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**Editor**
Dr Karen Goldrick, Email: iwren@aapt.net.au

**Editorial Committee**
Barbara Fougere, Sydney Australia
Susan Wynn, Georgia USA

Graphic Design: wwwbeloved.com.au

# Welcome
## TO THE SECOND EDITION OF OUR JOURNAL

Dr Karen Goldrick has once again devoted a lot of time and effort into pulling together our contributions, as well as being a busy herbal practitioner! This is your Journal; we need feedback to make sure it is relevant to your interests and needs. Karen has carefully balanced tradition and science and you will find scientific monographs, articles and information that combine both.

I was fortunate enough to go to Hong Kong a couple of weeks ago and discovered a wonderful Chinese Herbal Medicine garden. Photographs of this garden are on page 3 of the Journal. If you have a herbal garden in your area, let's hear about it. There is nothing quite like connecting with the medicines that emerge from the earth, to see them in their whole form. It's quite exciting, like finally getting to meet a friend you have been talking to via email but haven't seen. You think you know them, but it's much nicer meeting them face to face!

On that note, the next VBMA symposium and AGM is coming up very soon. It might seem a distant time and place, but believe me the symposiums are a great learning opportunity, and I travel each year from Australia to wherever to attend. So there's no excuse to miss this one in Kentucky in October, as for most members the symposium is almost in your back yard. Please make the effort to attend. You will be well rewarded with new ideas, a stronger connection to your medicines and you will get to meet those names you see on emails!

Finally a word of welcome to our new Executive Director Jasmine Lyon who has come on board with a flurry of work and a list of tasks a mile long. Jasmine has taken the role very seriously and is doing a wonderful job. Thank you also to Dr Susan Wynn for mentoring Jasmine with the change over and for all her contributions to date – the VBMA would not be what it is without her! Susan will be taking on the presidency of the AHVMA so we expect to see the tendrils moving closer and more synergies emerging with AHVMA. And as soon as Susan is done with that huge responsibility we hope to see her back in our own herbal garden! A big thank you extends to our VBMA executive committee as well. We meet via teleconference to discuss issues and plans on a regular basis, and a lot goes on behind the scenes to work towards our goals.

We welcome any member involvement, no matter how small or large. We only exist because of our membership, so if you have some energy (none of us has time) and would like to plant your ideas and see the association grow, please contact us. Small efforts make a big difference.

With kind regards

**BARBARA FOUGERE BVSC, PRESIDENT**
*All Natural Vet Care, Sydney, Australia*

# The Goals and Resources
## OF THE VBMA

1 to represent member veterinarians and herbalists as political and professional issues arise;

2 to develop certification standards;

3 to encourage ethical clinical research in herbal veterinary medicine;

4 to institute an adverse event reporting system;

5 to explore cultural traditions such as TCM, greek/western herbalism and ayurveda for their proper translation to and application in modern day animal conditions;

6 to compile databases of existing science; ethno-veterinary medicine advances; and eventually a library;

7 to liaise with manufacturers so that they have an expert body to advise them on the needs of veterinary herbalists and quality control concerns; and

8 to support sustainable environmental, agricultural and husbandry practices.

### Our Purpose

The Veterinary Botanical Medicine Association is a group of veterinarians and herbalists dedicated to developing responsible herbal practice by encouraging research and education, strengthening industry relations, keeping herbal tradition alive as a valid information source, and increasing professional acceptance of herbal medicine for animals.

We invite you to use our referral directory to find member vets in your area, and are pleased to offer a library of public information, including links, books, and herbal database and more.

Services include:

- A members-only listserv
- Professional certification for notable education and career achievements

### Certification of Competency

The VBMA seeks to provide animal owners, farmers, and veterinarians with some standard of competency by which to choose a veterinary herbalist. For certification by VBMA, the herbalist must pass a competency examination with a grade of 75%. In addition, the herbalist must submit and have accepted 3 case reports that are publication quality. Veterinarians certified by VBMA will earn the title "Certified Veterinary Herbalist". Nonveterinary herbalists will earn the title "Certified Veterinary Herbalism Educator".

# Certification as a Veterinary Herbalist
## CERTIFICATION REQUIREMENTS

### Certification by the VBMA will require:

1 passing the exam (100-200 questions) with a grade of at least 75%

2 submission of 3 case reports – publication quality, as we will encourage publication – for peer review within one year of taking the test

3 Donation of at least 10 test questions for future exams.

Nonveterinary herbalists who are certified will earn the VBMA title, Certified Veterinary Herbal Educator (CVHE).

Veterinary herbalists who are certified will earn the VBMA title, Certified in Veterinary Botanical Medicine (CVBM).

Veterinary herbalists who are certified by VBMA are automatically eligible for membership in the American College of Veterinary Herbalists, earning the title Dipl. ACVBM.

### Examination, administered yearly by VBMA

Examinations will be announced periodically, usually to be given in conjunction with the VBMA Fall Conferences in September. The examination will begin at 8:00am and the applicant will have until 12:00pm to finish.

The Exam will be divided into modules, and the herbalist must apply for one (or more, by separate application):

1 species of interest

   a dog/cat
   b horse
   c food animal or mixed animal

2 area of herbal medicine

   a Western herbs
   b TCM

The written examination is multiple choice and will be administered over 2-3 hours. An herb identification section of the test may be administered during the same session. Western herbs will be identified orally or in writing from slides or fresh plant material, and Chinese herbs will be identified from samples.

# Regional Reports

## VETERINARY HERBALISTS FROM AROUND THE GLOBE SHARE THEIR LATEST NEWS

### VHM in the U.S.

In September, the VBMA had our 4th Annual Fall Conference in Ogden, Utah, USA. Our keynote speaker, Francis Brinker, ND, is a prolific author and provided information from his latest book, Complex Herbs, Complete Medicines. Many of us sat, jaws dropped, as he reviewed the literature on Echinacea, showing that we must be more careful than to say Echinacea does or does not work for any given disorder. His in-depth analysis showed how ongoing research has been done to determine whether the root or the tops, angustifolia or purpurea, extract or dried herb is best for upper respiratory and viral infections. Despite all of this research, one finding stood out – you have to take a form (primarily tea) that contacts your pharyngeal lymphoid tissue!

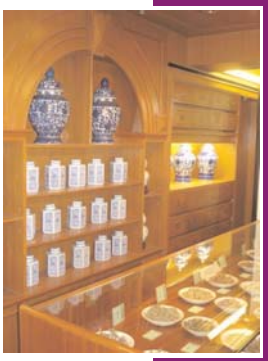
Our speakers inspired us in other ways – Joyce Harman discussed her journey exploring equine phytotherapy using antiquarian texts and presented her research on insulin resistance in horses. Barbara Fougere reviewed adaptogens, and the antioxidant properties of herbs. Rob Silver reviewed the many faces of licorice. Lynelle Graham discussed anesthetic/herb interactions, and presented us with her literature review and personal experience using Yunnan Paiyao in the University of Minnesota Veterinary Teaching Hospital. Susan Wynn finished the two day conference with a review of concepts important in the treatment of GI and respiratory diseases.

The VBMA is busy planning our next fall conference, as well as a spring symposium for May of 2007. U.S. members are welcome to help us scope out a spot for the spring conference (near Seattle, WA).

**SUSAN WYNN DVM**
*Bells Ferry Veterinary Hospital, Acworth, GA, USA*

# Chinese Herbal Medicine Garden

## HONG KONG

# Case Study

## CHRONIC PERIANAL DISCHARGE RESOLVED WITH PHYTOTHERAPY


### Abstract

A 9 year old Labrador boxer cross dog was successfully treated for chronic serous discharge from the perineum with phytotherapy. This was following four surgeries, antibiotic and prednisolone therapy which was unsuccessful, however there may have been a synergistic effect with concurrent herbal and prednisolone treatment.


### Case History and Clinical Signs

A 9-year-old, female, 30.5kg Labrador boxer cross was presented September 2001 with a history of chronic serous blood tinged discharge from her left perineum for the past year. The owners would need to clean underneath her tail several times daily to avoid spread of discharge onto floor and furnishings. The left anal gland had been removed in February 2001 following abscessation, which had not resolved with antibiotic use. This surgery was followed by three more surgeries in March, April and May of 2001 because the area continued to be infected and the discharge had continued. In discussion with the regular veterinarian it was felt that some tissue remnant remained and was the source of the infection and discharge. The surgeries were unsuccessful in locating the source of the discharge and the owners were reluctant to continue with surgical options.

At the time of presentation a significant amount of dark, blood tinged serous discharge was present, oozing from a single small fistula/ furuncle on the left hand side beneath where the anal gland would be expected to be. The dog also had a moderate degree of crepitus in her stifles and hips. The owners had also observed a large amount of mucous present in her daily stools, though the stools were regular and consistently firm; however the owners did observe dyschezia. She had been on several long-term courses of antibiotics because of the chronic discharge problem.

A referral to a specialist was recommended but declined at the first visit. A herbal treatment (formula 1) was provided to support the immune system and counter the infection and to help address the dog's arthritis.

The dog represented in November 2001, the discharge had reduced in quantity, but was still present and a referral to a surgical specialist was agreed upon with the view that surgery would be required to remove the source of the infection. No tests were carried out, however the specialist thought the discharge was due to a draining sinus or fistula, but could possibly be an autoimmune furunculosis. He recommended surgery to remove the suspected remnant tissue and in the meantime dispensed prednisolone to see if it would resolve the problem. The dog stayed on prednisolone under the guidance of the specialist until April 2002 (a total of 5 months). She gained 2kg during this time. The sinus was still draining and surgery was recommended again with the view that the condition was probably not autoimmune and that there was most likely a remnant of anal gland tissue. In April 2002 the owners requested herbal therapy again and the prednisolone was gradually reduced and the course finished in June. The herbal therapy (formula 2) was continued during this time (from April) and in June 2002 the discharge stopped. The herbal therapy was continued until September 2002. In April 2003 the owners report that the discharge has never returned.

### Treatment

The conventional treatment of this dog included four surgeries (including initial removal of the left anal gland), antibiotic therapy (amoxicillin and clavulinic acid) and prednisolone (20mg daily to every second day).

HERBAL FORMULA

Formula 1 was provided at the time of initial presentation. The key symptoms were the serous discharge from the perineum, osteoarthritis and mucous in her stools. A possible link between the bowel inflammation and the discharge was assumed and the formula made to address a possible mild colitis, infection and arthritis.

| | | |
|---|---|---|
| Berberis vulgaris | 1:2 | 60mL |
| Echinacea purpurea | 1:2 | 40mL |
| Glycyrrhiza glabra | 1:2 | 20mL |
| Althea officinalis | 1:5 | 40mL |
| Astragalus membranaceus | 1:2 | 40mL |
| | | 200mL |

Dose 4 mLs twice daily with food. This formula was redispensed for a total treatment period of eight weeks.

Formula 2 was provided at the time of the second check-up with the specialist when the discharge was still present despite prednisolone treatment and surgery was recommended again. The key symptoms were the serous discharge from the perineum; arthritis and weight gain from prednisolone use.

| | | |
|---|---|---|
| Bupleurum falcatum | 1:2 | 25mL |
| Silybum marianum | 1:2 | 25mL |
| Glycyrrhiza glabra | 1:2 | 25mL |
| Berberis vulgaris | 1:2 | 25mL |
| | | 100mL |

Dose 3 mLs daily with food.

HERB SELECTION AND RATIONALE
(Mills& Bone 2000, www.ars-grin.gov/duke, AcoHM 2001)

**Bayberry** *(Berberis vulgaris)*

| | |
|---|---|
| Family | Berberidaceae |
| Parts used | Bark |
| Energetics | Cold, dry, bitter |
| Actions | alterative, antiinflammatory, mild laxative, liver tonic, digestive tonic, antiseptic |
| Indications | Skin disease including acne, boils, psoriasis, eczema, and urticaria<br>Gastrointestinal catarrh, cholecystitis, gallstones, jaundice<br>Arthritis, gout |
| Contraindications | None known, pregnancy |
| Constituents | Berberine |
| Rationale | Use in skin disease and arthritis for its alterative, digestive tonic and antiseptic properties. |
| Dose | 1:2 20-40 mLs per week human |

**Echinacea** *(Echinacea purpurea)*

| | |
|---|---|
| Family | Asteraceae |
| Parts used | Root, whole plant. |
| Energetics | Warm, acrid, sweet |
| Actions | Immunostimulant, antiinflammatory, antibacterial, antiviral, vulnery |
| Indications | Chronic infections, states of weakened or suppressed immunity, long term treatment of allergies and intolerance, inflammatory and purulent wounds, boils, indolent ulcers, abscesses, furuncles, inflammation of connective tissue, topically for poor healing wounds |
| Contraindications | Allergies to asteraceae |
| Constituents | Alkylmides, cichoric acid, polysaccharides |
| Rationale | For its vulnery, antibacterial, immune support to treat chronic infection, possible colitis, abscesses, furuncles and inflammation of connective tissue indications |
| Dose | 1:2 10-40 mLs per week human |

**Licorice** *(Glycyrrhiza glabra)*

| | |
|---|---|
| Family | Leguminosae |
| Parts used | Root. |
| Energetics | Neutral moist |
| Actions | Antiinflammatory, adaptogen, antiviral (topically), expectorant, antispasmodic, laxative, oestrogenic, taste improver, antiulcerogenic |
| Indications | Stress, respiratory conditions, eczema, acne, arthritis, gout, gastric ulceration, augment steroid treatment, |
| Contraindications | Depletion of potassium when used for long periods |
| Constituents | Triterpenoid saponins (glycyrrhizin), flavonoids, liquiritin, polysaccharides, sterols, coumarins, bitter principle |
| Rationale | For its antiinflammatory gastrointestinal properties, indications in arthritis and taste improver. |
| Dose | 1:2 15-40 mLs per week human |

**Marshmallow** *(Althaea officinalis)*

| | |
|---|---|
| Family | Malvaceae |
| Parts used | Leaf, root. |
| Energetics | Warm, moist |
| Actions | Mucilage |
| Indications | Gastrointestinal ulceration, colitis, respiratory inflammation, urinary tract infection |
| Contraindications | None known |
| Constituents | mucilage |
| Rationale | To treat the underlying inflammation causing mucous production in the bowel and to balance the formula |
| Dose | 1:2 20-40 mLs per week human |

**Astragalus** *(Astragalus membranaceus)*

| | |
|---|---|
| Family | Leguminosae |
| Parts used | Root. |
| Energetics | Sweet and slightly warm |
| Actions | Immune enhancing, tonic, cardiotonic, diuretic, hypotensive |
| Indications | Chronic infections, immune deficiency, cancer, stomach ulcer, chronic wounds and lesions, hepatitis, heart disease, hypertension, chronic debility, ageing |
| Contraindications | Caution in acute infections |
| Constituents | Triterpene saponins (astragalosides) |
| Rationale | Older dog, immune enhancing, chronic infection and chronic wound and lesion indications. |
| Dose | 1:2 30-60 mLs per week human |

**Bupleurum** *(Bupleurum falcatum): used in formula 2*

| | |
|---|---|
| Family | Apiaceae |
| Parts used | Root. |
| Energetics | Cold, bitter |
| Actions | Antiinflammatory, hepatoprotective, renal protective, tonic, diaphoretic, antitussive |
| Indications | Acute and chronic liver disease, gastric ulcer, enlarged spleen, acute infections with accumulation of toxins, cancer, autoimmune disease |
| Contraindications | May cause loose stool, nausea, and flatulence |
| Constituents | Berberine Triterpenoids (saikosaponins), polysaccharides (bupleurans) |

| | |
|---|---|
| Rationale | Antiinflammatory, infection with accumulation of toxins and the dog had been on prednisolone for months. General tonic. |
| Dose | 1:2 15-40 mLs per week human |

**Milk Thistle** *(Silybum marianum, Carduus marianum)*
(Holy thistle, Lady's thistle, Mary thistle, Marian thistle)

| | |
|---|---|
| Family | Asteraceae |
| Parts used | Derived from the seed, pod, or fruit of the plant. |
| Energetics | Warm, dry |
| Actions | hepatotonic, hepatoprotective, antioxidant |
| Indications | Hepatitis, digestive and other health problems associated with deficient liver, Adjunct to treatment of hepatitis and jaundice, exposure to liver toxins, gallbladder disease, hypercholesteremia, cancer prevention, drug induced hepatoxicity |
| Contraindications | None known |
| Constituents | Flavolignan: 1.5% silymarin; a mixture of three compounds silybinin, silidyanin, and silychristin |
| Rationale | Long-term use of prednisolone and assumed hepatopathy |
| Dose | 1:2 30-60 mLs per week human |

## Results

At a two week telephone check-up (October 2001) following formula 1, the serous discharge was present but the presence of blood had reduced and the mucous in stool was now not present every day. Four weeks later she was checked again, the discharge was reported by the owners to be less, and there was no mucous present in her stools now. The dog was started on glucosamine 500mg twice daily for her arthritis. The referral to the specialist was made because the problem had not resolved and if remnant anal gland tissue were present, this would be expected to continue discharging or acting as a nidus of infection until removed.

