VOLUME 11, ISSUE 18

JOURNAL

of veterinary botanical medicine

A publication of the Veterinary Botanical Medicine Association

Veterinary Botanical Medicine Association

VBMA 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.

VBMA Goals

- Represent member veterinarians and herbalists as political and professional issues arise.
- Establish standards of training and herbal training programs and to identify established programs with the goal of developing or reviewing certification standards and Degree Programs in Herbal Medicine.
- Support ethical scientific clinical research in herbal veterinary medicine and maintain avenues for exploration of traditional care in veterinary botanical medicine.
- Explore cultural traditions such as TCM, Greek/western herbalism and Ayurveda for their proper translation to and application in modern day animal conditions and communicate these.
- Compile databases of existing science, ethnoveterinary medicine advances, and eventually a library online.
- Liaise with manufacturers so that they have an expert body to advise them on the needs of veterinary herbalists and quality control concerns.
- Support sustainable environmental, agricultural and husbandry practices.

VBMA 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. Veterinarians certified by VBMA will earn the title "Certified Veterinary Herbalist". Non-veterinary herbalists "Certified Veterinary Herbalism Educator." Certification by the VBMA will require passing the exam with a grade of at least 70%, submission of 3 publication-quality case reports for peer review within 1 year of taking the test and donation of at least 10 test questions for future exams. Guides available online HERE. Examination is administered yearly by VBMA at the AHVMA conference in the USA, where the VBMA holds their symposium. 2019 exam details will be posted when available.

SUBMITTING CONTENT

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 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 methods 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. *JOURNALS:* Author's surname Author's initials. Year. Title of article. Journal name volume; issue: page numbers. *BOOKS:* Author's surname Author's initials. Year. Book title. Edition. City of publication: Publisher.

Send all submissions via email to:
VBMA Communications Coordinator
communicationscoordinator@vbma.org

A Letter From VBMA President Ihor Basko

At our annual joint ACVBM, VBMA, AAVA and AHVMA Conference this year in Florida, we had some really informative as well as heart felt sharing about healing, the aging process, death and the grieving process for the owners, but especially the veterinarians. Connecting Heart to Heart is something special and not usually experienced in traditional conventional conferences.

Our speakers Christopher Hobbs (my mentor in medicinal mushrooms) and Guido Mase brought new enlightenment to how to better use the herbs we know.

I enjoyed meeting and seeing everyone again ….old and new, although once a year seems "not enough! We age, we change, we grow wiser…learning from our successes and failures. Sharing with veterinarians who "are into plants" is a rare, and dear time for all of us. Where do we go for wisdom and clarity? So much deeper of an experience when we are present to be with each other as we were at our conferences. We are Blessed!

Although in the Grand Ginormous Gaylord Palms Resort, it was a challenge to find each other in the vast sea of tourists, kids, loud and boisterous drunks, light shows, fireworks, and other organizational conferences occurring at the same time as the AHVMA Conference.

The space of the venue to me seemed quite ironic. In Las Vegas in a private room away from the hullabaloo, the AHVMA was created out of our angst of "this place is as far from holistic as we can fathom!" The AHVMA made full circle back to a "Las Vegasesque" venue, the Gaylord Palms.

In the midst of all the distractions, mazes of hallways, rooms, buildings, noisy sports bars, and water features, it was difficult and frustrating finding people and friends that I wanted to talk to and connect with in a calm, quiet space.

I was lucky to be in the exhibit hall near the entrance in the Vet Classics booth. I could meet and greet everyone from there. It was great to see, share and interact with so many of you advancing and evolving in your discipline and life's work in your own ways: taking the information and "making it your own".

So sorry for complaining, but it brings to mind the question for all to contemplate...

WHAT IS THE FUTURE OF HOW AND WHERE WE WANT TO HAVE OUR MEETINGS?

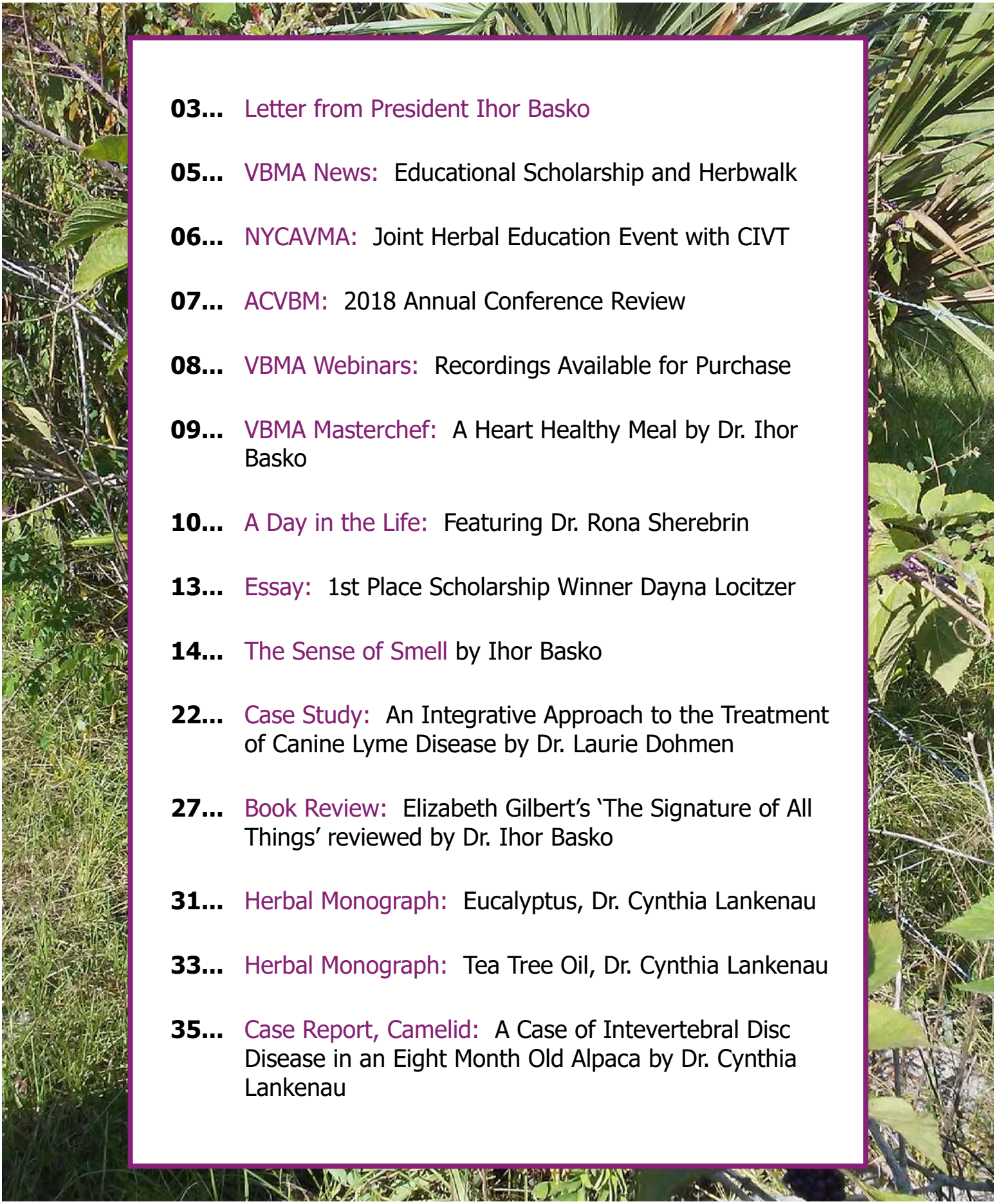
Can we still create conferences in environments that would also support our own healing? I do not believe in my heart that large venues such as we just experienced are good for our Qi and Yin. It was exhausting and very frustrating maneuvering around the maze, of buildings, pools, and people some drunk, others with screaming kids. Perhaps, I am too prejudiced in favor of a calm, natural space for conferences that "walk our talk". Healer Heal Yourself…. was difficult to experience, personally at the Gaylord Palms Resort.

