefully calculated in pediatric patients.

For marshmallow root, a slurry made from the powdered form or diluted tincture can be used for patients with oral ulceration. It is soothing and protective for oral and GI irritation or ulceration.

Pill curing can be used to treat nausea secondary to postnasal drip ingestion.

Acupuncture is helpful for relieving pain, maintaining appetite, clearing mucus, and immune support.

Dermatologic Disease

Skin disease is generally a sign of underlying chronic disease. From a holistic perspective, skin disorders are the first level of disease. The severity of disease progresses from the distal and ventral skin moving upwards toward the head. If progression continues, physiologic and later pathologic changes move to internal organs. Patients that present with signs manifesting only in the skin have the highest likelihood of a curative response.

Otitis externa

Excessive earwax production and inflammation is generally associated with chronic disease. A thorough history and physical examination should be performed to identify any additional sign of disease. Treatments that support healthy immune functioning are generally indicated in cases that involve chronic or recurrent inflammation. An otoscopic examination to assess the competency of the tympanic membrane should precede any topical treatments.

Topicals and nutritional supplements

Almond oil is useful in cases of excessive earwax and mild otitis externa.^{4,17} It dissolves wax and soothes irritated tissues.^{4,17,30} In addition, it can be used to treat recurrent cases of ear mites or in cases when clients prefer a nonchemical method of treatment. Almond oil will suffocate mites and eggs. The treatment should be once to twice daily for 3 weeks to account for the mite life cycle. The author generally begins with more frequent treatment when abundant wax and inflammation are present and reduce to daily once the signs are improving. When continuous treatment is not possible because of patient compliance, treatment for 2 weeks followed by a 1-week break and treatment for an additional week is often sufficient.

Oral probiotics may be helpful in cases with bacterial or yeast overgrowth. Topically powdered probiotics can be applied in the ear once daily at bedtime. This is often extremely helpful for cases of chronic *Malassezia* otitis.

There are many herbal ear washes available on the market. These ear washes often contain herbals that reduce inflammation and have antimicrobial effects. They can be useful to reduce or eliminate the necessity for medicated ointments.

Demodicosis

Demodex is a normal commensal mite of dogs normally present in small numbers.^{31,32} *Demodex* mites live in facial hair follicles, particularly around the periocular area. Demodicosis is categorized as either localized or generalized. Localized *Demodex* in puppies does not show a familial pattern of occurrence. More than 90% of prepubertal dogs with localized demodicosis resolve spontaneously in 3 to 8 weeks. This resolution is thought to occur as the puppy becomes more immunocompetent with age. Generalized *Demodex* is a familial disease problem. Most cases of generalized demodicosis begin as local lesions. Pruritus, inflammation, and secondary bacterial overgrowths often accompany cases of generalized demodicosis.

Treatment of Demodicosis

Cases of demodicosis are treated on an individual basis. Most patients will benefit from immune-enhancing herbal formulas matched to their specific pattern of disease. Herbals with antiinflammatory effects in the skin and that reduce pruritus are helpful. These herbals, in addition to calming formulas, can help to reduce self-trauma and improve the emotional status of patients.

Topicals and nutritional supplements

Probiotics enhance systemic immunity and are helpful in supporting a normal floral ecology.^{33,34}

Green tea/black tea can be used topically for its antimicrobial, antiinflammatory, and antipruritic effects.¹⁷

Calendula is a nonalcoholic herbal or homeopathic spray (solution) that can be used topically for antiinflammatory, antimicrobial, and antipruritic effects.^{2,4,17}

Flea allergy dermatitis

Healthy individuals do not show signs of flea allergy dermatitis. They do not require chemical flea treatments to remain free from evidence of fleas. In severe infestations with significant signs, chemical flea treatments with rapid onset may be required. Ongoing control can be easily achieved for most individuals without the use of spot-on or oral antiflea chemicals. The routine use of non-chemical flea control reserves the use of chemicals for patients with significant clinical signs attributable to flea sensitivity. Reducing the widespread use of flea control chemicals may help to preserve their efficacy through reduced resistance. In addition, it removes exposure of patients, other animals, clients, and children in the household to these chemicals.

Natural Flea Control

Boric acid (salt) is a detergent powder that removes the wax coating on the flea causing it to die from desiccation. Toxicologic evaluation results show it to be less toxic than table salt. It is applied to the environment (not the patients). It is guaranteed effective for 1 year.

B vitamin supplementation seems to reduce the number of fleas attracted to patients. Experimental trials of various B vitamin supplements have shown inconsistent results as a repellent. There is often more than a 3-week delay in improvement of flea numbers, which may indicate changes other than a direct repellent effect (ie, reduced skin inflammation) may be the cause of improvements. B vitamins have antioxidant and immune-supportive actions,³⁰ which may be beneficial in improving the signs of flea allergy dermatitis. There are several products for oral supplementation including B vitamins along with herbs known to have antipruritic and calming effects.

Neem has an insect repellent effect and is an antiinflammatory as well as an antimicrobial.² There are shampoos and sprays available containing neem, often in conjunction with other herbs (eg, citronella, eucalyptus) with insect-repelling effects.

Balanced diets low in carbohydrates and without preservatives or added chemicals often greatly reduce evidence of fleas.

RESOURCES FOR VETERINARIANS

Many herbal and nutraceutical companies provide support for veterinarians, assisting with proper formula selection, dosing, drug interactions, and contraindications. The following is a partial list of companies commonly used by the author as a resource for practitioners:

Dr Xie's Jing-tang Herbal Inc: www.tcvmherbal.com; telephone: 800-891-1986; address: 9700 West Highway 318, Reddick, FL 32686

Golden Flower Chinese Herbs: www.gfcherbs.com; telephone: 800-729-8509; address: 2724 Vassar Place NE, Albuquerque, NM 87107

Health Concerns: www.healthconcerns.com; telephone: 800-233-9355; address: 8001 Capwell Drive, Oakland, CA 94621

Kan Herb Company: www.kanherb.com; telephone: 800-543-5233; address: 380 Encinal Street Suite 100, Santa Cruz, CA 95060
Thorne Research: www.veterinary.thorne.com; telephone: 800-228-1966; address: PO Box 25, Dover, ID 83825

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