Following five months of prednisolone therapy the discharge had diminished but was still present. The dog gained 2 kilograms over this time. The owners were advised that surgery was the only option and they declined. At this point formula 2 was dispensed (April 2002). 10 weeks later the dog's discharge had stopped and area had healed, there was no evidence of a sinus. The dog's weight had reduced by 2.5kg, her mobility had improved and her stools were normal.

In April 2003, the owners report that the dog has been well, and the discharge has never returned.

## Discussion

The challenge for this case from a conventional perspective is that the source of the problem was not clear. The differential diagnosis could include pyoderma, perianal fistula/ furunculosis or a remnant of secretory anal gland tissue. The most likely aetiology of the discharge was a nidus of infection from a remnant of secretory anal gland tissue. The prognosis given to the owners was therefore poor and the reason why referral to a surgical specialist was considered. However the owners did not want a fifth surgery.

The mucous in the stool and dychezia was also interesting as there is an apparent association between anal furunculosis and colitis (Jamieson et al 2002). Though this dog did not present with a diagnosis of colitis or anal furunculosis, a mild form of colitis is possible. The dog had always been on a home made diet, meat, bones and vegetables. The presence of mucous was resolved over the course of herbal treatment (formula 1) prior to the administration of prednisolone. Althea officinalis is particularly well known as a mucilage for the treatment of colitis or other inflammatory diseases of the digestive tract (Mills &Bone) and the dog seemed to respond quickly in this regard, without modification of the diet.

Berberis vulgaris and Glycyrrhiza glabra have a traditional use in the treatment of arthritis however, despite 6 weeks of treatment on formula 1, there was no apparent improvement in the dogs crepitus. The owners were not concerned about the dog's mobility, however they agreed to commence glucosamine sulphate. At follow up several months later, the owners had observed increased mobility. These two herbs were not chosen specifically for their anti-arthritis use, but primarily for their antimicrobial and antiinflammatory properties and the fact that they had concurrent indications for arthritis.

With eight weeks of treatment there was an improvement in the quality and quantity of discharge produced. Blood was present less frequently and the owners reported that they did not need to clean the area as frequently. Berberis vulgaris containing berberine, has antimicrobial and antiinflammatory activity, Echinacea purpurea has vulnery, antibacterial, and immune supporting properties and a long tradition of use in the treatment of chronic infection, abscesses, furuncles and inflammation of connective tissue (Mills & Bone). Astragalus membranaceus is also indicated for the treatment of chronic infections and wounds (promoting discharge of pus) (Mills & Bone).

Despite the improvement, the case was not resolved at this stage. The specialist surgeon was sure it was anal gland tissue and needed to be removed but given the owners reluctance for surgery, the dog was treated with prednisolone.

If the dog did have anal furunculosis, the combined use of immunosuppressive and antimicrobial therapy (such as azathioprine and metronidazole) followed by surgery is thought to provide better outcomes than either medical of surgical treatment alone (Tisdall et al 1999). Perianal fistula is a chronic inflammatory, ulcerative disease of the perianal tissues that is seen almost exclusively in the German Shepherd dog. The exact aetiology of this disease is not definitive and includes a possible immunological, bacterial, endocrine, or anatomic basis for the disease. As a result many different treatment methods have been proposed for this problem, none of those reported are routinely successful in controlling

the disease (Harkin et al 1996, Matthew et al 1996). It is not certain whether this was the diagnosis, however it was not resolved with prednisolone alone.

The second herbal formula contained Berberis vulgaris, Bupleurum falcatum, Glycyrrhiza glabra and Silybum marianum. Silybum was used primarily because of an assumed low-grade hepatopathy that might be expected with long-term use of prednisolone. Berberis vulgaris was used for its antiinflammatory and antimicrobial properties. Bupleurum falcatum has antiinflammatory properties. In combination with concurrent corticosterone acetate administration, it has been demonstrated to potentiate the action of cortisone (Mills & Bone). Given that this herbal formula was started as the prednisolone was being reduced, there may have been a synergistic effect; given that prednisolone on its own was unsuccessful. Glycyrrhiza glabra was included mainly as a flavouring agent, although it does augment steroid action too (Mills & Bone).

**Summary**

What is surprising about this case, is the seemingly quick resolution of a long standing discharging sinus (over 14 months duration), eight weeks after dispensing the formula. It is possible that the prednisolone played a role in the resolution, however 5-6 months of treatment prior to the herbal formula had made an insignificant change clinically. The question remains then, was this a mild case of anal furunculosis or a remnant of anal gland tissue or a chronic pyoderma? If it were anal gland tissue, then recurrence would be expected. If furunculosis, then this may be another possible treatment option. If it was a chronic pyoderma, then again the herbal formula may offer an alternative to antibiotic use. This simple formula triggered a satisfying resolution to the case.

**BARBARA FOUGERE BVSC**
*All Natural Vet Care, Sydney, Australia*

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Website: www.ars-grin.gov/duke

# Food Therapy

## MEDICINAL FOOD RECIPES

### Dandelion and Beetroot salad

*Serves 4*

- 2 C sliced beets (beetroot)
- 2 C prepared dandelion leaves
- salt and pepper
- white wine vinegar
- Goat or feta cheese, as desired

Dandelion leaves are diuretic, nutritive, act as a digestive tonic and may benefit the liver.

Mix the beets and dandelions in a shallow dish, season with a little salt and plenty of pepper, and add enough vinegar to barely cover the salad.

Adapted from Pamela Michael, *All Good Things Around Us*

### Hop Top Soup (1)

Take a large quantity of hop tops, in April or May, when they are in their greatest perfection; tie them in bunches twenty or thirty in a bunch; lay them in spring water for an hour or two, drain them well from the water, and put them into some thin pease soup; boil them well, and add three spoonfuls of the juice of onions, some pepper, and salt; let them boil some time longer; when done, soak some crusts of bread in the broth and lay them in the tureen, then pour in the soup.

From Mrs. Charlotte Mason's *The Lady's Assistant*, 1755

### Hop Top Soup (2)

Roger Phillips of *Wild Foods* suggests sautéing a chopped onion, adding 4 cups of chicken stock, a can of peas, a large handful of hop tops and cooking gently for 30 minutes, flavoring with a touch of cayenne and serving with croutons.

# BELIZE
## ECOTOUR

*Belize*

In February, the VBMA held its annual ecotour in the rainforest and beaches of Belize. The tour was run by Rosita Arvigo, DN, a naprapathic physican, herbalist, international lecturer, author and teacher of Maya medicine.

*Rosita*

According to various sources on the internet, I have pieced together this portrait of Rosita's fascinating life. Dr. Rosita Arvigo was born in the early 1940's on the north side of Chicago. She earned her degree in Naprapathy from The Chicago College of Naprapathy in 1981, graduating with high honors. Dr. Arvigo then moved with her husband and family to the jungles of Western Belize, where they founded an organic farm and natural healing clinic. The 35 acre farm on which the family grew their food, as well as healing herbs, is named Ix Chel Farms, in honor of the Mayan Goddess of Healing.

"Dr. Rosita" (as she is fondly known in Belize) began to hear stories of an old Mayan traditional healer, Don Elijio Panti, who was known for his ability to cure hopelessly ill patients. Finally, two years after her arrival in Belize, Dr. Rosita met the 86 year old gentleman, who eventually became her mentor. For ten years, Dr. Rosita studied the art of Mayan natural healing and spiritual traditions that are an integral part of Don Eligio's tradition. She is determined to preserve the knowledge of Don Eligio so that it will not die out when the last traditional shamans are gone.

During one of their walks in the forest to gather herbs, Don Eligio Panti showed Dr. Rosita all the medicinal plants that were growing along the path. This path was dubbed "The Panti Medicinal Trail" and has become one of the major attractions for tourists who visit the Cayo District of Belize. Visitors to the Ix Chel Tropical Research Center can walk along the trail, which has signs for each medicinal tree and plant describing its history and uses. Near the end of the walk, visitors can view a recreation of Don Panti's home. Sadly, Don Elijio died in February of 1996, at age 103. His death was mourned throughout the world.

*Chaa Creek*

The VBMA ecotour to Belize went off without a hitch. We had beautiful accommodations with spa meals, a well stocked bar and plenty to do at Chaa Creek. Belize is only a 3 hour flight from Altanta, and Chaa Creek's beautiful meeting facilities tempted some of us to discuss an official VBMA meeting there.

Our teacher was not only a font of information but a beautiful hostess as well. Rosita Arvigo began our 4 days of lessons in her beautiful home, introducing us to the namesake for her old farm (where we stayed in beautiful new cabanas) – Ixchel, goddess of love, home, fertility and medicine.

Rosita is author of 4 books:

*Spiritual Bathing: Healing Rituals and Traditions from Around the World* by Rosita Arvigo and Nadine Epstein

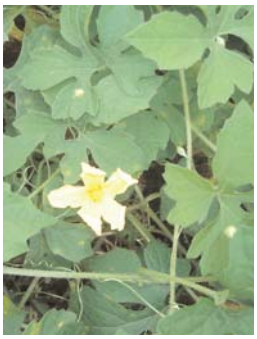
*Rainforest Home Remedies: The Maya Way To Heal Your Body and Replenish Your Soul* by Rosita Arvigo and Nadine Epstein

*Sastun: One Woman's Apprenticeship with a Maya Healer and Their Efforts to Save the Vani* by Rosita Arvigo

*Panti Maya Medicine Trail Field Guide* by Rosita Arvigo

We were introduced to the plants of her Mayan mentor, Don Elejio Panti, by seeing them, feeling them, tasting them and hearing Rosita's description of their traditional uses and their relationships to the gods of the Maya. Two plants we all recognised grow beautifully in Belize – bitter melon and wild yam. During one day of class, we each had the experience of making our own spiritual baths, and bathing on a beautiful mountain top in meditative silence. We were all very moved.

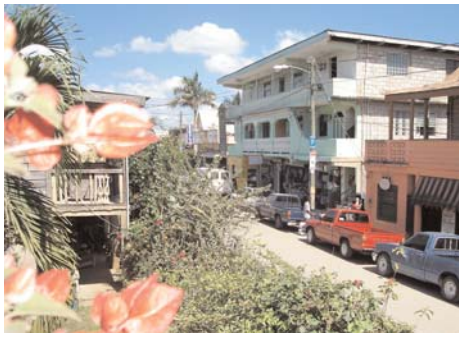
Rosita acted as tour guide as well, and led us through a Saturday farmer's market in San Ignacio as well as her small



*Wild yam and bitter melon flower*

factory in town. We had time to visit dramatic Mayan ruins near by (and one group went to the larger ruins in Guatemala – a must-do next time we are there).

In smaller groups, we got to experience bird walks, night creature tours, and plenty of deck time with our new favorite drinks (capirinhas were well known and appreciated by the end of our stay at Chaa Creek). This became the platform for our continuing education during the rest of the tour, which landed presently in Placencia.



*San Ignacio*

This beach town on the southern coast is still 'beachy' – casual, poor, with great sea food – but it is fast being developed with more chi chi resorts, shopping and hotels. Our hotel was likewise informal but had everything we needed – clean, beautiful beach, beach bar, casual restaurant, and within a bike ride of everything else. If you are on the Belize coast, you must try conch with your Belikin beer (the native beer was judged very good by Ian, our resident beer master). Your meal – actually, your entire stay - will usually be accompanied by reggae music.

Our C.E. sessions were a mix of formal lecture and discussions of personal experience. We learned more about cancer treatment, nutraceuticals, diet and herbs during this second phase of the tour, in between naps on the beach and night time entertainment. One particularly memorable session was a discussion of everyone's favorite books. But this is a subject for another article……

Rhea, Priscilla, Sara, Ian, Vicki, Karen, Barbara, Jeff – thanks for being such a great group of travel friends, and especially thank you to Rhea. You can plan our next trip any time!

## TO ALL CATNIP CULTURE HOPEFULS… MY OWN TALE OF WOE.

I guess the point was mainly to grow it for the cats, but I had anticipated waiting until the holidays and using it for gifts.

The first time, I naively plunked the catnip among the mints and pennyroyals. The poor little transplant never pushed its roots out from the pot-shaped ball they came in. The neighbor cats ripped it out of the ground and played football with it all afternoon – this I judge from its condition when I arrived home from work the second evening.

Silly me, I thought then that a bit of wire would keep the cats off it. I tenderly re-planted the invalid Nepeta with a bit of poultry wire arranged over the top and staked into the soil. I have always wondered what happened to the wire...

After this second violation, the plant did not look a likely candidate for survival. In medical terms, its condition was 'grave'.

So I brought home another, and planted it in the top of a large heavy imported Italian terra cotta pot. Filled with soil, this pot weighs in at about 75 pounds. Imagine my horror, when I returned home the following evening, to find the pot overturned, the soil excavated, the catnip plant nowhere to be found, but significant tufts of animal fur scattered among the wreckage. It passed through my mind that this might not be an ordinary cat at work, but, perhaps, Something Larger? The yellow tiger-colored hairs did, however, suggest a domestic visitor over an apricot catamount.

I next (jaw set, grim determination in my eye) planted catnip in a plastic pot hung by 3 chains from the cross-bar of the clothesline. With pliers I closed the hook that passed through the eye of the bar. I arranged new chicken wire over the top of the pot. I put cast-off barbed wire at the base of the clothesline pole, and anchored it with iron stakes driven in at angles. I stood back to admire my work. It looked like an industrial construction project on the perimeter of a prison.

I have always prided myself on effective design in the garden...

On the following evening, I probably need not tell, the catnip had again been ravaged. The scene was improbable. The pot, still attached by one of three chains, hung at a debauched angle. Its contents had spilled into the barbed wire at the base of the installation.

Among those wires were traces of catnip leaves, and quantities of yellow and white fur, soft fur, tinged with spots of blood. Bits of perlite from the potting medium clung to the red spots. The catnip, and the nipped cat, were nowhere in evidence.

I adopted a philosophical outlook then, as I surveyed the result of the day's work. I decided it might be a better thing to not grow catnip in the garden.

**Susan L. Nielsen**

*Found on Henriette Kress' wonderful website:*
*http://www.ibiblio.org/herbmed/index.html*

# Monograph
## CRATAEVA

*Crataeva nurvala*

**Common names:** Varuna, three leaved caper, varun. Botanical synonym is *crataeva religiosa*.

**Distribution:** Throughout India and cultivated worldwide

**Family:** Capparidaceae

**Parts used:** Stem and root bark and leaves

**Selected constituents:**
Varuna contains lupeol (a triterpene), the most active principle which has antiurolithic properties and reverses biochemical and histopathological changes caused by calculis (Anand 1990). Lupeol is an effective antioxidant (Baskar 1996). Anticancer and antioxidant coumpounds (quercetin, B-sitosterol, catechin) have been identified in animal studies and in vitro (Prabhakar 1997), flavinoids, glucosinolates, saponins and tannin.