Some say teleseminars and Live online workshops are the "way of the future" i.e., cheaper, stay home, and view at your convenience. But, what is missing?

What's missing: relationship, building friendships with fellow colleagues, collaboration, co-creating, networking and just sitting down and getting to know our veterinary herbalists. Being there "in person" is a multi-dimensional experience. Besides food for the mind, a recharge of Qi, Love and Gratitude are experienced. How can we create an environment, ambiance, and vibrational energy that supports our work and needs during a conference?

The VBMA needs to hear from members on what they want. Large conferences in resort and popular tourist areas? Or, something more in touch with Nature, where we too can be healed by "forest bathing", be "baptized in fresh mountain streams, and cleansed in hot mineral springs? Can our conferences be more than about the Mind, but also, about healing that occurs that touches our Heart and Soul? **Share your thoughts with us by taking our poll HERE**. No personal information is required - all submissions are anonymous.

IN THIS ISSUE



VBMA NEWS

VBMA EDUCATIONAL SCHOLARSHIP

The Veterinary Botanical Medicine Association currently offers annual educational scholarships for veterinary students totaling AT LEAST $1000.00 in order to promote herbal education.

2019 Requirements: Tell us about yourself! Why do you want to use Herbs in Your Future Veterinary Practice? Is there an experience that you have personally had with herbs that has engaged your interest? How has herbal medicine influenced your course in veterinary school? Simply send your information to office@vbma.org by **7/15/19** for consideration. The winning essays will be published in the VBMA journal as well as on the VBMA website.

Note: There is no expiration date for monies awarded so you can use it on future continuing education needs!

2018 SCHOLARSHIP WINNERS

At the 2018 VBMA Annual Meeting in Kissimmee FL, the VBMA board opted to award THREE educational scholarships totaling $1500.00.

First Prize: Dayna Locitzer, Cornell University, $750.00. Dayna's essay is published in this edition of the JVBMA on page 13 as well as on our website. If you'd like a PDF version, you can find it HERE.

Second Prize: Rebecca Haber, University of Wisconsin-Madison, $500.00. Read her essay HERE.

Honorable Mention: Ashley Shaw, University of Georgia, $250.00. Read her essay HERE.

CONGRATULATIONS DAYNA, REBECCA & ASHLEY FROM ALL OF US AT THE VBMA!

VBMA WEBINAR

Wednesday December 5th, 2018, 8:00 PM Eastern US Time

For our eighth webinar, Drs. Ihor Basko and Connie DiNatale will be discussing the use of the sense of taste as applied to food therapy and plant identification. Don't miss this one!

MASTERING THE SENSE OF TASTE: FOR USE

- **in Food Combining for Therapeutic Effects**
- **in Plant I.D. and Properties**

This Webinar will include:

- **the physiology of tasting**
- **the use of culinary herbs in recipes**
- **what do the tastes signify**
- **using taste to identify plant properties**

ONLY $70.00 FOR VBMA MEMBERS - *CLICK HERE* TO REGISTER

NYCAVMA/CIVT HERBAL EDUCATION EVENT

Getting Started in Veterinary Western Herbal Medicine

June 5th 2019 - a one-day intensive workshop

Venue: Wheaton College in Norton, Massachusetts. Please note that the 14th International Herbal Symposium will be held from June 7th - 9th 2019 at the same venue - travel out a few days earlier and maximize your CE opportunities!

This CIVT event is offered in conjunction with the New York Complementary and Alternative Veterinary Medical Association - CLICK HERE to register.

This intensive day of instruction, for beginner veterinary herbalists, is the perfect 'kick start' to develop skills and knowledge that can lead to an accredited post-graduate degree. This intensive workshop will cover topics included in the Certification in Veterinary Western Herbal Medicine and accelerate the veterinarian's usage of herbs within the clinical setting. By the completion of this course you will be effectively using a selected group of herbs for common conditions. Licensed Veterinarian Only - you will need to provide your State of registration and License number when you register. NOTE: The lectures and workshops will provide direct credit for the Certification in Veterinary Western Herbal Medicine and the Graduate Diploma of Veterinary Western Herbal Medicine.

DOWNLOAD THE PROGRAM HERE (NOTE: Late changes may occur to the program)

Course Fee:
$299 for the 1-day tuition (accommodation, travel and refreshments are the responsibility of the participant).
Early Bird Fee (available until March 31st 2019): $249

Speakers:
Dr Cynthia Lankenau DVM GDipVWHM CVA CCVHM graduated from Cornell in 1981 and moved into 100% dairy practice and became very frustrated with the limitations of western medicine. After a stint in the Peace Corps and time in a mixed animal practice, Cynthia began her path towards complementary and alternative veterinary medicine. She holds a Graduate Diploma of Veterinary Western Herbal Medicine, an Advanced Certification in Veterinary Chinese Herbal Medicine (IVAS) and certifications in veterinary acupuncture (IVAS), chiropractic, reiki and homeopathy. Dr Lankenau runs a sole practitioner mixed animal 100 % alternative modality practice in western NY State. She is active in the CAVM community being past-president of VBMA and having been responsible for the maintenance of the VBMA Listserve, with untiring devotion generously sharing advice and knowledge.

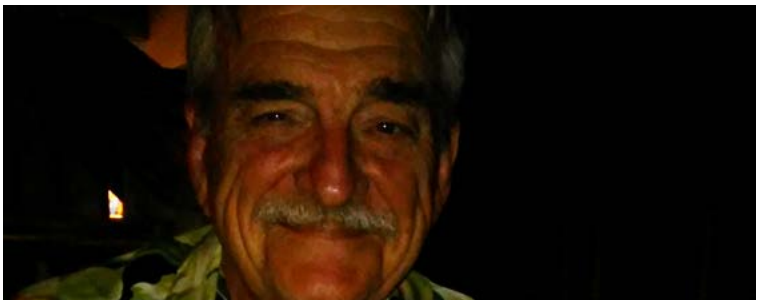
Dr Alexia Tsakiris-Vasilopoulos BVetMed GDipVWHM CVA received her BVetMed from the Royal Veterinary College, University of London, in 2005. She received her Certification in Veterinary Acupuncture from the Chi Institute in 2009, her certificate in Veterinary Herbal Medicine in 2015 from CIVT and qualified with a Graduate Diploma of Veterinary Western Herbal Medicine (CIVT). Dr Tsakiris completed David Winston's Herbal Studies course in 2016. In 2016, she established an exclusively holistic small animal practice. She lives in New Jersey with her husband and two young boys.

Dr Monica Chapman DVM GDipVWHM graduated from the Virginia Maryland Regional College of Veterinary Medicine. She worked in small animal practices throughout Virginia and joined the Middleburg Animal Hospital in 1996. In 1999, Monica left private practice to enter public practice at the Fauquier SPCA where she was for 15 years. Monica began her training in herbal medicine in 2012, studying under Teresa Boardwine, RH(AHG) in Sperryville, VA, completed certification courses in Foundations of Western Herbal Medicine and Apothecary (medicine making) in 2013, and worked as an intern with Geo Derick Giordano, MSc, RH(AHG). She subsequently formalized her qualification by completing a Graduate Degree in Veterinary Western Herbal Medicine at the College of Integrative Veterinary Therapies (CIVT), studying under Dr. Barbara Fougere. She has now joined the faculty of CIVT as a mentor and tutor. Monica also conducts a small house call practice providing western herbal consults for dogs and cats, Mojo Medicinals.