**Clinical actions:** anti-inflammatory, antilithic, bladder tonic, urinary antiseptic

**Energetics:** cooling

## History and Traditional Use

The name Crataeva derives from Crataevus a Greek botanist. It was known to ancient physicians who used it as a blood purifier and to maintain homeostasis. Ayurvedic medicine texts dating back to 1100AD record the use of varuna in urinary tract disorders.

It is used in the treatment of urinary tract infections, calculi and cyrstalluria and valued as a bitter, astringent, demulcent, laxative, rubifactant, tonic, liver stimulant and vesicant. It is also used for malaria and tumours.

Ethnoveterinary use is in the treatment of renal lithiasis, swelling of the liver and diarrhea (Williamson 2002).

## Published research

A pharmacological study found that crataeva influenced small intestinal sodium, potassium ATPase which may in turn influence transport of minerals (Varalakshmi 1991).

In human studies 50ml decoction twice daily for three months significantly improved incontinance, pain and retention in prostatic hypertrophy with hypotonic bladder (Deshpande 1982). After four weeks treatment 68% symptomatic relief in chronic urinary tract infections, 17% devoid of microorganisms and pus cells (Deshpande 1982).

Water extract of the stem bark increased smooth muscle tone (intestine and ureters) of guinea pig, dog and humans and skeletal muscle in vitro (Das 1974) and after oral treatment with Varuna for 40 days, there was a significant increase in bladder tone in dogs (Deshpande 1982).

Crataeva significantly inhibited bladder stone formation in an experimental model in rats. The bladders of treated animals showed less oedema, ulceration and cellular infiltration when compared to controls (Deshpande 1982). In 46 calcium oxalate stone patients using 50ml decoction twice daily for between 1 and 47 weeks, 28 passed the stone, 18 experienced symptomatic relief. This is thought to be due to the tonic contractile action of the drug on smooth muscle (Deshpande 1982).

Crude extract at 100mg/kg po in rats significantly reduced stone formation (81%) (Prabhakar 1997). The use of Crataeva decoction on calcium oxalate lithiasis has been studied in rats. The elevation of the oxalate-synthesizing liver enzyme, glycolate oxidase, produced by feeding glycollic acid was remarkably reduced with the decoction, showing a regulatory action on endogenous oxalate synthesis. Protein-bound carbohydrates were increased in the renal tissues during calculosis but these changes were not reversed with the herbal treatment. The increased deposition of stone-forming constituents in the kidneys of calculogenic rats was lowered with decoction administration. The increased urinary excretion of the crystalline constituents along with lowered magnesium excretion found in stone-forming rats was partially reversed by decoction treatment (Varalakshmi 1990).

Stem bark decoction was used in patients with calcium oxalate stones. After 12 weeks there was a significant reduction in pain and dysuria and some reduction in the size of stones (Singh 1991).

### Lupeol

Adjuvant arthritis is widely used as an experimental model for rheumatoid arthritis and inflammation. The effects of lupeol and lupeol linoleate on the development of complement in adjuvant arthritis in rats were studied and compared with those of indomethacin. The results suggest that the anti-inflammatory activity of the triterpenes may be due to their anticomplementary activity (Geetha 1999 Apr).

Lupeol and lupeol linoleate were administered orally (50 mg/kg) for 8 days to arthritic rats, after 11th day of adjuvant injection. Lupeol linoleate was more effective than lupeol possibly due to stabilization of the lysosomal membrane of cells (Geetha 1999).

Investigations were undertaken to study the role of lupeol, in calcium oxalate experimental rat urolithiasis. Lupeol

administration (25 mg/kg body weight/day) reduced significantly the renal excretion of oxalate. It also reduced the extent of renal tubular damage as evidenced from the decreased levels of the damage marker enzymes in urine. Such a reduction is likely to be beneficial in minimizing the deposition of stone-forming constituents in the kidney which provides antilithic effect (Malini 1995). Administration of lupeol and its structural analogue betulin to hyperoxaluric rats minimised the tubular damage and reduced the markers of crystal deposition in the kidneys. In this connection, lupeol was found to be more effective than betulin (Vidya 2000).

Lupeol in rats produced a dose dependent (10-50mg/kg po) 20-95% reduction in weight of urolith formed (protective effect). In preformed stones after 16 weeks of lupeol at 10-50mg/kg po there was a weight reduction of 15-55% on stones but no size reduction. Very small stones had disappeared suggesting their dissolution and/ or subsequent flushing. Biochemical and urinary abnormalities were markedly normalized (Anand 1994).

## Potential veterinary uses

Calcium oxalate urolithiasis

Urinary tract infections

Atonic and hypotonic bladders

Incontinence

Prevention of kidney and bladder stones

Benign prostatic hyperplasia

## Contraindications

none found

## Toxicology and Adverse effects

The LD 50 of a 50% ethanolic extract of stem bark was found to be >1000mg/kg administered IP to adult rats.

## Preparation Notes

Traditional 1 part powdered stem bark boiled in 16 parts water and evaporated until one fourth remains

## Dose

**Human:**

Decoction (15-25g per day) or 50mL of decoction (1:16) twice daily

Extract 1:2 40-100 ml per week

**Veterinary:**

1:2 tincture 1 ml- 2 ml per 20kg divided daily

## Notes of Interest

The tonic effect on the bladder is important as this will decrease the residual volume of urine an hence assist the effective expulsion of microorganisms from the bladder. This in turn will decrease the likelihood of chronic infection or reinfection.

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**BARBARA FOUGERE BVSc**

*All Natural Vet Care, Sydney, Australia*

# Practice Pearls

## PRACTICAL TIPS FROM VETERINARY HERBALISTS

*Gifts of knowledge and ideas from veterinary herbalists. They do not however, reflect the views or endorsement by VBMA.*

My Cat Practice had some challenges in getting the cats to take herbs. Having graduated from Dr. Xie's TCM and herbal practitioner class, I use a lot of Chinese herbs. If there is a formula, I probably know where to obtain it in tea pill form. Tea pills are the easiest to administer. Second easiest is to take the powdered form of the herb and mix it into anchovy paste, nutrical or hairball remedy, and paint the coat with it. It doesn't seem to matter to a cat how bad something tastes. If it is put on their coat, they will clean it off.

I also use Homeopathy to treat some cases, and of course administering the remedies to cats is very simple. I find that when the remedy is correct, most of the cats actually open their mouths for it. Some homeopathic remedies are herbal in origin.

Currently, I am working with mixing herbs in natural oils like avocado oil, which is really good for the skin. Cats are funny in how readily they go after oils. In the horsebarn, my barn manager used to use corn oil or wheat germ oil to top dress the horses' food, and the small animals (dogs and cats) raced to the buckets to lick what they could before the buckets were scooped up for delivery to the horses.

I think administering herbs in these types of oils is a very promising area. Omega 3 essential fatty acids, and the 3/6/9 combinations would make an excellent supplement to add herbs to. I have also loaded fish like sardines, salmon and herring with herbs to give to cats.

Soup is another good choice for dogs and cats. A soup poured over their regular food will most of the time be ingested. I don't recommend free feeding any of my patients, and that is probably why they are less likely to pick over their meals. Feeding raw foods also helps, chicken wings and necks can be powdered in some herbs. I find that not much herb has to be administered to be very effective.

Geriatric patients, (even my large breed dogs like labs and goldens)receive their herbs in teapill form. I would say that dosing the dogs with the larger doses of Chinese herbs is the most difficult, and if the client will cook for their dog, this is usually no longer a problem

Our horses are usually dosed with herbal mashes: add some bran or oats, and some apple juice for sweetener.

Birds can have their food pellets rolled in the herbs, or may eat loaded treat balls. We make little seed and lard treats for the birds just like outdoor birds enjoy.True, we don't know for sure exactly how much is actually making it to the bloodstream, but when they improve and do better, well, it must be enough.

For rabbits, we load bananas or roll pellets or use oral dosing with dropper. The smaller the animal, the harder generally it is to use tinctures, however these are the strongest forms of herbs.

I am planning for my Clinical Trials to use a herbal decoction, and administer the decoction to mice. The best way I feel to do this is to daily indivually dose the formula by mouth dropper. Always remember that as a general rule taste buds, if present, are at the tip of the tongue, so bypass that area with the dropper. Approach from the side and try to avoid the resistence to acceptance.

For people, I like the herbs to be leached out of red wine and suggest to anyone complaining of signs of Spleen Qi Defecieny, Jing Exhaustion, Blood Defeciency to make herbal wines. I take astralagus root that has been put into red wine almost every day. A shot glass full to avoid the colds and flu.

Personally, I use Honzo granules because they are concentrated. Very bitter but a much smaller amount. Most of Honzo's formulae are your kidney and liver formulae which we prescribe more frequently anyway. Using the concentrated granules in loaded items for dogs may be the best way to look into future administration problems.

Finally, food as medicine is a very exciting area, which study with Dr. Xie at the Chi Institute Food Therapy Classes have really helped ignite. I use the Food Therapy charts available from Redwings, and actually go down the list with clients for supplements to their pets feeding protocol. Everything alive can be treated this way, and food as medicine is the ultimate prescribing.

All of that information that works so well for me came with many hours of study under Dr. Xie and others in the US and in China through Chi Institute. Bob Flaws information from Blue Poppy, and lots and lots of outside reading. Being able to make that TCM diagnosis is imperative and you just don't learn that from one text.

**PATRICIA JORDAN**

*Chi Institute:Traditional Chinese Veterinary Medicine*
http://www.tcvm.com/

# Book Review

## 36 Insecticides Used on or Around Dogs and Cats

**by Dr. Diana Post and Jackson Schreiber**

This is a handy reference guide for veterinarians, animal care givers, pet owners, as well as those interested in up-to-date pesticide-related information. It provides easy to follow guidance to profiles of insecticide active ingredients by class, and individually. It has instructions on how to research a pesticide. There are adverse reaction summaries based on data from veterinary publications and the USEPA.

The information includes toxicity to pets, to owners and to the environment from products used on or around pets. The book also lists ways to minimize pesticide hazards.

In today's busy world, where time is not available to do research on one's own, this guide is essential in the office, to document concerns you or your clients have about the best way to protect themselves, their companion animals and the environment.

Dr. Michael Fox has called the publication "a good overview". He plans to recommend it in his national newspaper column, *Animal Doctor*.

PAGES: 152

DATE OF PUBLICATION: September 2005

Cost is $8.00US from Rachel Carson Council, Inc., PO Box 10779, Silver Spring, MD 20914.

Call 301-593-7507 or e-mail rccouncil@aol.com.

# Instructions for Contributors

The VBMA invites contributions to the *Journal of Veterinary Botanical Medicine*. The *JVBM* publishes material on all aspects of veterinary medical herbalism with emphasis on the clinical application of medicinal plants in veterinary medicine, the philosophy of veterinary herbal medicine, and the phytochemistry, pharmacology, herb drug interactions and research that applies to veterinary botanical medicine.

### Editorial Policy

Subject material must relate to veterinary botanical medicine. Accepted articles become the property of the *Journal of Veterinary Botanical Medicine*. Contributions are subject to peer review and editing. Contributions to the *Journal of Veterinary Botanical Medicine* must not be submitted elsewhere.

### Contribution Requirements

Contributions should be word processed and forwarded by email to the editor, with the file(s) saved in plain text or Microsoft Word formats. All statements must be referenced and a full reference list must be included (if references are lengthy, they may be published in full on the VBMA website rather than in print). If the statement is the author's observation or opinion, this should be made clear. All statements should be of a professional nature and exclude any inappropriate style of writing. An abstract of the article should be included. A brief profile of the author should be included.

### Peer Review

All feature articles will be reviewed by two independent peer reviewers. Reviewed articles will be returned to the author for modification if required.

### Referencing

Textual citation method should be employed. Requires the name of author and year of publication in brackets at the end of statements or paragraphs. The reference list should be arranged in alphabetical order using the following format:

JOURNALS
Author's surname Author's initials. Year. Title of article. Journal name volume; issue: page numbers.
*for example:*
Bauer V, Bauer F. 1999. Reactive oxygen species as mediators of tissue protection and injury. Gen Physiol Biophys Oct; 18 :7-14

BOOKS
Author's surname Author's initials. Year. Book title. Edition. City of publication: Publisher.
*for example:*
Bensky D and Gamble A. 1993. Chinese Herbal Medicine: Materia Medica. Seattle, WA. Eastland Press, Inc.

# Organic Management of Food Producing Livestock

Organic production of livestock has provided some distinct challenges for producers but also some great opportunities to learn about raising animals optimally without having to resort to antibiotics and other conventional medicines. There is growing demand from consumers in organic products, so there is a benefit in livestock producers being certified organic because of the dollar premiums received (Hartman, 2004). However, organic livestock production is many years behind organic crop production and many producers have little understanding of the requirements of the certification process. Their veterinarians can also be disadvantaged when working with these producers because they are limited in what they can use and are not necessarily versed in looking at the farm in a holistic manner.

Organic agriculture espouses as its philosophy good farming practices without using synthetic chemicals. This philosophy is based on Sir Albert Howard's work in the early 20th century (Howard, 1943, Howard, 1947). Organic standards worldwide have grown out of the need for verification of the soil building techniques and the procedures used to raise organic products. In other words, organic certification is a marketing tool. There is little in most standards that are researched based. Research is occurring slowly but there is a need for much more. Much of what is practiced by producers is from decades of anecdotal and shared information.

Most standards around the world are based on the writers' philosophy of what organic means and on marketing strategies. Little of these standards, including the United States National Organic Program standards have science backing them. In the USA the National Organic Standards Board's official definition states that organic agriculture is "an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity. It is based on minimal use of off-farm inputs and on management practices that restore, maintain and enhance ecological harmony". Organic livestock producers abide by this philosophy and need to conform to strict standards set up by such programs, for example in the USA the National Organic Program (NOP). To successfully raise livestock and produce meat and dairy products without the use of antibiotics, farmers must manage their farming system well. This is accomplished in several ways. Under NOP feed must be 100% certified organic, which requires attention to quality soil building. Access to pasture must be given to ruminants. Cleanliness and sanitary conditions are most important. Dairy and meat animals must be raised following these standards from the last 1/3 of gestation, while poultry producers must conform to these standards from the second day post hatching. While standards are meant to be decisive and clear, too often they are open to interpretation on details.

Producers and veterinarians may only use non-synthetic or natural substances with no prohibited compounds, or they may use synthetic products that are on the National List of Allowed Substances. The National Organic Program defines non-synthetic or natural as a substance that is derived from mineral, plant, or animal matter and does not undergo a synthetic process as defined in section 6502(21) of the Act (7 U.S.C. 6502(21)). For the purposes of this part, nonsynthetic is used as a synonym for natural as the term is used in the Act (USDA, 2002). This National List of Allowed Synthetic Products is made up of products which have gone through a petitioning process that involves a Technical Advisory Panel review to ensure they conform to the National Organic Standards (*Table 1* on page 24). Those that conform are recommended for inclusion on the National List by the National Organic Standards Board, a board appointed by USDA as an advisory board to the NOP. NOP staff publishes these products in the Federal Register for public comment before they can be added to the National List. There is not necessarily any scientific reason why one product is petitioned over another. FDA rules supercede the use of any product on the National List.

Different countries have varying lengths of time during which land must be managed according to that countries standards before being certified. The US has a three year period; the UK has a two year period. Other countries have their own standards and may have differing time periods before land can be certified (*Table 2* on page 25). Land must have been free of prohibited substances or managed according to that country's standards before being certified. While these are arbitrary lengths of time, the purpose is to achieve adequate soil health and integrity of the system. It also takes about three years for the people to make the mental transition from using antibiotics or pesticides, to management through careful observation of farm interactions and reactions. This includes understanding that each part of the farm system affects the other parts, that there are biologically sound ways to enhance the function of all the parts, and that over time, the health of the system will improve the health of the animals, thus making disease a less common occurrence.

## Holistic Management of the Farm

The goal of organic livestock production is to manage the system so that animals stay healthy. Managing the system requires a holistic approach, by looking at the animals and their environment in relationship to each other. This leads to the understanding that changing one aspect of the system affects all parts of the system. The challenge is to determine what changes will be positive ones. As organic livestock producers become more skilled in their management of their farms, they see the health of the whole system improve.