ACVBM 2018 ANNUAL CONFERENCE REVIEW

On October 2, the American College of Veterinary Botanical Medicine held its annual conference. The conference was truly a remarkable educational event. We began with an Herb Walk lead by Emily Ruff, a local clinical herbalist and educator. Emily is a very accomplished herbalist who found an amazing number of 'weeds' who are incredible sources of medicine on the well-manicured lawns at the Gaylord hotel. On the walk we found and talked about, Ginger, Sida, Bidens, Fire Bush, Button Weed, Croton, and Coleus, to name just a few plants. Sida and Bidens are very fascinating herbs as they both have great indication in the treatment of Lyme disease and Lyme co-infections.

At the general meeting, Organizing Committee member Ihor Basko was presented with a gift of appreciation for his years of service on the executive board. Kendra Pope will be joining us on the executive board. On Oct. 3 we had our lecture part of our program, during which Christopher Hobbs, PhD, L.Ac. spoke for 6 hours on Treating Infection in Animals with Herbal Medicines. Dr. Hobbs is not only a renowned clinical herbalist and mycologist but he is also a research scientist with over 35 years of experience. His talk included recent information on absorption of various phytochemicals and strategies to improve utilization of herbal medicines and he easily blended his discussion on herbal actions with recent research on the pharmacodynamics and pharmacokinetics of the individual herbs. After a basic introduction to the four major chemical pathways in which plants produce their fatty acids, terpenes, alkaloids and phenyl propanoids, he discussed the major herbal medicines used in a variety of infections. The major antiviral Herbs discussed included Andrographis, Cedar leaf, Elder fruit, flower and bark, Garlic, Asarum root, Isatis root, Baptisa, Lonicera flower/stems and Pelargonium. Dr. Hobbs included not only traditional use but provided recent scientific studies and practical information on herbal uses and preparation based on the plants unique biochemistry and active phytochemicals. Immune tonics, including mushrooms and the action of Beta-glucans, and other supportive information for treatment of viral respiratory were also discussed. Urinary tract infections were also mentioned, including the use of Uva ursi, Pipsissewa, Cleaver, Dandelion, Cranberry, D-mannose, Vitamin C, Goldenrod, and Juniper berries. After a VBMA herb walk break, Guido Mase, RH (AHG), gave an inspiring two hour lecture on his experiences working in a hospital clinic in Tanzania improving the effectiveness of patient care by incorporating the use of medicinal plants. Both of these topics were fascinating, and both speakers were engaging, extremely knowledgeably, and it was a true joy to attend. Next year's ACVBM's annual conference will be held on June 6, 2019 at Wheaton College, Norton Massachusetts. Keep an eye on www.acvbm.org for details and registration information.



If you'd like to purchase proceedings from the ACVBM 2018 Annual Conference please

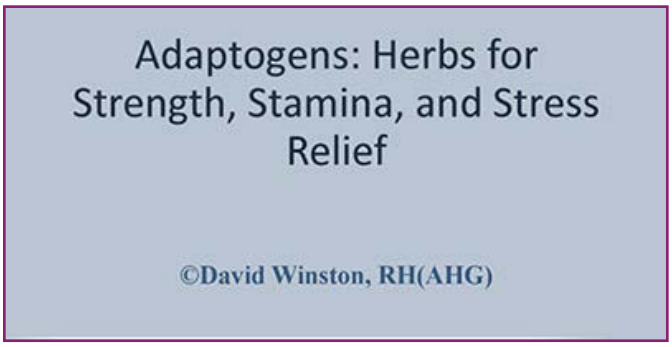
CLICK HERE

VBMA WEBINAR RECORDINGS

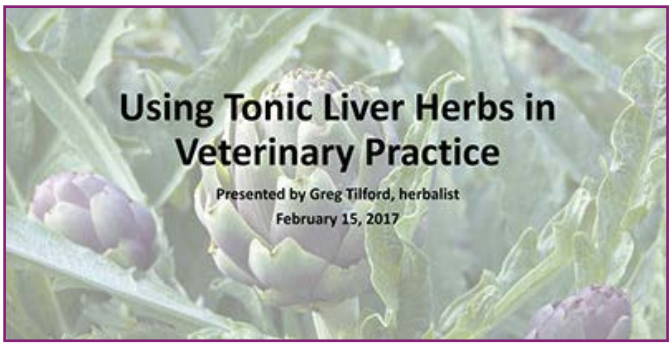
Missed a Webinar? We offer recordings of previous programs for you to purchase!

Use your computer and a web browser to view the recorded version. Q & A portion included, member price only $70.

CLICK HERE TO ORDER



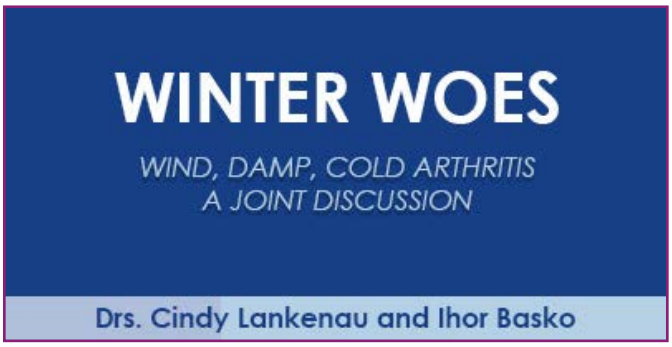
Webinar by David Winston
Recorded June 22nd, 2016



Webinar by Greg Tilford
Recorded February 15th, 2017

Webinar by Cindy Lankenau
Recorded September 9th, 2017

Webinar by Robert Silver
Recorded December 6th, 2017.



Webinar by Cindy Lankenau & Ihor Basko
Recorded February 21st, 2018.

Webinar by Nancy Brandt
Recorded May 2nd, 2018.

Heart Healthy Meal

by Dr. Ihor Basko

Raw Beef Heart with Stir Fry Meat, Vegetables and Rice

INGREDIENTS

- 1 cup of beef heart (raw, but into pieces)
- ½ cup of chicken livers[1]
- 1 egg (raw)[2]
- 1 cup of cooked organic brown rice
- ½ cup of baked squash or pumpkin(cubed)
- 1 cup of mixed green vegetables (well chopped)[3]
- ¼ cup of water or bone broth
- 1 tablespoon of virgin coconut oil

DIRECTIONS

In a frying pan or wok, medium heat the oil, add the chicken livers and cook for about 5 minutes stirring often. Add vegetables and stir well and cook for another 5 minutes. Increase heat to medium hot, then add water and egg. Mix in well. Lower heat and simmer for 10 minutes. Add rice, mix, and let sit covered until room temperature When mixture is room temperature add the beef heart and mix well and conformably. Makes about 4 cups of food. Feed ½-3/4 cup per 20lbs of body weight. This particular dish could be fed as a supplemental meal for the heart condition, along with regular meals.

[1]*chicken liver contains about 6.763 g taurine per kilogram of dry weight* https://www.vetmed.ucdavis.edu/sites/g/files/dgvnsk491/files/aal/pdfs/spitze.pdf

[2]*choline:* https://lpi.oregonstate.edu/mic/other-nutrients/choline

[3]*Besides red meats in general, L-carnitine can also be found in artichokes, asparagus, beet greens, broccoli, Brussels sprouts, collard greens, garlic, mustard greens, okra, and parsley*

A DAY IN THE LIFE

Featuring VBMA President-Elect Rona Sherebrin

Toronto, Canada

I'm woken at dawn by the insistent barking of my 6 year old yellow lab, Jasmine Barksalot (pictured at left, both of us at my office), who only sleeps late during thunderstorms. Well, she doesn't actually sleep late when it's stormy, but she stays in her kennel hiding from the noise and doesn't bark, so I get to sleep late! Luckily dawn is at 7am now.

I let her out and text "Good Morning" to my Anam Chara (soul friend) in Ireland, who I often talk to after breakfast, if time permits. The 5 hour time difference makes morning the best time to chat with him and catch up.

Breakfast starts with a strong latte I brew while the dog is outside barking at squirrels and annoying the neighbor. I let her in and feed her a slow cooker stew made with the "ugly" vegetables rescued for my by the produce manager at the food coop I belong to. My breakfast is usually home-fermented cow's milk kefir and granola or toast, sometimes it's on the run while I'm on the way to work.

I start my work day looking through the list of "tasks" on the computer, trying to sort out the most urgent ones that need a phone call or email response before I see my first patient. Today the call is about Tyler, an oncology case that has not been doing well recently, 6 months ago he had surgery and chemo following for auricular hemangiosarcoma. He did very well with very few negative effects from chemo with herbal, nutritional and acupuncture support, but was now out of remission with mets in chest and abdomen. He is scheduled to be euthanized this afternoon at the referral hospital, and his guardian is understandably upset. I take a few breaths to centre myself before proceeding to check my appointment schedule.

Up first is Shayne, a 12.5 year old, 40kg boxer cross who has been my patient for 8 years, after he had bilateral ruptured ACL's repaired and hip dysplasia was diagnosed. He is getting stiffer but is still able to get up and get around with regular acupuncture and herbal therapy. The rest of the day is a mix of things....a puppy with diarrhea and suspected food sensitivities, a few regular elderly pets having acupuncture for mobility, kidney disease or both, a 12 year old golden retriever with a brainstem tumour, and a new patient consultation for an older cat who is in the same household as one I have been treating for hyperthyroidism and IBD.

I get out at lunch for a walk and to pick up a salad for lunch at the local market, then eat half of it quietly and mindfully, but the rest is eaten while at my desk going over test results and drafting emails reporting those results to clients. After appointments end, I finish the less urgent client call and emails, as well as read the VBMA digest and VBMA board mail. I head home, thinking about whether I can change the massage I have booked for next week to this week as I feel the knots in my neck and back multiplying. I think about all the exercises and stretches my physiotherapist has assigned that I have not done lately and resolve to get back to them.

Dinner is made when I get home, thanks to my parents visiting me; a little perk to balance out the additional traffic and laundry at my house. After dinner I walk Jasmine with my husband and we chat about our days, meeting our son coming home from his dance class. He has 10 hours of dance classes a week, preparing for an intensive competitive dance schedule in the spring. At right is a shot of me, #DanceMom, attending one of his recitals. Before bed if I'm not too tired I will read a bit; currently I am reading "Bad Feminist" by Roxanne Gay, a book of essays I started reading after I finished reading her memoir "Hunger".

2019 VBMA ECOTOUR - SCOTLAND

June 29th through July 6th 2019, Aigas Field Center, Scotland

Join us for what will certainly be a one-of-a-kind experience - a week exploring the Scottish Highlands! From June 29th through July 6th 2019 we'll be staying at the Aigas Field Center, Scotland's foremost center for nature study and wildlife holidays. Our itinerary (subject to change) appears below. This is an all-inclusive EcoTour in regard to lodging, food and activities, with the exceptions being your airfare and car rental. Note that airport pickup and drop-off is provided for you as part of the package. **LIMITED TO 25 ATTENDEES, CLICK HERE TO SIGN UP NOW!**

PRICING:
VBMA Members: $2300.00 per person, **Non-Members:** $2350.00 per person

PAYMENT SCHEDULE:
VBMA Members: $750.00 deposit, $750.00 due 11/30/2018, $800.00 due 2/1/2019
Non-Members: $775.00 deposit, $775.00 due 11/30/2018, $800.00 due 2/1/2019

REFUNDS: Full refund less $20 for VBMA administrative fees through 1/31/19, 50% refund from 2/1/19 through 3/31/19, NO refunds will be issued after 3/31/19

ITINERARY:
Saturday 6/29/19 - Arrival
Arrival at the House of Aigas, home of Sir John and Lady Lister-Kaye and award-winning field centre, in time for afternoon tea. The rest of the afternoon will be spent familiarising ourselves with the Aigas gardens and grounds, and settling into our accommodation before dinner in the Baronial hall of the house.

Sunday 6/30/19 - Glen Strathfarrar & Aigas
This morning we head to Glen Strathfarrar, a remnant of Scotland's ancient Caledonian pine forest to look for golden eagle, dipper and migrants such as wheatear and cuckoos that have returned from the south. As well as a suite of wildflowers, including bog asphodel, northern marsh orchid, heath-spotted orchid, dwarf cornel and starry saxifrage. After a buffet lunch we will spend the afternoon walking round the Aigas estate to learn about the European beaver, our Scottish wildcat breeding project and to familiarize everybody with the loch, grounds and nature trails.

Monday 7/1/19 - Black Isle
After breakfast our destination is the Black Isle, a diverse mix of pebble shores and cliffs, agricultural land intermixed

with areas of native woodland, forestry and old hedgerows, where we will look for common and rare species of wildflowers; this is a nature lovers paradise. We will visit coastal mud flats where we hope to see the many wading birds that make this habitat their home. Stroll through woodlands to listen for recently arrived warblers and explore the farmland which abound with skylark, yellowhammer and the reintroduced red kite. We will join up with EcoVentures for an exhilarating two hour boat trip in search of the resident population of bottlenose dolphins.

Tuesday 7/2/19 - Strathconon
Today we will head for Strathconon, a vast strath with a high population of red deer and resident golden eagles. We also hope to find red kites, goosander, dipper, tufted duck, Slavonian grebes and roe deer along the way.

Wednesday 7/3/19 - Aigas and River Beauly
We will spend the morning at Aigas, further exploring the grounds on foot, walking around the Aigas Loch and native pinewoods, home to our twinflower translocation project, and participating in some workshops such as owl pellet dissection and foraging. After a buffet lunch we will head out for a walk along the River Beauly where we might spot kingfishers, sand martens, ospreys and peregrine falcons.

Thursday 7/4/19 - The West Coast
Our longest day of the week, today we head west to the mountainous and dramatic shores of the west coast of the Highlands. Here we hope to observe the world's fourth largest eagle and Britain's rarest breeding raptor; the white-tailed sea eagle. During the day we may see red and black-throated divers, gannet, black guillemot, twite, a variety of waders and, if we're very lucky, otters exploiting the vast shoreline, as well as spectacular scenery, beaches, sea lochs and mountains.

Friday 7/5/19 - Glen Affric and Glen Cannich
The morning will be spent wandering through the ancient Caledonian pine forest of Glen Affric where we will have a packed lunch looking out over Loch Beinn a'Mheadhoin. Following Glen Affric, we will head to Glen Cannich, another nearby glen, before heading back to Aigas for afternoon tea.

FOOD:
From the Aigas website: *Cordon Bleu trained Lucy Lister-Kaye runs the catering at Aigas. The estate is organic; we eat much of our own produce – beef and venison – and we buy ingredients locally whenever we can. Dinner is a 3-course set menu, breakfast is hot porridge and a help-yourself buffet of lots of cereals, toast and fruit. Every day fresh rolls and baguettes are made up for your packed lunch and guests are offered a selection of many other ingredients to take with them each day. Thermos tea and coffee are carried on all expeditions. Special dietary needs are not a problem at Aigas. We prepare special meals all the time. Just let us know your needs on booking.*

VBMA 2018 SCHOLARSHIP FIRST PLACE ESSAY

Dayna Locitzer
Cornell University

My first influential experience with herbal medicine began when I started working on a Biodynamic dairy farm in the Hudson Valley of New York, Hawthorne Valley Farm. Biodynamic farming is based on the philosophies of Rudolf Steiner and employs herbal medicine to treat humans, their animals, and the soil on which they grow. In May, the whole farm crew would collect blossoming dandelions to use in a biodynamic preparation that, when spread on the soil at a certain time of year, intended to sensitize the soil to cosmic forces. While this was a more esoteric application of herbal medicine, I also had very tangible experiences. As a farm crew we also harvested nettles together. We would put on gloves and wore long pants and sleeves, and go out to a large patch of nettles to harvest as much as we could. Some of this was used for a biodynamic preparation but most of it was used as medicine for our cows. The nettles were hung in the hay loft to dry and during the winter months, the herdsman would add bundles to the grinder each time he would prepare their grain. Dairy cows are under constant metabolic stress that is exacerbated in the winter time when they don't have access to fresh feed. This supplementation was intended to strengthen their immune systems, tonify their bodies, and provide vitamins and minerals they were lacking. I was inspired by every aspect of this effort: the community involvement, the resourcefulness, and the attention to the immune system of the cows. This method of seasonal mass treatment of dairy cows with foraged plants is something that I want to bring to my practice when I become a veterinarian.