In the USA the federal government did not allow the term organic to be used for labeling livestock products until 1999. Therefore, organic livestock production is far behind organic

crop and vegetable production in terms of research and knowledge. Beginning organic livestock producers struggle with alternative solutions for their sick animals. Veterinarians with no experience in alternative treatments face the same dilemma. Common alternative medical modalities include herbs, both Western and Chinese, homeopathy and acupuncture. These modalities require the user to observe the animal and its environment closely to determine the best remedy. Learning to use these modalities requires time and commitment, since it is a holistic approach that requires a different way of viewing the disease process. But once that change in thinking occurs, livestock farmers find that looking for alternatives to antibiotics is preferable. With careful management, many farmers often discover that as time goes on, there can be less sickness overall.

Veterinarians must have an understanding of what producers are allowed to use, as well as the fact that producers have the final word in what is used on their animals. Veterinarians can be a good source of information on management strategies, but they also have an opportunity to learn from producers, as producers often have knowledge of alternative therapies.

## Understanding and Minimizing Stress

Stress is defined as the biological response elicited when an individual perceives a threat to its homeostasis (Moberg, 2000). Stress leads to increased susceptibility to disease and decreases the vitality of the animal. Stress affects metabolic processes in the body, causing a series of hormonal releases and reactions. This series of processes increase the animal's energy requirement. All non-emergency functions, including digestion, growth, and reproduction are shut down. The immune system is affected, with some tissues undergoing atrophy and some blood cells being destroyed. All these effects lead to inefficient energy utilization by the animal's body. The energy used during stress removes stored hormones and nutrients and those must be restored, using more energy.

Treating sick or otherwise unhealthy animals, even successfully, makes no money for the farmer. It is a salvage operation. It is imperative to try to predict and avoid as many stress factors as possible. Certain management practices such as optimal nutrition and management of environmental stressors help the animal counteract stress better. It is more economical to work on animals that are unprofitable but not "sick". If animals aren't well fed, or if their living quarters are crowded or dirty, or if they are stressed from environmental factors, rough handling, parasites, they cannot produce profit for the farmer. To produce profit, animals must gain weight or produce milk and rebreed quickly, with as little expense as possible. During the transition phase of organic production, especially for producers who are unfamiliar with grazing management, some loss in production will likely occur. As land and management improves, production should improve. Producer often find the cost of production is reduced, thereby improving profitability.

In addition to adversely effecting immune function, stress can affect metabolic functions, which slows or stops feeding, rumination, growth (Moberg, 2000). This reduces dry matter intake, which creates a negative energy balance. If the stress is short in duration, the animal will be able to overcome these affects on its own, with no apparent problems. If the stress is longer lasting or chronic, recurrent, or there are multiple stresses on the animal, this may deplete the animal's reserves and cause overt illness. For example, a first calf heifer is not only undergoing the stresses of pregnancy, calving and lactation, but also is still growing herself. These are all physiological states for which she evolved. However, inadequate or poor quality forage or feed, rough handling or weather extremes, may present too many insults for her body to compensate. The challenge for the livestock producer is to become aware of the particular stresses occurring on the farm, and determine ways of preventing or at least lessening their effects. While this would seem to be common sense, many livestock producers are lacking in animal husbandry and nutrition knowledge (Schumacher, 2004).

The animal's response to any new stress can decrease or disappear depending on how and to what degree the stress occurs. For example, an animal is able to adjust to a gradual weather change without showing signs of stress or disease; a sudden weather change can severely weaken an animal with no shelter or windbreaks. First experiences with handling, hauling or other new situations will determine how well the animal reacts subsequently to those events. (Grandin, 1997)

When animals do become ill, producers should develop the habit of reviewing the events of the previous 2 weeks for possible stressors that can be corrected. When uncontrollable or irreversible circumstances require additional intervention from the farmer, botanical medicines may be considered.

## Pasture and Feed Requirements

Organic livestock operations in the US, prior to the implementation of the National Organic Program, relied on organic grain supplementation for a large portion of the animals' daily nutrient requirements. This was particularly true for dairy cattle and still is for poultry and hog producers.

All livestock must be provided good living conditions. Ruminants must also have access to pasture. Pasture is paramount for providing the nutrients necessary to keep animals healthy. In order to achieve this, pastures must be managed with good grazing practices, often referred to as controlled or management-intensive grazing. (Gerrish 1996) Controlled grazing is defined as providing high quality forage to animals at all times. Organic dairies can make forage available by moving cows into fresh pasture after every milking. Daily or twice daily moves are also necessary for stocker calves, lambs and goats which require high levels of weight gain. Less frequent rotations suffice and may be beneficial for other classes of livestock, such as dry cows and ewes. Availability of quality forage provides needed nutrition

in a form that these animals are best adapted to utilize. A ruminant can digest roughages in its rumen that simple stomached animals cannot and quality pasture is roughage that is high in protein and digestible fiber (in balance). The resulting high nutritional status helps prevent many diseases that might necessitate the need for conventional drugs. Grazing pastures provides the ruminants with the requirements listed in *Table 3* on page 26. Supplemental feedstuffs, raised organically, enhance the nutritional status of dairy cows, hogs and poultry by providing nutrients that are raised in an ecological manner. These supplemental feedstuffs are usually grains, but may be grain byproducts or other food byproducts, such as bakery products. In the US, all meat and meat byproducts are prohibited for livestock feeding. For many meat-producing ruminants, well-managed pasture can meet their entire nutritional needs. Providing high quality feed in the form of pasture, a form animals are adapted to utilizing, improves the whole farm system, usually at a lower cost than having to buy expensive organic feedstuffs (Kriegl, 2004).

Controlled grazing also satisfies the natural behavior of livestock, thus reducing stress. Understanding stress, identifying potential stressors and developing ways of predicting, handling and minimizing stress, will keep the animal's vitality high and immune system functioning well. Organic producers and graziers observe their animals closely and regularly, which helps them to recognize initial changes or signs that could mean the animal is weakened. Producers learn what these signs mean and can use various means to bring their animals back to the level of vitality that will keep them productive.

Pasture management and grazing is another learning process for producers and the veterinarians working with them. Fortunately there are many grazing workshops and schools that can be attended, along with grazing groups where follow up questions can be asked. Books and articles also are readily available that provide additional help (see resources).

Swine and poultry are required to have access to the outdoors. There is no stipulation that any part of their diet must come from pasture, but their natural behavior needs must be met, along with access to sunlight and fresh air. Table 3 contrasts the requirements for organic swine and poultry with conventional confinement animals.

For all animals, being outdoors decreases stress and enhances good health. While this is common sense, many producers need to see it in practice before they realize the importance of being outdoors.

## Substitution approach

When livestock producers transition to organic production, they naturally go through what is often referred to as a substitution approach. In other words, they look for legal remedies to use instead of pharmaceuticals that are not allowed in organic agriculture. This is a normal transition and gives the veterinarian the chance to work with the producer on the whole farming system as well as searching for alternative treatments. The transition period for land is three years, which also allows transitioning the thought processes that must take place when switching from using synthetic medications to using natural substances and working to create a healthy farm system. The more understanding one has about the underlying principles of holistic medicine and herbal medicine in particular, the better chance one has of selecting the best herb or herbs for the particular condition. But for a veterinarian who is working with organic livestock for the first time, it is better to learn about a few particular herbs for specific conditions. Once a level of confidence is gained, then learning more about more individual herbs will have more meaning.

In Western medicine, we are used to having drugs that provide quick, effective changes. Herbs may work more subtly and slowly, and palliative care may be important.

Veterinarians may try some of the remedies on their own animals, which teaches how they work, how long they take to cause changes, and what specific dosages to use. There is little information available on dosages, and there is even less known about how the rumen affects the active ingredient in many of the herbs. But sometimes emergencies happen and just having a list of products on hand will be the only step necessary.

There are many herbs listed in the literature for many different diseases. Which ones work best for which conditions is best determined (until more studies are available) by individual investigation and experience. Some of those questions can be answered best by what is commercially available. Many of these herbs can be toxic to some animals, at least at some stage of their life. Commercial availability of herbs can be a start as to assurance of safety.

Producers use alternatives which may be a combination of Western herbs, Chinese herbs, homeopathy, acupuncture, biodynamic preparations, nutritional supplements, and other forms of medicine. These are determined by the producer's own experiences, the experiences of other local organic producers, books or practitioners to which they are referred, and finally local veterinarians who have experience or at least interest in working with them. Most find that certain modalities work better in one situation and other treatments work better in another situation. There will be times when synthetic products will be the most effective treatment option. This is the importance of the National list of allowed synthetic medications. Antibiotics are the one medication that aren't allowed, but must be used in certain cases, for animal welfare reasons, even if it means the animal will then be removed from the organic herd or flock.

Producers and veterinarians can benefit from networking with groups which provide anecdotal experiences about various products (*Table 4* on page 26).

## How Herbs Provide Solutions

Nutrition is the most important aspect of organic livestock production, followed by good management that keeps stress to a minimum. There will be times, especially for producers new to organic production, when medications are necessary. Parasites and mastitis are the two most common diseases that producers will have to treat.

Short term solutions are treatments given to sick animals, and long term treatments consist of pasture herbs that will provide animals with what they need both from a nutritional standpoint as well as a preventive medicinal standpoint.

Herbs are available to most pastured livestock. These plants, also called forbs, are often considered weeds and many people don't realize that they provide livestock with health promoting plants. One old concept that specifically provides pastures with these plants is the herbal ley. First described in the early 1900s in Clifton Park, London, England, herbal leys are pastures that are planted to provide certain nutrients to the soil and to the animals. (Elliot, 1907) The most common seed mixtures for herbal leys contain orchardgrass, timothy, fescues, along with white and red clovers, birds-foot trefoil, other legumes, and forbs or herbs including chicory, plantain or ribwort, sheep's parsley, yarrow, and salad burnet. These forbs and legumes are deep rooted plants that bring up minerals from deeper in the soil, transferring them to the shallower rooted grasses. This pasture diversity gives livestock a better chance at having all necessary nutrients provided than with monoculture pastures with only one or a few plant species. There is also evidence of anthelmintic activity with these herbal leys, as will be discussed later. Many livestock producers consider these weeds, not realizing the benefits to their animals.

Planting different species of herbs and forbs in hedgerows may be a better way of providing these medicinal plants to livestock than administering them individually by hand. More recent work on establishing herbal leys has found that the forbs, which are the desired plants, do not persist for many years (Younie, 2003). In order for these plants to persist in pastures in high enough levels, time will be needed to establish them and they will have to be given increased rest periods in order to reseed. This can be accomplished with a good controlled or management intensive grazing program. These forbs tend to be very palatable, which means that livestock will eat them preferentially to other forages in the pasture. If animals are left on these pastures too long, they can kill them by overgrazing them.

Another option is to plant these forbs in hedgerows or a separate pasture that animals can be given access to periodically, and then removed to assure there is enough rest for these plants. Forbs and other pasture plants should be selected based on their ability to grow and thrive in that climate.

Mineral analyses of these different forbs show that they compare to alfalfa and ryegrass in protein and energy. They also have high levels of minerals, often higher than alfalfa or ryegrass. Since one of the regulations in the NOP is to provide livestock with natural forms of minerals where possible, having these plants in pastures will help to meet that requirement (*Table 5* on page 27).

Planting hedgerows requires training animals to go to them, which usually means having experienced animals in the herd or flock. Once animals are accustomed to going to these plants, they can self medicate. Pastures high in forbs should be grazed for limited periods of time, giving rest periods so that the desired forbs in those pastures can regrow Providing plants in pastures allows animals the opportunity to self-medicate. (Engel, 2002, Huffman, 2003) At other times, directly administering botanical products may be more useful. Herbs are used in the form of teas, tinctures, dried boluses, drenches, ointments, poultices. Whole plants may be used, either fresh or dried, or specific parts of plants.

Having an understanding of the components of the plants will be helpful in understanding what their mechanism of action may be, but it is important to remember that the most studied component is still just one of many compounds found in the plant. The whole plant is considered to be beneficial (as opposed to isolated components similar to conventional pharmaceuticals), due to synergistic effects of the different plant compounds. One excellent resource is Plant Products as Antimicrobial Agents (Cowan, 1999). It details various compounds found in plants and their generally accepted mode of action on bacteria, fungi and viruses. Understanding the different compounds found in plants is helpful in determining what herbs can be used for different conditions, even if there is little clinical information available (*Table 6* on page 27).

These compounds which have medicinal properties in small quantities can also be toxic to animals in large quantities (Caygill, 1999).

To get started using herbs in livestock, pick out the conditions that are most problematic for you. A basic herbal course is very helpful, and after going through one, the best advice I was given was to pick out several herbs, use them and see how they work for you, and under what conditions. For me, knowing the mechanism of action as much as possible helped familiarize me with them and made me more comfortable using them. Knowing the different compounds contained in the herb also was a big help to me.

Individualized prescriptions are generally preferred in small animal medicine, but it is much more difficult to do that with livestock. While certain breeds of livestock have been inbred to the extent that they will all have similar personalities, such as the Holstein cow, that doesn't hold true for all livestock. Relying on owner's observations are important, but in a herd, it will be more difficult to select the herb or herbs to correct a deficiency or excess than it is with an individual dog or cat.

There are several books available written by dairy veterinarians that are good sources of practical experience (see resources). There are no books available that specifically discuss other livestock, but many of the remedies for dairy cattle have similar indications. Many of the remedies used for companion animals and humans, especially topical remedies, will also be useful for livestock.

In addition to specifically addressing illness as it occurs, tonics are used to provide nutrients, especially vitamins, and promote digestion (Bone, 2003). Commercial tonic preparations are available from several different companies.

Ethnoveterinary medicine refers to people's knowledge, skills, methods, practices and beliefs about the care of their animals (McCorkle, 1986). There are hundreds of articles available that discuss ethnoveterinary products and practices Unfortunately, many of the products used in other countries are not currently available to producers and veterinarians outside of those countries and similar plants found elsewhere do not have the same effectiveness. There are ongoing efforts to study more of these treatments to better understand their efficacy and pharmacokinetics (Plaeger, 2003, Anjaria, 2002). A major concern is to protect the intellectual property rights of the people who have developed and maintained the use of these treatments.

## Herbs in Popular Use by Organic Producers

Organic livestock producers have had to learn about allowed treatments on their own. They have learned through books, workshops, and talking to one another. Many of the remedies they choose are supported by anecdotal evidence and their own observations, through trial and error. Many find that as they observe their animals more, they recognize how important good management and tender loving care is, and find that many of their diseases disappear

Nevertheless, all producers use some alternative therapies, usually a combination of homeopathic remedies, herbs, and vitamin and mineral supplements. *Table 7* on pages 29-28 lists some of these remedies, the species of animal they are used on, and what disease conditions they are used for. These are remedies that individual producers feel have given them a desired outcome.

## A Review of Conditions and Solutions

Parasites are the biggest problem that most organic livestock producers face. They are more detrimental to small ruminants, but in certain parts of the country, mainly the Deep South and Pacific Northwest, cattle may have severe problems. Swine and poultry do not tend to have as much of problem. With the increased space requirements of poultry and the requirement of access to the outdoors, many of the problems of confinement poultry and hogs disappear for organic poultry and hogs.

Treating parasites with allowed organic methods is very challenging. There are no alternative deworming products available that have the same effect as the chemical dewormers. Management strategies must be developed that take a number of different factors into consideration, including grazing management, age of animals, species of animals being raised, plants being grazed and finally, products that can be used to enhance the other aspects.