The same herdsman also introduced me to the use of yarrow and goldenseal to heal wounds. When the cows would get udder rot or abscesses, we would mix together one part goldenseal powder to ten parts yarrow powder and pack that into wounds. I learned that the goldenseal was used to prevent infection because of its antimicrobial properties and that yarrow helped with tissue healing. The wounds healed rapidly and successfully, keeping at bay nasty infections and the use of conventional antibiotics. Hawthorne Valley Farm was also where I learned about homeopathic medicine, which I would used almost daily on the farm. We would use it to treat cows with mastitis, calves with diarrhea, and animals that just weren't doing right. I enjoyed the process of matching a remedy with the ailment, it enabled me to delve deep into the character of the animal and the character of their disease.

After Hawthorne Valley, I became a herdsman at a small dairy that was transitioning to organic and grass fed. With the shift in diet and management some cows thrived while others faced significant health problems. Because many of these problems were unique to this transition, our veterinarians were not always able to find solutions that met the organic requirements. This led me to do my own research about organic veterinary care. In addition to remedies I had previously learned I also employed herbal tinctures and essential oils. In addition to homepathics for our mastitis protocol, we used a homemade garlic tincture as well as oregano oil. I became very focused on the health care of the animals and this led me to the decision to apply to veterinary school.

Herbal medicine was my introduction to veterinary medicine and it is what drove me to become a veterinarian. I am excited about using herbal medicine when I am in practice. I want to implement herd wide herbal protocols for organic farms I work with and learn more about using herbs in acute situations. I appreciate herbal medicine because of its versatility and how it offers an alternative and effective option to hormones, antibiotics, and steroids. I am looking forward to learning more.

THE SENSE OF SMELL

How Can We Make Sense Out Of It?

by Ihor Basko, DVM, CVA

How did early humans and animals differentiate edible foods and plants from toxic ones? Without knowledge of biochemistry and phytopharmacology, how did early herbalists determine which plants were medicinal, and devise methods for mollifying toxicity in the harmful ones? They used their tongues, but most importantly their noses.

The senses most associated with survival by our ancestors were: **sight** (e.g. morphology i.e., "The Doctrine of Signatures", and color), **taste**, and most importantly - the sense of **smell**.[1] The sense of smell in primitive humans and animals evolved into their primary survival mechanism.

Although the sense of smell still functions as a survival mechanism for dogs (it's either "Go" or "No go" when they smell things they are thinking about eating), humans have largely stopped relying on the important skills of their noses to promote survival.

My large animal professor at Michigan State University Veterinary School, Dr. O'Riley, told his classes, "You should be able to walk into a barn and diagnose the problem from the odors." As a young vet student, this concept totally fascinated me. What do different animal smells mean, and what makes a smell "diagnostic"? Could I develop my sense of smell and gain the skill to incorporate it into my diagnostic process?

Questions like these still guide my career. As veterinary herbalists, is it possible to return to our roots and develop our sense of smell to the degree where we can ascertain the presence of active medicinal compounds and their concentration in a fresh plant, powder or tincture with practice? Will developing the sense of smell improve our understanding of medicinal plants? Without access to sophisticated laboratory procedures and equipment[2], can refining our skills of smell serve our knowing and help us in our veterinary practices?

For the herbalist in the field besides our sense of sight, taste and smell can be useful in identifying properties of plants (especially toxic ones) without having prior knowledge of them. Plants communicate with color, shape, taste, hormones, vibrational energies, and the odors they emit.[3,4,5] Knowing their "language" gives us another way of identifying plants that are unfamiliar. Becoming acquainted with their habitat and ecology (soil, climate, water needs) can also tell us something about a plant's "potency." (Not all Reishi mushrooms are the same!)

How do you know that what's on the label is in the powder?
Taste and Smell.

We understand how the pills, powders, tinctures and teas we use work, based on intellectual knowledge we have attained over the years. Using smell to further evaluate these things adds another dimension to our understanding of them.

Some powdered herbs have been sitting in capsules for months if not years, adversely affecting their potency. When buying bulk herbs and formulas, a cultivated sense of taste and smell can give us qualitative information about the state of the product, as well as the presence of actives, substitutions, or contaminants.

Figure 1. Trametes versicolor

The compounds in some plants and extracts may degrade over time, not only making the plant less potent but possibly toxic due to the byproducts of degradation, such as aldehydes (which can be perceived by smell). Contamination by molds, which can create toxins and cause harm if ingested, are the main problem with the storage of most medicinal plants. Mold is easily identified by its distinctive odor, making smell an important and simple tool in discovering its presence.

The sense of smell can also facilitate a veterinary diagnosis. In the process of examination, we smell odors and may wonder what they are, but many times we instinctually know that a particular smell belongs to a pathogenic bacterium, or fungi (such as Malassezia). We can confirm this with a culture and sensitivity test, but in the interim we have an idea of what the causative agents might be and can begin treatment based on that knowledge. See Figure 2.

Most of us know that a fishy smell from the mouth can reflect a chronic kidney disorder, a sweet, fruity smell usually represents ketoacidosis, "puppy breath" is often a sign of intestinal worms, a fecal smell could mean a bowel obstruction problem, and a metallic, acrid smell from poop most likely signifies blood.

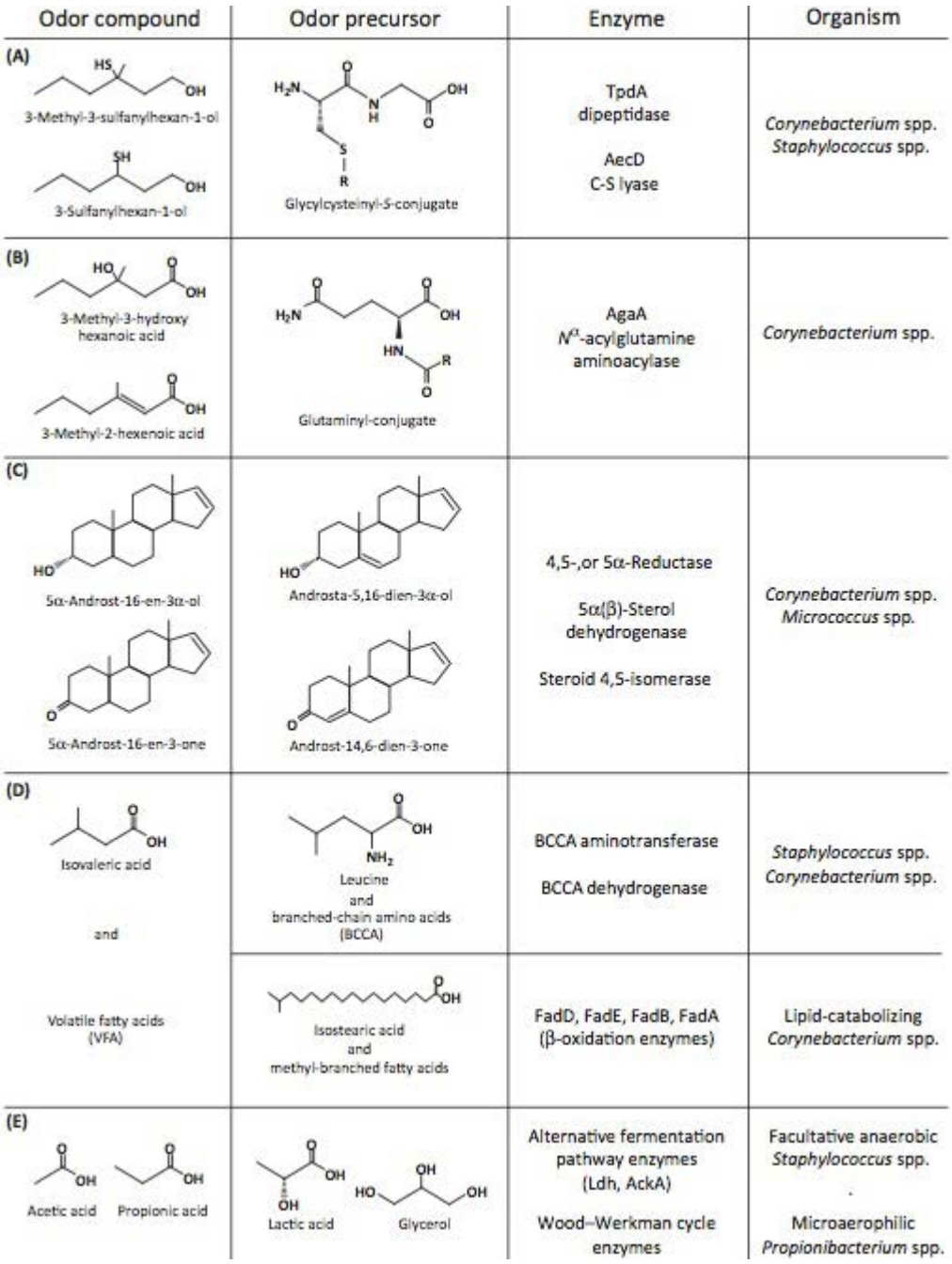


Figure 2. Odor compounds that make up underarm smells[4]

What is the Mechanism of Smelling?

According to the work of biophysicist, perfume critic, and writer Luca Turin, when we perceive an aroma we are actually smelling atoms. Only five elements (atoms) make up odors: Carbon, Hydrogen, Oxygen, Nitrogen and Sulfur. These atoms bond with each other in different configurations, creating molecules, each with their own distinctive smell. A plant has hundreds of molecules.[6]

When the elements below bond with each other they create recognizable smells:

NH3	Fishy
C=N	Metallic and oily
N-C-S	Mustard spice
NO2	Sweet and ethereal
As-H	Cabbage

In our everyday practice we notice smells, but perhaps we do not take them into account in our diagnosis process. Veterinarians are most acquainted with decomposition smells:

CH-NH2	Short chained amines
H2S	Aliphatic volatile fatty acids/ butyric acetate
Isonitriles C4H9	Decaying flesh or dead fish
Quinolines C9H7N	Green pepper
C-S-H	Sulfur
NH3	Ammonia/ uremia
Indoles CHN, skatols	Fecal
Fermentation	Cheesy
Blood	Dry, sweet and metallic

Organic odorants in oils fall into several categories, including esters, terpenes, amines, aromatics, aldehydes, alcohols, thiols, ketones, and lactones. (See Figure 3 on the page that follows).

The long-standing theory of smell, promoted mostly by the perfume industry, is that smell is a function of its molecular shape.[8] Turin disproved this theory by demonstrating that 2 stereoisomers (enantiomers / mirror images) of the same molecule (carbonyl C-O) will smell different: R-C-O smelled like mint, and the S-C-O smelled like caraway seeds.

Incorporating quantum biophysics into his theory, he defined smell as the result of electrons vibrating at a specific frequency, amplitude and wavelength. Smell is created by the electrons as they create a distinct wave that is received by the G protein-coupled receptors (through electron tunneling)[9] in the nose and then communicated to the brain.[10,11,12]

Long ago, before laboratory analysis of plants was possible, TCM practitioners used color and taste to identify the properties of food and herbal plants. With the advancement of science, we now know that the color of roses, for example, is dependent on the variety and ratio of carotenoids and anthocyanidins. Different varieties and colors of the flower will have different properties as well as different aromas. The aroma of a rose depends on the ratio of its different chemical molecules, which make up compounds, which create a vibrational wave that interacts with the electrons emitted from the G-receptor cells in the nose. Ketones (damascones, dama scenones, and ionones), cis-rose oxide, geraniol, citronellol, and others all combine to create a distinct and unique aromatic "chord."

Knowing the frequency and wavelength of a molecule according to Turin was a more accurate way of predicting what something will smell like than relying solely on its chemical structure. Turin rated a molecule's vibrational effects on a frequency scale from 0 to 4,000. By identifying the frequency, he could predict the smell.

Variations in the number of times an electron bounces back and forth as it bonds with atoms will result in different smells. For example, a sulfur smell occurs from the vibration of a sulfur molecule bonding to hydrogen. To mimic the process of smelling, Turin developed a spectroscope that could identify the wave patterns, because the smell receptors

cells in our noses function like a spectroscope.

	Odor	Natural Source
Esters		
Geranyl acetate	Rose, fruity	Flowers, rose
Fructone	Apple	
Methyl butyrate	Fruits, pineapple, apple	Pineapple
Ethyl acetate	Sweet solvent	Wine
Isoamyl acetate	Fruity, pear, banana	Banana
Benzyl acetate	Fruity, strawberry	Strawberry
Terpenes		
Geraniol	Floral, rose	Lemon, geranium
Citral	Lemon	Lemongrass
Citronellol	Lemon	Rose geranium, lemon-grass
Linalool	Floral, lavender	Lavender, coriander, sweet basil
Limonene	Orange	Lemon, orange
Camphor	Camphor	Camphor laurel
Carvone	Caraway or spearmint	Dill, caraway, spearmint
Eucalyptol	Eucalyptus	Eucalyptus
Amines		
Trimethylamine	Fishy	
Putrescine	Rotting meat	Rotting meat
Cadaverine	Rotting meat	Rotting meat
Indole	Feces	Feces, jasmine
Skatole	Feces	Feces, orange blossoms
Alcohol		
Menthol	Menthol	Mint species
Aldehydes		
Hexanal	Grassy	
Isovaleraldehyde	Nutty, cocoa	
Aromatics		
Eugenol	Clove	Clove
Cinnamaldehyde	Cinnamon	Cinnamon, cassia

Figure 3. Organic odorants[7]

Researchers have identified approximately 1,000 types of odor receptor cells in humans, and it is estimated that humans can detect 10,000 different odors.[13] Odor molecules bind to different combinations of receptors, and these combinations are decoded in the olfactory cortex. According to chemists in the perfume business, it is possible to train oneself to identify at least 200 different molecules through smell.