Pasture plants which are high in condensed tannins have been shown to help parasitized livestock. These plants include birdsfoot trefoil (Lotus corniculatus) (BFT), giant trefoil (Lotus pedunculatus) (maku), serecia lespedeza (Lespedeza cuneata), sainfoin (Onobrychis viciifolia), chicory (Cichorium intybus), narrow-leafed plantain (Plantago lanceolata), and dock (Rumex sp.) (*Table 8* on page 29). One study tested the effectiveness of giant trefoil (maku), birdsfoot trefoil (Lotus corniculatus), sulla, a legume grown in the northern United States, New Zealand and the United Kingdom, plantain, lucerne (alfalfa) and ryegrass/white clover against nematodes in lambs. Drenched lucerne-grazed lambs had highest weight gains, plantain lowest. Undrenched lambs had lower weight gains, with those eating sulla having highest gains, and a loss with plantain. Fecal egg counts (FECs) were lowest in lambs grazing sulla, highest with plantain lambs. Worm burdens were lowest with lambs grazing sulla and highest with maku (Robertson, 1995).

Another study was designed to determine if the antiparasitic effects of condensed tannins (CT) are due to the amount of protein reaching the small intestine or as a direct effect on the nematodes in the small intestine. This study carried out a larval migration inhibition assay using were maku, BFT, sulla, sainfoin, Dorycnium rectum, D. pentaphyllum and dock. All had an effect on the migration of 1 month old larvae. The most reduction in migration occurred with D. pentaphyllum, sainfoin, maku, D.rectum and dock. Dock had a 50% reduction in migration of larvae. Even at lower levels of CT, dock and sainfoin reduced movement of the larvae. Polyethylene glycol reversed the effects of the CT. Seven month old larvae were much more susceptible to the effects of CT than younger larvae (Molan, 2000). This article cited research showing raspberry canes and roots, which contain CT, have nematocidal activity (Taylor, 1966). The Taylor article has been cited several times since, but no further research has been found that specifically targets raspberry plants. Goats prefer browse and love brambles. Raspberry canes reducing parasite loads in goats would provide a much needed alternative.

Lambs grazing birdsfoot trefoil, containing condensed tannins, were found to have lower fecal egg counts (FEC) and nematodes than those grazing chicory or ryegrass/white clover mixture. Lambs grazing the chicory, which contains

sesquiterpene lactones, had similar fecal egg counts as those grazing the ryegrass/white clover but fewer nematodes were found in the lambs. (Marley, 2003)

Fecal egg counts in goats grazing mature sericea lespedeza, (Lespedeza cuneata) a forage high in condensed tannins, dropped dramatically, in as little as five days, while the goats were grazing the lespedeza. It rebounded just as quickly when the goats were grazed on forages lower in tannins, suggesting that the lespedeza did not kill the intestinal nematodes, but only affected their egg production.

These studies show that providing legumes and forbs high in tannins and sesquiterpene lactones to livestock can reduce the level of internal parasites in these animals, possibly to a level that keep the animals producing at an acceptable level.

Managing livestock and the pastures they graze will be critical to the overall success at keeping parasites at a low enough level to maintain profitable animal production levels. In some parts of the country, though, parasites may be an insurmountable problem because of wet, humid weather conditions. Herbal deworming products are the best solution available to complement these pasture and management strategies but they also have limitations.

Most of the commercial herbal anthelmintic products available have wormwood (Artemesia absinthium) as their primary herb. This herb has well known anthelmintic properties, due to its sesquiterpene lactone content. It can also be toxic if given in too high a dose. The various products are formulated by different herbalists, and it is difficult if not impossible to quantify the amount of different herbs present in the products simply by reading the label. There is also the caution of toxicity of the Artemisia, but there is no data to show what the toxic dose actually is in livestock. Rats fed up to 2% wormwood showed no adverse effects (Muto, 2003). All available information shows inconsistency in dosages of the different herbs. This increases the difficulties in determining effectiveness of herbs for parasite control. *Table 9* on page 29 lists commercial dewormers and their formulations.

Other herbs found in these deworming products have different actions, some of which are carminative, some are liver protectant, and others have little apparent effectiveness for the digestive tract.

A study in Virginia compared commercial herbal dewormers A and B with Ivermectin. This study lasted only three weeks, and showed that product A reduced egg counts over the entire period, while product B reduced egg counts the first two weeks, then egg counts rose on the third week. Product B consists of a dewormer that used for only three days, and a tonic that is recommended for use weekly (Drazenovich, 2003).

An organic sheep producer in British Columbia split her less thrifty sheep into four groups and tested four different alternative dewormers. Her results showed that none of them were effective. She used product A on one group, garlic on another group, diatomaceous earth, the fossilized skeleton of the sea diatom, on the third group and a pyrethrum drench on the last group. The producer rotated all four groups of lambs to new pastures on a weekly basis and monitored fecal egg counts and weight gains to determine effectiveness of the different products (Allen, 1998).

Several organic producers in Vermont participated in a three year study testing different parasite management strategies and products. The first year, garlic and wormwood capsules were used on two different farms. The second year ewes were fed soy bean meal, to increase the nutritional level and reduce the periparturient rise of worm eggs that occurs at lambing. Ewes were also drenched with a nicotine solution and fed an herbal wormer (Product E). Lambs were drenched with nicotine and fed the herbal wormer, but were also grazed on an individual paddock only once during the growing season (once through grazing). Calves were drenched with nicotine. The third year, lambs, kids and calves were drenched with pumpkin seed extract, nematophagous fungi spores and a combination of the two.

Fecal egg counts were monitored and did not fall with any of the herbal or fungal treatments. Supplementing the ewes with soybean meal also did not decrease egg counts. Producers felt that grazing a pasture only once in a season was the most significant contribution to lowered egg counts (Murphy, 2001).

With the exception of herbal dewormer A used in two trials, none of the treatments were the same, and dosages of the same herbs were different. Fecal egg counts were the determining factor in all studies as to the effectiveness of the treatments. There was little information available as to the degree of clinical disease in the animals, which is needed to help evaluate these products.

Epazote (Chenopodium ambriosoides) has been used in this country and other countries as an anthelmintic. The anthelmintic compound is ascaridole. One short-term research study fed both the oil and the fresh plants to goats to test for anthelmintic efficacy. The results, counting worms recovered from animals slaughtered seven to ten days after treatment, showed that epazote was ineffective in decreasing the number of parasites. This was directly opposite other studies that used natural infections. In vitro tests of Haemonchus eggs exposed to the oil of chenopodium resulted in decreased viability of the eggs. The conclusion was that longer term studies needed to be conducted, as a decrease in pasture contamination by parasitic eggs and larvae might result if the oil or fresh plants were fed for a longer period of time (Ketzis, 2002).

Chemical dewormers must kill 90% or more of worms to prevent the development of resistance to the dewormer. This level of kill is what most alternative dewormers are also held to when researched. This will rarely, if ever happen, as the herbal products are whole products, and do not have the same

mode of action. Internal parasites do not easily develop resistance to natural products. These natural products may provide gastrointestinal health benefits that help producers during times of parasite infestation to achieve the goal of acceptable animal production. Systems research is needed to determine how to use these products in conjunction with good grazing practices on pastures that have a diversity of forbs or legumes, and selecting animals that show resistance to parasites .

Heifer International is working with livestock producers in different parts of the world to test and catalogue effective ethnoveterinary practices. Guatemala producers participated in the following study using a traditional deworming tincture. This project is to preserve disappearing indigenous veterinary alternatives, and validate through research some of the practices, using local family farms. The director for Heifer International-Guatemala discussed the findings at a Heifer International Animal Well-Being seminar.

### DEWORMING TINCTURE

**Ingredients:**

- Tops of Epazote or Mexican Tea (Chenopodium ambresoides) 4 oz or 100 grams
- Dry Ayote(Pumpkin) Seeds (Cucúrbita pepo) 2 oz or 50 grams
- Leaves and flowers of African Marigold (Tagetes erecta) 2 oz or 50 grams
- Grain Alcohol 1 liter

**Elaboration:**

1 Weigh the plants and seeds. Measure the alcohol.

2 Pound the Mexican Tea, African Marigold and pumpkin seeds.

3 Put the powder in a jar and add alcohol.

4 Cover up the jar and agitate with circular motion.

5 Label the jar with the product's name and preparation date.

6 Place the jar in dark place for one week, agitating daily, and every day move it in circles.

7 After a week, strain the content and bottle it.

8 Label the jar with the product's name and preparation date.

9 Keep the bottle in a dry, cool, and dark place.

**Veterinary Uses:**

To combat worms and tapeworms in all kind of animals.

**Dose:**Administer product for three consecutive days; to be repeated five days later.

- Oxen and Cattle: three spoonfuls (25 cc) with water before breakfast.
- Sheep, Goats and Pigs: One spoonful (10 cc) with water before breakfast.
- Mature Chicken and other types of poultry: One teaspoon or 2 cc.

Always apply half the dose for young animals.

For Sheep Liver Fluke, apply double dose.

It preserves for a year.

**Contraindications:**

Do not administer to pregnant females.

## Case Studies:

### 01 CAPELLANIA VILLAGE, CHANTLA HUEHUETENANGO

Four adult ovine (3 females and 1 male) plus one male caprine with manifested and confirmed problems of intestinal and pulmonary signs were presented, for treatment Animals were administered doses of the deworming mixture for three consecutive days, repeating 21 days later. The total recovery was confirmed with lab tests performed at a clinic after 21 days of receiving medication.

Laboratory:

- STRONGYLINA EGGS +++ and larva DICTYOCAULUS spp. ++ at the beginning
- 0 at 3 weeks.

### 02 EL PARAISO VILLAGE, NEBAJ QUICHE

With a total herd of 10 females and 2 males, the same procedure as above was followed. This study was done in a more humid, higher rainfall region of Guatemala.

Laboratory:

- The lab tests shown a 50% decrease of the parasitic load after the first dose, but given the high humidity conditions of the region, it is recommended to deworm every 3 months.

Questioned about only a 50% decrease in parasite load, Mr. Guzman stated that that is sufficient for these animals to maintain adequate production.

*Adapted from presentation given by Jonathon Guzman, Director HPI Guatemala, July 2004, Animal Well-Being seminar, Heifer International, Little Rock, AR.*

External parasite control also requires management strategies, beginning with good sanitation. Fly control is the major concern for cattle producers, although ticks can also be a problem. Essential oils can be mixed with vegetable oil, vinegar or water, with oil causing the least reaction in the cattle. For dairy cattle, which are handled daily, applying the oil mixture directly to the animal will provide the most benefit. For beef cattle, a hand sprayer can be used to spray the cattle, with the realization that the calmer the cattle are, the more oil will be applied to the animal. The repellent component of these essential oils includes terpenes, aldehydes and alcohols. Oils used include citronella, eucalyptus, lemon, pennyroyal, rosemary. Caution must be used with dairy cattle so that milk does not taste like the essential oil. A garlic mixture made up of chopped garlic in oil, water, or vinegar and sprayed on animals has also been used by producers for fly control.

Little research has been done on the ectoparasites of livestock. Related research was carried out by applying the essential oils of Matricaria chamomile and Clerodendron inerme oils directly onto adult houseflies in the lab. The oils severely disrupted the flies' ovaries, preventing them from breeding. (Shoukry, 1997).

Northern fowl mites can cause a decrease in egg laying and induce anemia in laying hens. A group of hens were split in two groups and their vent area was sprayed with either water or a 10% garlic solution weekly for three weeks. On the fourth week, birds were examined for mites on their skin, and feathers were removed from below the vent, placed on a filter in a Petri dish and examined an hour later. Those hens sprayed with the garlic solution significantly reduced the number of Northern fowl mites found on those birds, compared to the control hen group, sprayed with water. This garlic solution could be very effective and would not be difficult to apply in a layer operation (Birrenkott, 2000).

The neem tree is indigenous in tropical areas, but the oil is used world wide as a pesticide, mainly on crops. It is also antiseptic, antiviral, antibacterial and antifungal (Nduma, 1999). The products appear to have little toxicity to warm-blooded animals. Neem oil has been show to kill Amblyoma variegate tick larvae. It is concentration and time dependent, with 100% larval kill with 100% neem oil in 48 hours. That kill goes down with lower concentrations of neem oil (Nduma, 1999).

Research published in 1999 stated that the Central Veterinary Research Laboratory in Dublin Ireland had demonstrated some acaricidal activity with neem oil against Psoroptes mites in sheep (O'Brien, 1999). Unfortunately, no further research has been published on this usage of neem oil.

A 5% tea tree oil product was shown both in vitro and in vivo to be effective in killing the human variety of Sarcoptes scabiei. This product was found to be as effective as 5% permethrin and ivermectin.

Mastitis is one disease that producers new to organic production are most concerned about. Mastitis requires careful attention to sanitation, culling of animals with chronic subacute mastitis, and making sure bedding and equipment do not contribute to mastitis problems. There are very few herbal therapies for mastitis (Duval, 1997).

Aloe is one that is often listed as a treatment for mastitis. One study showed that infusion of aloe into infected quarters of cows' udders caused a large increase in somatic cell counts, with an accompanying decrease of bacterial numbers. The primary cell identified was a leukocyte, however, the level of leukocytes was not sufficient to cure the quarters and within 14 days post treatment, the somatic cell count (SCC) was back down and the number of bacteria had risen to pre-treatment levels. Aloe infused into normal quarters also increased SCC indicating that the aloe caused irritation of the udder tissue (Owens, 1996). Taking this information a step further, if aloe reduces bacterial counts up to 36 hours after treatment, then it is possible with other strategies, such as frequent milkout, that mastitis can be cured. But the irritation of the udder must be considered before using aloe in this manner.

Tests done on the compounds found in plantain showed that enhanced the activity of human peripheral blood mononuclear cells. This supports the suspected immunostimulating effect of plantain when used medicinally for infectious diseases. (Chiang, 2003). The best time to harvest plantain leaves for use medicinally is the midfall, as concentrations of aucubin are highest at that time (Tamura, 2002).

In 1951, investigators found that an alcohol extract of Ascophyllum nodosum, a seaweed or kelp, has antibacterial properties against a wide range of bacteria, including staph aureus in vitro. Testing of the thick extract showed seasonal variation in its antibacterial properties (Vacca, 1954). This seasonal variation appears to be common and may need to be taken into account when harvesting certain herbs, as well as in judging their potency. Padmakumar and Ayyakkannu also found some seasonal variation in antimicrobial activity in certain classes of marine algae (Padmakumar, 1997).

Kelp has also been sprayed on fescue and been show to decrease oxidative stress in both the plants and grazing animals feeding on the fescue (Fike, 2001)

In Australia, farmers have used raspberry juice cordial, a juice drink containing 35% raspberry juice, to treat gastroenteritis signs in pigs, cattle and chickens. This cordial was tested in vitro at a 1:10 dilution and found to have antibacterial effects on a number of intestinal bacteria, including E. coli, Salmonella, Clostridium perfringens, Shigella and Staph aureus. Frozen raspberries which were juiced had the same effect, but a raspberry tea did not. Therefore, raspberry juice may act as an antibacterial agent for the treatment of gastroenteritis. However, the dilution factor is very critical for use in livestock. Administering the juice in drinking water would have to be kept at the 1:10 dilution rate. A higher dilution rate decreases the antibacterial effectiveness. This is useful for chickens as well as ruminants and hogs (Ryan, 2001).

Disease incidence in both poultry and hogs are minimized when the animals are allowed outside access. There is a small amount of research on the use of botanicals for diseases in poultry and swine that can be used by producers. Much of it has been done internationally, outside the U.S. Avian coccidiosis is always a concern for poultry producers (Opitz, no date). Sugar cane extract has been used with success in chickens in Japan as an immunostimulant. It increases and prolongs antibody response, delays hypersensitivity reponses, and decreases the clinical signs of Eimeria tenella infections. A dose of 500 mg/kg/day is used on chicks as young as one week of age (El-Abasy, 2003, El-Abasy, 2003).

Dried Artemesia annua leaves were fed at 5% of a ration for three weeks to chicks to test for their effectiveness in protection from coccidian lesions. This preparation was found to provide protection against Eimeria tenella but not other coccidia species (Allen, 1997). A Chinese herbal preparation was administered to chicks and found to prevent lesions due to coccidian. Those chicks also had higher weight gains than the control group given no medication (Du, 2004).

Dried neem leaves were found to enhance the antibody titers against New Castle Disease Virus in chicks which were immunocompromised from Infectious Bursal Disease infection (Sadekar, 1998).

Because of the concern about the misuse and overuse of antibiotics in livestock, particularly swine, there is much interest in the use of botanicals in swine as antimicrobials. Unfortunately, the results are inconclusive.

Nursery pigs were fed echinacea at 0, 1.5, and 3% of a complete ration for five weeks along with a control group of pigs fed carbodox (Mecadox®). The 3% echinacea group had the same weight gain enhancement as the Mecadox group (Holden, 2000). However, similar trials using peppermint and garlic found no positive effects for the two herbs, compared to the use of Mecadox (Holden, 2000, Holden, 2000).

Oregano has been used by herbalists and is now being studied, especially for use in hog production, as an antimicrobial. Dried oregano or oil of oregano improved the growth of slow growing finishing pigs and had an immunostimulating effect on the pig's immune system (Walter, 2004).

Research into kelp shows that it may have an immunomodulating effect. When fed to pigs, which were then challenged with Salmonella typhimurium, it didn't show any effect. Serum haptogen, acid glycoprotein, IgM and IgG levels were unaffected in pigs fed kelp compared to those who were not fed kelp. The pigs fed kelp did show some increase in weight gain (Turner, 2002).

## Conclusion

There is sufficient evidence, both in the traditional use of botanicals world-wide and from numerous research articles, that botanicals are effective remedies for livestock. There is still much to be learned. Management and nutrition must be addressed first, in order to prevent animals from getting sick. Nutrition, in the form of plants that livestock eat, graze and browse, also provides health producing compounds. Understanding the properties of botanicals will help in knowing which herbs for the presenting symptoms. Knowing the mechanism of action of the botanicals will give understanding from a Western medical perspective of what herbs to use.

**ANN WELLS, DVM**

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**Table 1. Synthetic substances allowed for use in organic livestock production in the U.S.**

| Substance | Usage allowed | Notes |
|---|---|---|
| Ethanol | Disinfectant, sanitizer only | Prohibited as feed additive |
| Isopropanol | Disinfectant only | |
| Aspirin | Antiinflammatory | |
| Chlorine materials<br>Calcium hypochlorite<br>Chlorine dioxide<br>Sodium hypochlorite | Disinfectant and sanitizer for facilities and equipment | |
| Chlorohexidine | Surgical procedures, teat dip | Teat dip only after alternative germicidal agents or physical barriers have lost effectiveness |
| Electolytes | | Without antibiotics |
| Glycerin | Teat dip | Production through fat or oil hydrolysis |
| Iodine | | |
| Hydrogen peroxide | | |
| Magnesium sulfate | | |
| Oxytocin | Postpartum therapeutic applications | |
| Ivermectin | | Prohibited in slaughter stock, allowed in emergency treatment for dairy and breeder stock when organic system plan-approved preventive management does not prevent infestation. Milk or milk products from a treated animal cannot be labeled as organic for 90 days following treatment. In breeder stock, treatment cannot occur during the last third of gestation if the progeny will be sold as organic and must not be used during the lactation period of breeding stock. |
| Vaccines | Biologics | |
| Iodine | Topical | |
| Lidocaine | Local anesthetic | Requires 90 day withdrawal period in slaughter animals and 7 days in dairy animals |
| Hydrated lime | Topical or external parasiticide | Not permitted to cauterize physical alterations or deodorize animal wastes |
| Mineral oil | Topical use, lubricant | |
| Procaine | Local anesthetic | See Lidocaine |
| Copper sulfate | | |
| Milk replacers | | Without antibiotics, as emergency use only; no nonmilk products or products from BST treated animals |
| Copper sulfate | Trace mineral as feed additive | |
| Magnesium sulfate | Trace mineral as feed additive | |
| Vitamins | | |
| Inerts of minimal concern | EPA List 4 | |

**§ 205.603 http://www.ams.usda.gov/nop/NOP/standards/ListReg.html**

**Table 2 Certification standards**

| Country or organization | Contact information | Website | Notes |
|---|---|---|---|
| Australia<br><br>Biological Farmers of Australia Co-op Ltd. | Biological Farmers of Australia Co-op Ltd.<br>PO Box 530<br>Level 1, 766 Gympie Rd<br>CHERMSIDE QLD 4032<br>Ph: 07 3350 5706<br>Fax: 07 3350 5996 | http://www.australianorganic.com.au/ | Voluntary program |
| Canada | Canadian General Standards Board (CGSB)<br>Public Works and Government Services Canada<br>Ottawa, Ontario K1A 1G6<br>Ph: (819) 956-0425<br>Fax: (819) 956-5644 | http://www.pwgsc.gc.ca/cgsb/032_310/32.310epat.pdf | Voluntary program |
| International Federation of Organic Agriculture Movements (IFOAM) | IFOAM Head Office<br>Charles-de-Gaulle-Str. 5<br>53113 Bonn - Germany<br>Ph: +49 (0) 228 926 50-10<br>Fax: +49 (0) 228 926 50-99 | http://www.ifoam.org/ | Private international organization with its own standards |
| New Zealand<br><br>Agriquality New Zealand Ltd.<br>Biogrow New Zealand | Agriquality<br>David Brown<br>Po Box 307<br>Pukekohe<br>New Zealand<br>Ph: +64 9 237-1807<br>Fax: +64 9 238-3757<br><br>BIO-GRO New Zealand<br>PO Box 9693<br>Marion Square<br>Wellington<br>New Zealand<br>Tel: +64 4 801-9741<br>Fax: +64 4 801-9742 | http://www.agriquality.co.nz<br><br>http://www.bio-gro.co.nz | 2 private certifying companies |
| United Kingdom | Soil Association<br>Bristol House, 40-56<br>Victoria Street, Bristol, BS1 6BY, United Kingdom<br>Ph: 0117 314 5000<br>Fax: 0117 314 5001 | http://www.soilassociation.org/web/sa/saweb.nsf/Standards/index.html | Most prominent of certifying agencies in UK. All organic products sold in the European Union must comply with EU regulation 2092/91 |
| United States<br><br>National Organic Program | Richard Mathews, Program Manager, USDA-AMS-TMP-NOP<br>Room 4008-South Building<br>1400 Independence Ave, SW<br>Washington DC 20250-0020<br>Ph: (202) 720-3252<br>Fax: (202) 205-7808 | http://www.ams.usda.gov/nop/ | In order to label products as organic required to be certified if gross sales exceed $5000 |

**Table 3 Comparison of organic vs conventional livestock requirements**

| Organic Livestock | Conventional Swine and Poultry |
|---|---|
| Outdoors | Confinement throughout life |
| Shade | |
| Shelter | |
| Exercise areas | Space allotments per animal in building |
| Fresh air | Air filtration within building |
| Direct sunlight | Artificial light |
| Pastures (for ruminants only) | Total mixed ration brought to animals |

**Table 4 Farmer organizations**

| Name of Organization | Contact information | Website |
|---|---|---|
| Northeast Organic Dairy Producers Association (NODPA) | P.O. Box 697, Richmond, Vermont 05477<br>ph. 802-434-4122<br>fax. 802-434-4154 | www.nodpa.com |
| Northeast Organic Farming Association-Vermont (NOFA-VT) | P.O. Box 697, Richmond, Vermont 05477<br>ph. 802-434-4122<br>fx. 802-434-4154 | www.nofavt.com |
| Northeast Organic Farming Association—New York (NOFA-NY) | Mayra Richter, Office Manager, NOFA-NY, PO Box 880, Cobleskill, NY 12043-0880,<br>ph: 518-734-5495,<br>Fax: 518-734-4641,<br>mailto:office@nofany.org | www.nofany.org |
| Pennsylvania Association for Sustainable Agriculture (PASA) | 114 West Main Street<br>P.O. Box 419<br>Millheim, PA 16854<br>ph: 814-349-9856<br>fax: 814-349-9840 | www.pasafarming.org |
| Southern Sustainable Agriculture Working Group | 2250 Sewell Lane, SW,<br>Roanoke, VA 24015<br>ph: 540-344-5013 | www.ssawg.org |
| Oregon Tilth | 470 Lancaster Dr. NE,<br>Salem, Oregon, 97301<br>ph: 503 378-0690 | www.tilth.org |
| Midwest Organic and Sustainable Education Service | P.O. Box 339<br>Spring Valley WI 54767<br>ph: 715-772-3153,. | www.mosesorganic.org |

**Table 5 Nutrient composition of pasture forbs compared to alfalfa**

| Scientific name | Common name | Protein | TDN Total Digestible Nutients | Calcium | Phosphorous | Potassium | Magnesium | Sodium | Sulfur - total | Iron | Copper | Zinc | Manganese | Boron |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | % | % | % | % | % | % | ppm | % | ppm | ppm | ppm | ppm | ppm |
| *Medicago sativa* | Alfalfa | 20.97 | 63.89 | 1.58 | 0.37 | 2.05 | 0.46 | 759 | 0.31 | 171 | 15 | 30 | 23 | 50 |
| *Taraxacum officinale* | Dandelion | 25.00 | 80.90 | 1.04 | 0.33 | 4.46 | 0.26 | | 0.41 | 657 | 15 | 34 | 35 | 30 |
| *Chenopodium album* | Lamb's Quarter | 31.70 | 85.60 | 1.10 | 0.39 | 7.66 | 0.55 | | 0.43 | 91 | 8 | 46 | 138 | 44 |
| *Cichorium intybus* | Chicory | 19.5 | 63.5 | 0.89 | 0.31 | 3.59 | 0.26 | 0.04 | 0.37 | 195 | 14 | 43 | 36 | 28 |
| *Symphytum officinale* | Comfrey | 23.7 | 66.8 | 2.73 | 0.20 | 3.94 | 0.39 | 0.04 | 0.27 | 176 | 29 | 46 | 192 | 42 |
| *Plantago major* | Plantain | 19.6 | 64.4 | 1.84 | 0.26 | 2.97 | 0.17 | 0.011 | 0.53 | 83 | 12 | 44 | 30 | 29 |
| *Urtica dioica* | Nettle | 25.7 | 74.5 | 4.38 | 0.41 | 3.01 | 0.39 | 0.005 | 0.94 | 349 | 11 | 40 | 36 | 67 |
| *Arctium minus* | Burdock | 29.0 | 71.8 | 2.10 | 0.34 | 3.28 | 0.43 | 0.028 | 0.90 | 149 | 26 | 32 | 47 | 32 |
| *Galium aparine* | Cleavers | 11.7 | 57.1 | 1.3 | 0.39 | 2.46 | 0.25 | 0.014 | 0.26 | 70 | 13 | 127 | 66 | 15 |
| *Rumex crispus* | Curly dock | 32.7 | 77.8 | 0.83 | 0.37 | 3.53 | 0.64 | 0.020 | 0.35 | 111 | 13 | 38 | 36 | 31 |
| *Achillea millefolium* | Yarrow (in bloom) | 15.2 | 61.7 | 0.99 | 0.43 | 3.25 | 0.29 | 0.034 | 0.17 | 100 | 17 | 40 | 71 | 26 |
| *Portulaca oleracea* | Purslane | 18.6 | 72.9 | 1.3 | 0.38 | 3.17 | 0.8 | | 0.24 | 4419 | 37 | 265 | 163 | 29 |
| *Impatiens capensis* | Jewelweed | 24.9 | 87.9 | 1.21 | 0.32 | 2.05 | 0.29 | | 0.29 | 180 | 12 | 52 | 48 | 26 |

Brunetti, Jerry. 2003. Agri-Dynamics Easton PA used with permission

**Table 6 Antimicrobial Plant Components**

| Component | Mode of antimicrobial action | Contained in |
|---|---|---|
| Caffeic acid (Phenol) | Oxidation | Tarragon, Thyme |
| Flavanoids (Phenol) | Plant response to microbial infection | Green tea |
| Condensed tannins (Phenol) | Bind bacterial cell walls | Sericea lespedeza, oak leaves |
| Coumarins (Phenol) | Stimulates macrophages | Cured hay (responsible for odor) |
| Terpenes | Microbial cell membrane disruption | Basil, chile peppers, Artemesia annua |
| Berberine (alkaloid) | Antibacterial/antiamoebic | Goldenseal, barberry, Oregon grape |
| Lectins and polypeptides | Prevent adhesion of microbes to host receptors | Amaranth, barley, wheat |

Table 7 Producer Remedies

| | | | | |
|---|---|---|---|---|
| Bovine Herpesvirus2 (mammalitis | Cattle | Elderberry, elderflower, tea tree oil, lavender oil tea and salve | Dip TID daily, apply salve BID Tea made with elder berries and flowers then ½ oz essential oils added | Antiviral |
| Caseous lymphadenitis | Sheep/goats | 1 cup Redmond Salt, 4 cups Kelp, 1 cup Dandelion, 1 cup Burdock, 4 cups Nettles, 1 cup Rosehips, 1/4 cup Rosemary, 1/4 cup Thyme | ¼ cup every other day for 4 months | |
| Conjunctivitis | Cattle/sheep | Eyebright tea | Bathe eye daily | Astringent |
| Disease | Species | Remedy | Dosage | Action |
| Fly control | Cattle | Cedar oil | PRN | Repellant |
| Fly control | Cattle | Garlic and water slurry | PRN | Repellant |
| Fly control | Cattle | Citronella, eucalyptus, lemongrass essential oils in mineral oil, vinegar or water | PRN | Repellant |
| Fly control | Cattle | Neem oil and water | PRN | Repellant |
| Infections | Cattle | Mixture of garlic, eucalyptus, and goldenseal tinctures | Orally or vaginally | Antimicrobial |
| Johne's | Cattle/sheep/goats | 1 cup Redmond Salt, 4 cups Kelp, 1 cup Dandelion, 1 cup Burdock, 4 cups Nettles, 1 cup Rosehips, 1/4 cup Rosemary, 1/4 cup Thyme | ¼ cup every other day for 4 months | |
| Lice | Cattle/goats | Tobacco extract, undiluted tobacco juice | Daily for 14 days | |
| Milk dry off | Cattle | Rubbed sage (dried) | Handful BID in grain for 7-10 days | Reduces milk flow |
| Milk fever | Cattle | Cascara sagrada Aloe juice | 2 Tbls BID/3 days 2 oz BID 3 days | Liver cleanser |
| Nerve regeneration` | All species | 1 part chopped garlic, 1 part chopped onions 1 part grated ginger 1 part grated Horseradish Root 1 part – chopped cayenne peppers | 30 cc orally TID as a tonic | Antimicrobial Antimicrobial Circulation Circulation – Head<br><br>Blood stimulant |

| | | | | |
|---|---|---|---|---|
| | | Decoction with apple cider vinegar | | |
| Nervous ketosis | Cattle | Dried hypericum<br>Lycopodium<br>Valerian root powder<br>Comfrey leaf powder<br>Milk thistle extract | Orally or vaginally<br><br>2 Tbls BID<br><br>2 Tbls BID<br><br>½ Tbls BID | Sedative<br>Reverses ketosis |
| Reproductive problems | Cattle | Blue cohosh, yam root, black haw, red clover, saw palmetto, don quai (Clear Creek product) | | |
| Retained placenta | Cattle | Caulophyllum tincture (blue cohosh) | 2 cc daily in vulva PRN | |
| Scours | Calves, kids, lambs | Slippery elm tincture | PRN | |
| Skin wounds | All species | 1 part dried comfrey<br>1 part burdock root<br>1 part cayenne pepper<br>1 part myrrh powder<br>2-4 drops benzoin resinoid | Mix herbs together, make a paste with water, then add benzoin<br>Apply as poultice BID | Wound healer<br><br>Blood stimulant<br>Wound healer<br><br>Pain reliever<br><br>Prevent scarring |
| Stressed immune system | Cattle | Aloe juice | | Immunostimulant |
| Udder edema | Cattle/goats | Elder and dock leaves, tincture | Apply twice daily | |

**Table 8 Pasture plants with anthelmintic properties**

| Scientific name | Common name | |
|---|---|---|
| *Dorycnium pentaphyllum* | | |
| *Onobrychis vicifolia* | Sainfoin | |
| *Lotus pedunculatus* | Giant trefoil, maku | |
| *Rumex sp.* | Dock | |
| *Dorycnium rectum* | | |
| *Lotus corniculatus* | Birdsfoot trefoil | |
| *Cichorium intybus* | Chicory | |
| *Lespedeza cuneata* | Sericea lespedeza | |

**Table 9 Commerical herbal deworming products**

| | Product | Ingredients |
|---|---|---|
| A | Hoeggers | Wormwood, gentian, fennel, psyllium, quassia |
| B | Molly's Herbal Formula | Wormwood, garlic, fennel, black walnut, stevia |
| B | Molly's Weekly Formula & Tonic | Garlic, pumpkin seed, mugwort, fennel, elecampane |
| C | Farmstead Health Restore | Wormwood, garlic, gentian, fennel, psyllium, centaury |
| D | Farmstead Health Sustain (tonic) | Coltsfoot, coriander seed, fennel seed, Irish moss, juniper berry, yarrow, rosehips, rhubarb root, sea kelp |
| E | Nature's Finest Herbal Wormer (dog product) | Garlic, onion, parsley, mustard seed, cayenne, black walnut hulls, wormwood (no longer in product |

# Practice Insights

## AN INTERVIEW WITH CARVEL TIEKERT

**Dr. Carvel G. Tiekert** is a 1963 graduate of Cornell University, and practices veterinary medicine in Maryland. He founded the American Holistic Veterinary Medical Association in 1982 and is their current Executive Director. Dr. Tiekert is the Founding Editor of the Association's Journal, and has been the Conference Coordinator since its inception in 1984. He is an AVMA member, the Secretary/Treasurer of the Maryland Veterinary Medical Association, as well as a member of various other veterinary associations. He was on the 1996 AVMA Committee to develop the *Guidelines on Complementary and Alternative Medicine* and is currently working towards getting the AHVMA a seat on the AVMA House of Delegates.