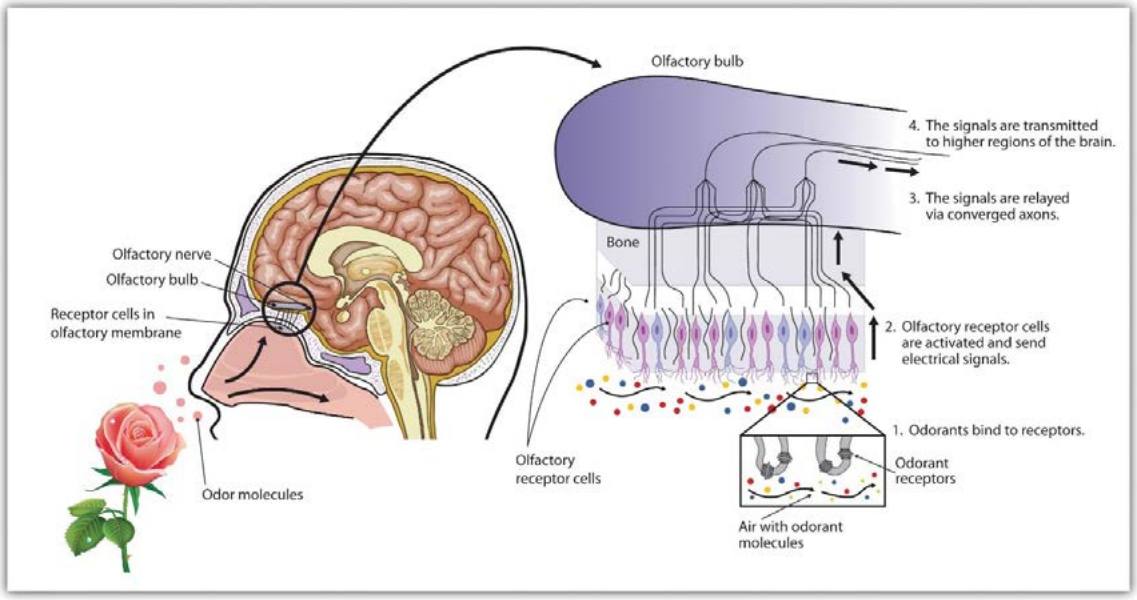


Figure 4. Smell receptors[14]

Most perfume fragrances (95%) are made from synthetic chemicals that are similar in molecular structure to the one part (of many) that gives the fragrance its characteristic signature smell. The synthetic version can easily be confused with "the real thing," and generally goes unnoticed by most consumers. For example, because of the high cost of making rose perfume from fresh flowers, and the poor stability of the scent over time due to fast oxidation, the rose essence you buy as a perfume is most likely made from chemical molecules which are copied from the rose.

Two Kinds of Smell

The sense of smell in humans is bidirectional: our perception of smell changes according to the direction of airflow. Ortho-nasal smell is perceived when breathing in through the nose, while retro-nasal smell occurs when energized aroma molecules in the mouth are forced back into the nose. *Retro-nasal smelling is much more complex than ortho-nasal because it recruits flavor, texture, hearing and muscle activity.*[15] (Retro-nasal smelling would complement the "Five Taste Theory" of TCM used in identifying a plant's properties and its nutritional and medicinal functions.)

Once odoriferous air molecules are inhaled and exhaled, the nose has to make sense out of all the molecules. Activation of the olfactory cilia of the neurons and the G-receptor cells, where the 1,000 specific receptor genes are present, produces a spectroscopic evaluation of what we smell. Specific olfactory receptor genes encode each protein.[16]

Dogs, who primarily use ortho-nasal smelling, have over 220 million olfactory receptor cells, compared to humans who range from 5 to 10 million.

Enhancing Smell Memory

> *Women, in general, have a better sense of smell than men. In humans, smells evoke memories and emotions.*
>
> *– Rachel Herz PhD*

According to psychologist and cognitive neuroscientist Dr. Rachel Herz, which smells people like or dislike is heavily influenced by their culture, childhood and racial background. Because humans have a developed amygdala, smells will trigger emotions and memories, good and bad. Humans associate feelings and emotions with smells, and this memory is stored in the amygdala. Consciously attaching a vividly descriptive emotion or memory to an aroma is a valuable "tool" for remembering smells and their primary compounds. This was one of the methods Turin used to remember the smell of a perfume's molecules (e.g., *"The wonderfully expensive and almost impossibly rich narcissus absolute made by the small Grasse (France)-based firm of Monique Remy smells like a farmyard tutti. Hay, flowers, honey, cowpats, earth, even ham in some ways."*[17]

Identifying Components

Similar to the act of tasting and identifying the complex flavors and aromas present in wine (citrus, peach, apricot, etc.), there are different stages to smelling plants, or anything that has an odor. The human nose likes smaller molecules: more than 16 carbon bonds have no odor. Larger molecules do not fit into the sensing mechanisms. As you inhale, the odor you smell first is the "top note" and is usually the shortest-chained molecule. This is followed by more smells as the nose adjusts to the molecules that are lurking deeper, the "bottom note," possibly due to the effect of retro-nasal smelling. Once these air molecules are exhaled through the nose, the olfactory cilia of neurons and the G-receptor cells begin to decipher the stimuli. See Figure 5.

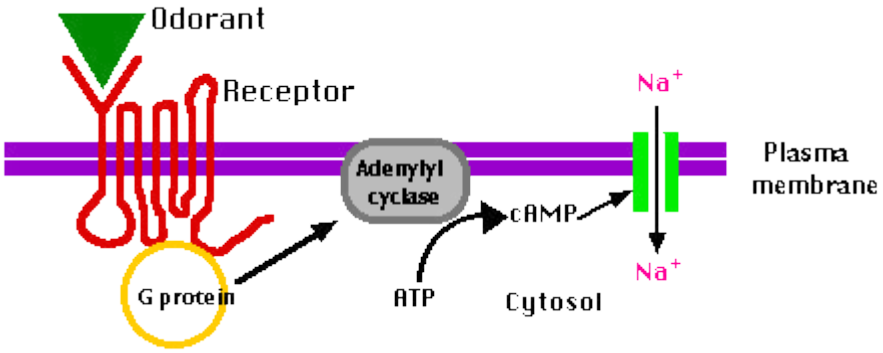


Figure 5. Processing smell: the sequence of events[18]

For example, when smelling molecules in alcohol tinctures, the top note will be alcoholic, pungent, and intense, then possibly fresh and floral (or flat and oxidizing), followed by warmer and sweeter notes, and finally ending on a longer-lasting smell that lingers, i.e. the bottom note - the signature smell.

With plants, each odor note represents one of the many compounds within the plant. Together the notes form a noticeable and specific olfactory "chord" which gives the overall smell impression, such as "rose" or "carnation." Aromas arise from the most *aromatic* compounds in the plant, and not necessarily the most *dominant*. For example, if you rub a lemon with your fingers enough to break the skin, you will detect at least four different odors, not just "lemony." With care and practice, one should be able to smell citral, citronellol, limonene, and carvone.

Heat loosens the molecules from their atomic bonds. Humid, warm air allows one to smell more of the molecules. Applied to your warm skin, with practice, you might be able to smell more of the individual molecules. The aromatic and other chemical compounds vibrate and become more alive as the temperature rises to a certain level, which makes them more detectable via the sense of smell. Crushing a plant and rubbing it in one's hands (warming it up) improves the quantity of volatile and non-volatile compounds that float up into your nose. Rubbing the plant on your skin (not poison ivy!), mixing it with your body oils, creating warmth and moisture, one might smell a different compound.