**Are you a dog person or cat person?**

Probably a dog person, although I have had some memorable cats.

**Who was your most memorable patient?**

Boy, that is really hard to say. And to some degree that has to be predicated on how we define memorable. If it's a response to treatment, it is probably a horse that a single chiropractic adjustment resolved 18 months of progressive back pain. If it's personality, it is probably a Doberman pincher who just recently died.

**Who has inspired you?**

Another hard one. Only because there have been so many – starting with my parents who taught me personal responsibility: do everything you do to the best of your ability; and keep an open mind. Many colleagues in our profession and allied professions have been points of inspiration along the way.

**What would you advise a new veterinary graduate today?**

Concentrate on one or two things that you really like and focus on doing them very well. Keep an open mind and if medicine seems to oppose physiology, choose physiology as you're starting place.

**What was the best professional advice you ever received?**

Learn from my mistakes – you'll make enough of your own!

**What is the most exciting change you've seen in veterinary medicine during your practice life?**

Advancing technology, and a broadening of the scope of veterinary practice.

**Do you think there is a critical missing element in the education of veterinarians today?**

With all of the information currently available to teach veterinary students, and the struggles I see on the part of veterinary institutions to do a capable job, I don't feel comfortable in throwing stones. That being said, the emphasis on high technology and drugs somehow needs to be blunted.

**What is your basic teaching philosophy?**

Unfortunately, I've never felt I was a particular good teacher except on a one-to-one basis.

**What is your favorite sanity check?**

Something funny. I'm convinced that we should not take ourselves seriously, but what we do very seriously. Also working in my shop or in our gardens.

**Has your chosen path in veterinary medicine made it difficult for you at times? If so, how?**

No, I looked at the bumps along the way as part of life.

**What do you think is the "cutting edge" in alternative medicine?**

At this point in time, Homotoxicology. But there is so much happening, I could very easily change my mind tomorrow. That's what the fun of all we do is – the picture is always changing and exciting.

**What do you identify as veterinary medicine's greatest challenge for the future?**

Non-veterinary practitioners.

**Do you see any dangerous trends in the growth of 'alternative medicine'?**

See above.

**Do you think the veterinary profession is failing the animals it serves at this time? In what way(s)?**

In a word – No. Are we perfect – absolutely not. The reality of today is that everybody wants an instant cure and not have to pay for it – with the least amount of effort. With all other medical media and the legal profession to back it up, expectations are often unrealistic.

**Can you talk about your work in growing the AHVMA, and veterinary holistic medicine in general?**

All I can say is that I have tried, and will continue to try using what ever resources seem practical and expedient

**What is in your emergency medical kit when you travel?**

Band-Aids, surgical adhesive, Traumeel (tablets and ointment), a homeopathic kit, and a number of nutraceuticals.

**What changes do you hope will occur in veterinary medicine in the next 25 years?**

Increasing capabilities in noninvasive diagnostic techniques, and an emphasis on therapies that do no harm.

*Interviewed by Susan Wynn*

ADDENDA

Dr Allen Schoen (*Practice Insights*, September 2005), in answer to the question: "Who has inspired you in veterinary medicine?", would like to add the following:

"I also wish to acknowledge Dr. Ihor Basko as one of my teachers, introducing me to the use of chinese herbs in veterinary medicine."

# Herbal Fodder

## CORDYCEPS SINENSIS

Force feeding mice C. sinensis mycelium extract for three days prior to innoculation with Group A streptococcus increased survival and reduced local tissue injury, compared with mice fed PBS (phosphate buffered saline). (Kuo CF et al. J Med Microbiol. 2005; Aug; 54(Pt 8): 795-802). Bacterial numbers in air pouch exudates were lower, and there was no bacterial dissemination in the C. sinensis treated mice. The three days pretreatment, followed by every other day treatment after innocculation resulted in 100% survival. These results show that C sinensis protects by decreasing bacterail growth and dissemination. IL-12 and IFN-gamma expression, and macrophage phagocytosis also increased.

## GREEN TEA (CAMELLIA SINENSIS)

Researchers at Panjab university investigated the effects of chronic administration of green tea extracts on sickness behaviour and liver disease in rats. (Anjali Singal et al. Phytother Res. 2006 Feb;20(2):125-9. ) Immune activation results in a constellation of non-specific signs such as lethargy, anorexia, depression and anxiety, collectively known as "sickness behaviour", and has also been implicated in the pathogenesis of many types of liver disease. Green tea is rich in antioxidant polyphenols, and has demonstrated inhibitory effects on cytokine production. Chronic administration of green tea extract to rats, significantly reduced lipopolysaccharide induced sickness behaviour and hepatic damage, either by its antioxidant effects or by reducing cytokine production.

Another study investigated the effects of epigallocatechin gallate (EG), one of the major polyphenols in green tea, in a mouse model for Duchene muscular dystrophy. (Dorchies OM et al. Am J Physiol Cell Physiol. 2006 Feb;290(2):C6165-25.) Duchene muscular dystrophy is a muscular disorder caused by mutations in the gene encoding dystrophin. It results in progressive muscle wasting and often death by age 30. Researchers tested the effects of green tea, EG or pentoxifylline on a dystrophic mdx(5Cv) mouse model. Their results showed that diet supplementation with green tea extract or EG protected the muscle from the first massive wave of necrosis, and stimulated muscle adaptation toward a stronger and more resistant phenotype.

Polyphenols present in green tea possess prostate cancer chemoprotective and possible therapeutic effects. (Siddiqui IA et al, Carcinogenesis. 2006 Apr;27(4):833-9.) Athymic nude mice were impregated with prostate cancer cells, and were treated with green tea p[olyphenols, warter extract of black tea, EG and theaflavins (from black tea). results showed i) significant inhibition in tumor growth, (ii) reduction in the level of serum prostate specific antigen, (iii) induction of apoptosis and (iv) decrease in the levels of VEGF protein. Furthermore, green tea extract, given after establishment of tumours, showed significant regression of the tumours.

## WITHANNIA SOMNIFERA

Withania somnifera (L.) Dunal is a known immunomodulator of indigenous medicine. Benzo(a)pyrene induced cancer animals were treated with 400mg/kg bodyweight of W. somnifera for 30 days. (Senthilnathan P, Padmavathi R, Banu SM, Sakthisekaran D. Chem biol Interact. 2006 feb25;159(3):180-5.) The immune disfunction from both the carcinogen, and treatment with paclitaxel, were more reversible and more controllable by W. somnifera. The results concluded the immunomodulatory effects of W. somnifera.

## ADAPTOGENS

Plant adaptogens are compounds which increase the body's resistance to physical, environmental, emotional or biologic stress and support normal physiologic function. A review in Phytotherapy Research assesses the response to a single dose of adaptogens derived from Rhodiola rosea, (Goldenroot), Schizandra chinensis (Schizandra) and Eleutherococcus senticosus ( Siberian ginseng). (Panossian A. and Wagner H. Phytotherapy Research 2005;19(10):819-838).Where the beneficial effects of multidose administration of adaptogens are primarily associated with the hypothalamic-pituitary-adrenal axis, single dose administration effects another part of the stress system: the sympatho-adrenal-system, which provides a rapid response to a stressful situation. Unlike traditional stimulants which result in side effects such as addiction and tolerance, the use of these herbs is not usually associated with side effetcs.Single administration of these adaptogens effectively increases mental performance and physical work capacity in people. R.rosea is the most effective, a single dose producing a stimulating effect within 30 minutes which lasts at least 4-6 hours. The active principles are glycosides of phenylpropance, as well as phenols such as salidroside, rosavin, syringin and triandrin.

Schizandra chinensis has been shown to improve egg production, antioxidant and immune status in laying hens in conditions of heat stress (Ma D. et al Arch Anim Nutr. 2005 Dec;59(6):439-447.) The results showed that diets supplemented with 1% of either Ligustrum lucidum ( Glossy privet) or Schizandra chinensis had benefits compared to a control group.

# Monograph
## BACOPA

*Bacopa monnieri (L) Pennell*

(Buh-KOH-puh mon-ee-ER-ee)

**Other Names:** Brahmi (this is also the name used for Centella asiatica [gotu kola] in certain parts of India), Water Hyssop, Herb-of-Grace, Indian Pennywort.

**Distribution:** Native in tropical regions, including India and Australia.

**Family:** Scrophulariceae

**Parts Used:** Dried whole plant, mainly leaves and stems

**Selected Constituents:**

Alkaloids (brahmine and herpestine), saponins, d-mannitol, hersaponin acid A, and monnierin. Other constituents include betulic acid, stigmastarol, beta-sitosterol, and numerous bacosides and bacopasaponins. The constituents responsible for Bacopa's cognitive effects are bacosides A and B (Kapoor, 1990; Chakravarty, 2003; Hou, 2002).

**Clinical Action:**

Nervine tonic, spasmolytic, mild sedative, mental tonic, cardiotonic, digestive, antiasthmatic

**Energetics:**

Cold, astringent in taste, slightly sweet

## History and Traditional Usage

Bacopa has been used in the Ayurvedic system of medicine for centuries. Traditionally, it was used as a brain tonic to enhance memory development, learning, and concentration, and to provide relief to patients with anxiety or epileptic disorders (Chopra, 1958). The plant has also been used in India and Pakistan as a cardiac tonic and digestive aid and to improve respiratory function in cases of bronchoconstriction (Nadkarni, 1988).

Recent research has focused primarily on Bacopa's cognitive-enhancing effects, specifically, memory, learning, and concentration; results support traditional Ayurvedic claims. Research on anxiety, epilepsy, bronchitis and asthma, irritable bowel syndrome, and gastric ulcers also supports the Ayurvedic uses of Bacopa. Its antioxidant properties may offer protection from free radical damage in cardiovascular disease and certain types of cancer.

Ethnoveterinary practice involves use of the leaves and whole plants for the treatment of epilepsy (Williamson, 2002).

## Published Research

Bacopa scavenges free radicals, which may explain the reported antistress, immunomodulatory, cognition-facilitating, anti-inflammatory and antiaging effects produced in experimental animals and in clinical situations (Russo, 2003). The standardized extract of Bacopa monnieri possesses potent adaptogenic activity in stressed rats (Rai, 2003). Bacopa has been shown to exert cognition-enhancing effects in animals, especially rats, and reduced cognitive impairment when administered in conjunction with phenytoin (Vohora, 2000).

Laboratory animal models have hinted that Bacopa has interesting activity against depression, anxiety, and pain. A study investigated the anxiolytic activity of a standardized extract (based on bacoside A) of Bacopa at doses of 5, 10, and 20 mg/kg po in rats; Bacopa was found to elicit a reaction comparable with that of lorazepam at 0.5 mg/kg ip (Bhattacharya, 1998). A standardized methanolic extract of Bacopa (bacoside A, 38.0+or –0.9) at 20 and 40 mg/kg po once daily for 5 days, was found to have significant antidepressant activity in a rat model of depression which was comparable with that of imipramine (Sairam, 2002). Bacosine was found to have analgesic activity but without barbiturate-type narcosis in rats and mice. The analgesic effects were found to be opioidergic in nature. Although analgesic activity was observed at 25 mg/kg ip, no mortality or untoward effects were observed up to 300 mg/kg (Vohora, 1997).

Human clinical trials have shown benefits for cognitive function. In a double-blind, placebo-controlled clinical trial, people were tested for visual information processing, learning rate, anxiety, and memory consolidation after 5 and 12 weeks of administration of 300 mg of Bacopa daily or placebo. Significant improvements were found following Bacopa administration (Stough, 2001).

Bacopa may have a role in the treatment of hypothyroidism. B. monnieri (200 mg/kg) increased T4 concentration in male mice, suggesting a thyroid-stimulating role. Bacopa could increase T4 concentration by 41% without enhancing hepatic lipid peroxidation, thereby showing an antiperoxidative role (Kar, 2002).

## Indications:

Decreased mental acuity, depression, anxiety, stress

## Potential Veterinary Indications

Epilepsy, mild sedation, anxiolytic as a nervine, hypothyroidism, stressed laboratory rodents. Complementary therapy alongside phenytoin treatment. Stress-related bronchitis and diarrhea.

## Contraindications

Bacopa has been noted in animal models to decrease the toxicity of morphine and phenytoin (Vohora, 2000). It has also been shown to have a slight sedative effect, so caution is advised in combination with sedatives. Because it may stimulate T4 activity at high doses, it may potentiate the activity of thyroid-stimulating drugs or inhibit the effects of thyroid-suppressant drugs.

## Toxicology and Adverse Effects

Therapeutic doses of Bacopa are not associated with any known adverse effects. A double-blind, placebo-controlled clinical trial of male volunteers investigated the safety of pharmacologic doses of isolated bacosides over a 4-week period. Concentrated bacosides in single (20–30 mg) and multiple (100–200 mg) daily doses were well tolerated and were associated with no adverse effects (Singh, 1997).

The LD50 values of Bacopa extracts administered orally to rats were 5 g/kg for aqueous extracts and 17 g/kg for the alcohol extract. Neither resulted in gross behavioral changes (Martis, 1992).

## Drug Interactions

Laboratory animal research suggests that Bacopa may potentiate the effects of pentobarbitone and phenothiazines.

## Dosage

**Human:**

Traditional daily doses of Bacopa include 5 to 10 g of nonstandardized powder, 8 to 16 mL of infusion, and 30 mL daily of syrup.

Dosages of a 1:2 fluid extract are 5 to 12 mL per day for adults and 2.5 to 6 mL per day for children aged 6 to 12. For Bacopa extracts standardized to 20% bacosides A and B, the dosage is 200 to 400 mg daily in divided doses for adults, and for children, 100 to 200 mg daily in divided doses.

**Veterinary:**

Veterinary Dosage of a 1:2 extract for small animals: 0.8 to 1.6 mls per 10kg/20lb, per day, divided dose.

**BARBARA FOUGERE BVSc**
*All Natural Vet Care, Sydney, Australia*

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# Treatment of Geriatric Disharmonies with TCVM Herb and Food Therapy

PART TWO

## Blood Stagnation Patterns

The following simple yet guiding words from Dr. Yan De-Xin will serve to introduce this section:

"Although medicinals which quicken the Blood and transform and dispel stasis all share the common characteristics of freeing and disinhibiting the blood vessels and eliminating static blood, they also have their different individual characteristics, such as cooling the blood, stopping bleeding, opening the network vessels, moving the Qi, precipitating water, and nourishing Blood. In addition, they each have their own nature. For instance, they may be cold, hot, warm, or cool. Therefore when applying medicinals in clinical practice, one should select medicinals for quickening the Blood and transforming stasis which correspond to the patient's pattern discrimination."

Dr. Yan then delineates ten methods to balance the Qi and Blood. These include: rectifying the Qi and transforming stasis, scattering cold and quickening the Blood, clearing heat and transforming stasis, opening the network vessels and transforming stasis, eliminating Phlegm and quickening the Blood, softening the hard and transforming stasis, attacking, precipitating and transforming stasis, stopping bleeding and transforming stasis, boosting the Qi and transforming stasis, and fostering Yin and transforming stasis. Of these ten methods we will review two.

It is somewhat difficult to approximate most of the herbal formulae for the above methods. This is because the Blood Invigorating herbs are generally rather strong compared with the milder activities of foods. However, we can support many of the herbal therapies with appropriate food formulae.

## Opening the Network Vessels and Transforming Stasis

"When used together, medicinals for opening the network vessels and medicinals which quicken the blood are appropriate for use when there is acute aching pain in the joints of the limbs whose bending and stretching is inhibited".

**Treatment Principles:** quickens the Blood and transforms Stasis, soften the hard and open the network vessels.

**Primary Herbs:**

*Ma qian zi* (nux vomica) seeds are bitter, cold and toxic (contain strychnine) and enter the Liver and Spleen to unblock the channels, disperse clumps and wind-cold

*Bi Di long* (lumbricus) is salty and cold, enters the BL, LIV, LU and SP channels to clear and unblock the channels for swollen and painful joints with reduced range of motion

*Zhu sha* (cinnabar) is sweet, cool and toxic (contains mercuric sulfide) enters the Heart channel clears heat and expels phlegm

*Di bie chong* (eupolyphaga) is salty, cold and toxic and enters the LIV, HT and SP channels to break up and drive out Blood Stasis

*Quan xie* (scorpion) is salty, acrid, neutral and toxic (katsutoxin is a respiratory paralytic) and enters the Liver to unblock the collaterals and stop pain.

**Food Therapy Example:**

A food combination palatable to carnivores that would have similar actions and be nontoxic would include the following. Warm, sweet **Shrimp** invigorates Blood and resolves Phlegm. Pungent and warm **Mustard leaf** invigorates Blood and resolves Phlegm. Warm, sweet **Oats** invigorate Qi. Neutral, salty and bitter **Alfalfa** is an important detoxicant. Sweet, salty and cool **Barley** tonifies Yin and Blood and acts as an anti-inflammatory. Sour, bitter and warm **Vinegar** may be used in small amounts to invigorate Blood. Cold and salty **Kelp** resolves Phlegm and softens hardness.

**Western Biomedical Disorders:** rheumatoid arthritis, hypertrophy of the cervical vertebrae, periarthritis of the shoulder, lumbar muscle pain and atrophy.

## Softening the Hard and Transforming Stasis

"When used together, medicinals for softening the hard and medicinals that quicken the blood are indicated for the treatment of goitre and scrofula, phlegm nodulation, and concretions and conglomerations, accumulations and gatherings".

**Tongue:** Pale to blue with purple spots

**Pulse:** Tense to tight

**Function:** Dispels Blood Stasis, quickens the Blood, transforms Phlegm and softens the hard.

**Primary Herbs:**

Salty, bitter, neutral and slightly toxic *Shui Zhi* (hirudo) breaks up and drives out Blood Stasis.

Salty, astringent and cool *Mu Li* (ostrea) softens hardness and dissipates nodules.

Acrid, bitter and warm *Yan Ju Suo* (corydalis) invigorates Blood and alleviates pain.

**Food Therapy Example:** A food combination palatable to carnivores that would have similar but less powerful actions to

this formula is as follows: Cold and salty **Crab** invigorates Blood and resolves Phlegm. Cold and pungent **Wheat Germ** invigorates Blood. Sweet **Shitake mushroom** tonifies Yang and resolves Phelgm. Neutral and sweet **Almond** resolves Phlegm. Cold and salty **Nori** or **Wakame seaweeds** both soften hardness and resolve Phlegm. Finally, a number of spices including sweet, pungent and bitter **Basil** circulates Qi and resolves Phlegm.

**Western Biomedical Disorders:** vascular tumors, hepatomegaly, splenomegaly, prostatic hypertrophy and hemiplegia.

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**BRUCE FERGUSON**
*Integrative Veterinary Services, St Augustine Beach, FL USA*

# Event Calendar

## June 3-5: Medicines from the Earth Herb Symposium

**Black Mountain, NC**

Annual symposium on herbal medicine at Blue Ridge Assembly near Asheville, NC. Join distinguished speakers David Winston, Mark Blumenthal, Richo Cech, James Duke, PhD, Doug Elliott, Cascade Anderson Geller, Bill Mitchell, ND, Jill Stansbury, ND, Jonathan Treasure, Roy Upton and Donald Yance. Workshops include: pre-conference intensive on case studies with Bill Mitchell, ND; Artemisia for cancer and malaria; therapeutic uses of medicinal mushrooms; making medicinal honey; St. John's wort as a xenosensory activator; botanicals for pain associated with cancer; iridology intensives; essential oils for immunity and botanical therapies for the newest health challenges: drug-resistant TB, avian viruses and hepatitis C. CE credits for health professionals.

Phone: 800-252-0688.

Web site: http://www.botanicalmedicine.org

## June 10–16: Food As Medicine.

**The Tremont Plaza Hotel, Baltimore, Maryland**

The most comprehensive professional nutrition training program in the US, providing the equivalent of a semester's worth of nutrition curriculum in one week. Jointly sponsored by Georgetown University School of Medicine and The University of Minnesota. Partial scholarships and CME credits available.

Web site: www.cmbm.org/fam.

Contact: Jo Cooper, JCooper@cmbm.org.

## July 14-17: Fifth Annual Intensive Seminar on Botanical Medicine with herbwalks

**Green Farmacy Garden, Laurel & Fulton, MD**

In this seminar, sponsored by the University of Maryland School of Medicine, Center for Integrative Medicine, and the Botanical Medicine Academy, experienced teachers will provide the details and the knowledge participants need to properly supervise and guide their patients in the botanical treatment of various common ailments. In order to maximize the educational experience, space is limited to 25 participants. AMA category 1 credits offered.

Contact: Holly, Phone: 301-854-3951,

Email: greenfarmacygarden@yahoo.com

## July 29-30: A Weekend in Wales with David Winston

**Conwy, North Wales**

Lectures will include Talking Leaves, An Indigenous Language of Plants, and Remaking Yourself, The Path to Becoming Human.

Contact: Pip Whetstone, Hafotty Gelynen, Maerdy, Corwen, Conwy LL21 9PA (North Wales), 01490 460493.

Email: www.thedreamingbutterfly.com.

## August 5-6: Rutland Biodynamics Conference

**Oakham, UK**

David Winston will be the keynote speaker at this wonderful event in rural Oakham. He will teach classes on the Duyukta-A Cherokee Look at Health, Spirit, and Life, The Differential Treatment of Depression and Anxiety, and The Alchemy of Herbs. Contact: Rutland Biodynamics, Ltd., Town Park Farm, Brooke, Oakham, Rutland LE15 8DG,

Phone: 44(0)-1572-757440.

Web site: www.rutlandbio.com.

## August 5-9: Natural Products on Target: The 47th Annual Meeting of the American Society of Pharmacognosy

**Washington, D.C.**

Please join us at the meeting for an exciting series of presentations covering contemporary developments in natural products chemistry, biosynthesis, drug discovery, drug development, and NIH Road Map initiatives.

Phone: 301-846-1943.

Web site: www.phcog.org/AnnualMtg/Washington.html.

## August 19: Sage Mountain Herbal Retreat Center

**East Barre, VT**

Rosemary Gladstar, joined by Pam Montgomery, Deb Soule, Bob Beyfuss, Matthias & Andrea Reisen, Kate Gilday & Don Babineau, Nancy & Michael Phillips and many others. Classes held from 9am-5pm and will focus on sustainable practice of herbal medicine, "at risk" plant cultivation, plant identification walks and related topics.

Web site: www.unitedplantsavers.org.

Phone: 802-476-6467.

## August 21-24: Quality and Safety and Processing conference

**Oxford, MS**

The purpose of this conference is to review, discuss, and explore methods for determining the identity, purity, quality and processing of the material. Topic areas will include such issues as authentication, cultivation, collection, and post-harvest practices for producing quality plant material, and chemical, toxicological methods for quality/safety assessment.

Phone: (662) 915-7821.

Email: ikhan@olemiss.edu.

## August 28: Materia Medica of the American West

**Laurel, MD**

Michael Moore, founder of the Southwest School of Botanical Medicine, will conduct this one-week workshop, at the Tai Sophia Institute. Materia Medica of the American West will cover Moore's most favored plants and clinical applications. He will discuss their habitat, environmental risks and availability.

Contact: the Tai Sophia Institute at 410-888-9048, Ext. 6611.

Web site: www.tai.edu.

## September 4: Field Lecture Workshop: An In-depth Exploration of Regional Medicinal Plants

**Laurel, MD**

Michael Moore, founder of the Southwest School of Botanical Medicine, will conduct this one-week workshop, at the Tai Sophia Institute. The workshop includes visits to regional parks and focuses on plant personalities, constituents, historical uses, and therapeutic applications.

Contact: The Tai Sophia Institute at 410-888-9048, Ext. 6611.

Web site: www.tai.edu.

## September 14: Herbal Therapies for the Eyes, Ears, Nose, & Throat

**Washington, NJ**

In this class we will discuss simple but effective clinical protocols for treating common ailments affecting the eyes (conjunctivitis, blepharitis), ears, (otitis media), nose (sinusitis, allergic rhinitis) and throat (sore throat, laryngitis, tonsillitis). Contact: Cathy Garland, Herbalist & Alchemist, Inc., Phone: 908-689-9020, ext. 101.

Email: cathy@herbalist-alchemist.com.

Web site: www.herbalist-alchemist.com.

## September 22-24: Green Nations Gathering

**Rowe, MA**

David Winston will be joined by Doug Elliot, Rosemary Gladstar, Cecilia Mitchell, Susun Weed, Elena Avila, and many other superb teachers at the beautiful Rowe Conference Center.

Contact: Pam Montgomery, 802-293-5996.

Web site: www.greennations.org.

## October 3-7: Contributions of African Botanica to Humanity 2006

**N'Zérékoré, Republic of Guinea, West Africa**

Contribution of African Botanica to Humanity 2006 will study in detail the pharmacological, phyto-chemical and genetic aspects of African Botanica so that not only the intimate structure of the molecules are clarified but also are identified interesting characteristics of plants used for health maintenance. This symposium will also offer the opportunity to plant reproduction specialists to share their views about the agronomical aspects that can influence the content in bio-active compounds in medicinal, aromatic and food plants.

Web site: http://www.botaniqueafricaine.com/.

Phone: 506-455-4110.

## October 6-8: Natural Products Expo East: Educational seminars

**Baltimore, MD**

Contact: Cathy Garland, Herbalist & Alchemist, Inc., 908-689-9020, ext. 101.

Email: cathy@herbalist-alchemist.com.

Web site: www.herbalist-alchemist.com.

## October 27-29: American Herbalists Guild Conference: from Expert Consensus to RCT: Creating an Evidence Base in Clinical Botanical Medicine

**Boulder, CO**

David Winston will be joined by some of the top clinical herbalists from the U.S., Canada, and England for two and a half days of herbal education at its best. Contact: Tracy Romm, 203-272-6731.

Email: ahgoffice@earthlink.net.

Web site: www.americanherbalistsguild.com.

## October 29 - November 1: The Fourth International Conference on Mechanism of Action of Nutraceuticals (ICMAN4)

**Tel-Aviv, Israel**

The Conference will deal with the latest developments in dietary and endogenous sources of nutraceuticals; the results of cellular, molecular and animal studies in diabetes, cancer, neurodegenerative disease, cardiovascular and inflammatory disorders; proteomic-genomic developments; anti-aging opportunities.

Web site: http://www.evetopf.org/icman4.

## November 20-24: FAPRONATURA 2006

**Varadero Beach, Cuba**

The organizing committee of the First International Symposia on Pharmacology of Natural Products and BLACPMA, (Fapronatura 2006) is delighted to announce that the Prelimanary Lectures (in the Preliminary Program Link) are available on the event web site. Optional Tours are also available, and will take place during the celebration of FAPRONATURA 2006.

Web site in Spanish:
http://www.scf.sld.cu/natprod/portada.htm.

Web site in English:
http://www.scf.sld.cu/natprod/en/portada-en.htm.

Works presented in FAPRONATURA 2006 will be published by PharmacologyOnLine journal as "short communications."

To see the Author´s Guidelines of this journal, please click here:
http://www.pharmacologyonline.unisa.it/submissionrules.asp.

## November 27- December 2: Applying Functional Medicine in Clinical Practice

**Fort Lauderdale, FL**

Spend a week with leading experts on functional medicine: the science-based healthcare approach that assesses and treats underlying causes of illness through individually tailored therapies to restore health and improve function. Learn the techniques and take home the clinical tools that will make functional medicine a reality in your practice.

Web site:
http://www.functionalmedicine.org/eduprog/afmcp.asp

Contact: Client Services at 800-228-0622.

Early bird cut-off date: October 13, 2006.

## November 31- December 4: Sixth Mexican Congress of Traditional Medicine

**Monterrey, Nuevo León, Mexico**

Email: info@cumbre2006.com.

Web site:
http://www.cumbremundialdesaludymedicinaintegral.com.mx

*Event Calender information from the American Botanical Council Web site:*

*www.herbalgram.org*

# Application Form

## HOW TO BECOME A MEMBER OF THE VETERINARY BOTANICAL MEDICINE ASSOCIATION

**Who can apply?**

Regular membership is open to any veterinarian with an interest in herbal medicine. Nonveterinarian herbalists may join as associate members, provided they are professional members of the AHG or NIMH, or have equivalent experience. Affiliate membership is for members of the industry to remain current in the needs and concerns of veterinary herbalists, and does not imply clinical expertise or certification of any sort.

Regular and Associate membership is $75 per year. Affiliate membership is $175 per year. Veterinary student membership is $10 per year. Multiple membership is available to family or hospital groups (so that each e-mail address can have access to the listserv, get a web password, etc); the cost is $75 per year for the first member, and $40 for each additional member. To qualify, the snail mail address of each group member must be the same.

Special allowance for DEVELOPING COUNTRIES: VBMA accepts membership applications and grants membership to qualified applicants in developing countries for $25 per year.

### YOUR DETAILS

First Name _____ Last Name _____

Practice or Company name _____

Phone number _____ Fax number _____

Email _____

Address1 _____

Address 2 _____

City _____

State _____ Zip code or postal code _____ Country _____

Experience/education _____

*Please note that an email address is required, since most of our association business and benefits occur electronically.*

### SELECT THE TYPE OF MEMBERSHIP:

☐ Regular $75 ☐ Associate $75 ☐ Affiliate $175 ☐ Veterinary Student $10

☐ Multiple Membership first member $75 ☐ Multiple Membership additional member $40

☐ Developing Countries $25

### PAYMENT

Please select one of the following methods of payment

☐ Visa ☐ Mastercard ☐ Cheque ☐ Money Order

Credit Card Number: ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ ☐☐☐☐ Expiry Date: ☐☐/☐☐

*Post this form, together with your payment, to:*
Veterinary Botanical Medicine Association c/- Jasmine C. Lyon, Executive Director
1785 Poplar Drive
Kennesaw GA 30144 USA

**You can also apply for membership online at: www.vbma.org**