Not all oils are created equal. A Brazilian study of different sources of lemongrass and their essential oils found 22 different compounds, with neral and gerinal as the two main compounds. Concentrations of these main actives varied from 45% to 75%. [19]

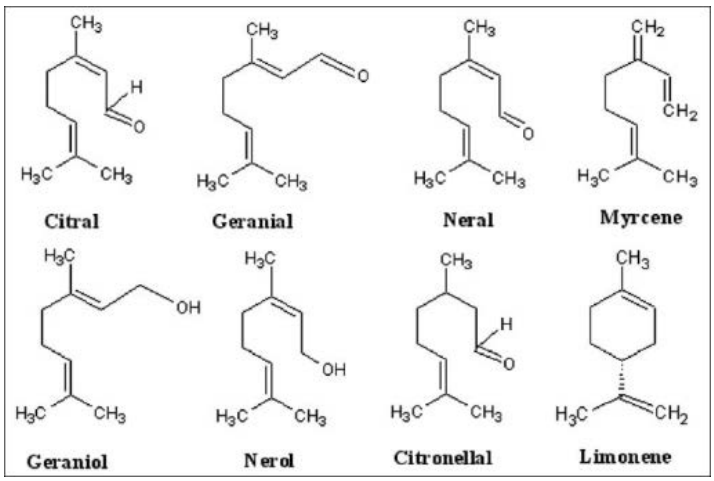


Figure 6. Lemon Grass[20]

Figure 7 gives a list of fragrances (the "top note") associated with some common plants. The molecules that give rise to these distinctive smells are copied and then reproduced chemically for use in perfume, lotions, and shampoos.

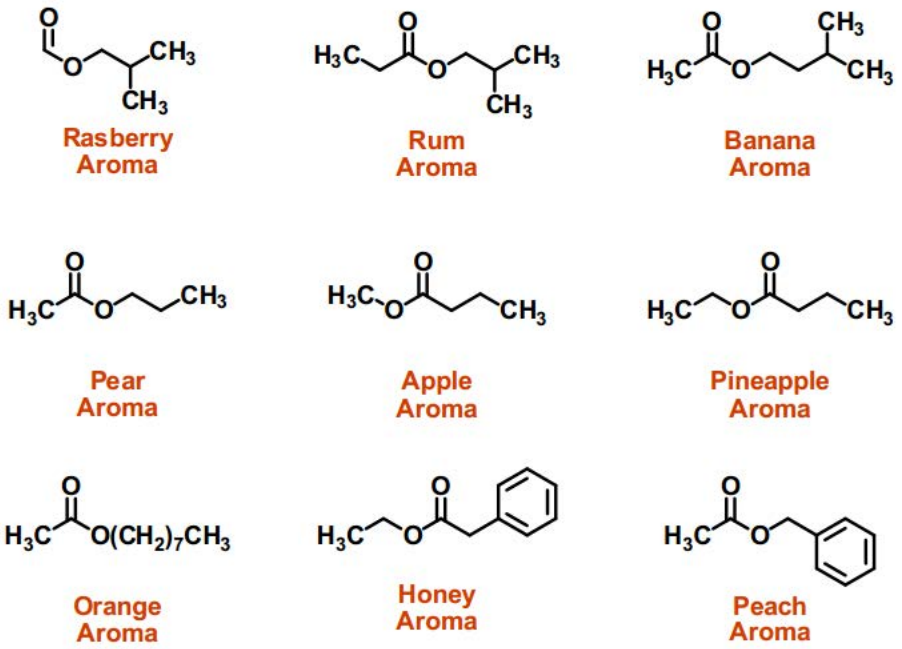


Figure 7. Molecular structures of some common fragrances[21]

To repeat, what we actually smell physically, or rather biophysically, is a *vibrational* phenomenon.[22] The nose works like a spectroscope. The G-Protein receptors shoot out electrons (electron tunneling),[23,24] which mingle with the floating odor molecules' electrons, creating an impression that is communicated to the brain via chemo-sensory olfactory neurons[25], which in humans activates emotions, feelings, textures, and flavors.

Chemists working in the perfume industry have trained themselves to smell specific molecules in a perfume product.[26] French perfume chemists can tell a synthetic from a natural sandalwood scent, because the synthetic smells more like sandalwood, and lasts longer on the skin than the naturally-derived oil. Similarly, I believe we can train ourselves to identify specific smells associated with the medicinal compounds we use in our veterinary practices, and to recognize the smells of certain conditions present in sick animals.

Combining The Sense Of Smell Along With The Sense Of Taste: What Is The Opportunity?

Laboratory methods of analysis using Gas Chromatography–Mass Spectrometry (GCMS can be applied to solid, liquid and gaseous samples) and High-Performance Liquid Chromatography (HPLC is applicable for compounds soluble in solvents) are exact but expensive and labor-intensive ways to determine the concentrations of pro-active compounds, and to discover toxic elements, in a plant or plant extract.

In our veterinary practices and in the field, without access to these chemical analysis techniques, we can learn to rely on our sense of smell and taste to determine and compare the actives in different batches of raw material or tinctures. We can teach ourselves to smell the difference in the quality of the essential oils we buy, and to detect the solvents or lack thereof.

As one who has studied plants for many years, having a knowledge of phytopharmacology, pharmaco-kinetics, chemistry, biophysics, botany, permaculture, and molecular biology has been important in my ongoing studies. These fields of science help to explain and prove many TCM beliefs and theories regarding the actions of medicinal plants. In addition to scientific knowledge, and the knowledge we attain from growing, observing, and studying medicinal and toxic plants in their natural environments, I believe cultivating a diagnostic sense of smell and taste will improve our TCM skills and knowledge by giving us additional information on the animals we treat and the herbs we prescribe for them.

> *Our oldest senses are those related to chemogustatory capacities: smell and taste. Of these, smell is probably the oldest, and before we fully develop cerebral hemispheres, the olfactory apparatus already exists as extensions of the limbic system.*

The study of the senses of smell and taste is so complex that it encompasses armies of aromachologists, food scientists, physiologists, behavioral psychologists, cognitive neuroscientists, neuropharmacologists, biochemists, anthropologists, molecular biologists, and many more and is intimately related to the study of taste.[27]

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A Pilot Study: An Integrative Approach to the Treatment of Canine Lyme Disease

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Abbreviations

BBB- Blood brain barrier

LD – Lyme Disease

ABSTRACT

Lyme disease, or Lyme borreliosis, is an inflammatory disease caused by the bacterial spirochete Borrelia burgdorferi. It is seen in humans, dogs, horses and other species. This study presents 4 canine cases of Lyme disease that converted to negative on an ELISA test with a combination of doxycycline and an herbal combination of Teasel (Dipsacus sylvestris), Japanese Knotweed (Fallopia japonica), and Sweet Annie (Artemesia annua). When dogs were treated with doxycycline and no concurrent herbal therapy, the ELISA tests did not return to negative for Lyme disease on retest (6 months or more later).

INTRODUCTION

In medicine, we are faced with community health predicaments and seek solutions to prevent or remedy these challenges. Complementary and alternative therapies consist of proven and unproven theories and therapies that can be adopted and used in our attempts to address medical care. As they are used, clinical experience and personal opinions accumulate which can be shared and experienced by others. First, pioneers enter the field. Then, after longer periods of time, students of these pioneers or other interested parties begin the process of more thorough scientific inquiry. As these studies progress more rigorous information accumulates allowing more evidence based approaches in evaluation of the data. Once evidence accumulates the therapy becomes an integrative medical modality. Finally, as more data and support develops, a theory or modality may gain acceptance into so-called "conventional medicine." This paper examines the experiences of the author using an integration of Western herbal medicine and antibiotic drug therapy in supporting canine patients with Lyme disease (LD).

LD, or Lyme borreliosis, is an inflammatory disease caused by the bacterial spirochete Borrelia burgdorferi. LD (named for the town in Connecticut where it was first diagnosed), is a rapidly growing epidemic (1-3). It has been endemic in the Northeast for years. It is seen primarily in people, dogs, and horses. There is much debate in both the holistic and the allopathic communities over the diagnosis and treatment of this disease (1, 4-6). This author has pooled information from both communities to develop a diagnostic and treatment protocol that shows promise in the management of Lyme disease.

LD is spread primarily by ticks of the genus Ixodes (2, 5). Ticks carrying Borrelia burgdorferi attach to the host animal and regurgitate the spirochete into the mammalian host. Originally, it was assumed that the spirochete traveled through the bloodstream. However it now appears that it travels through the skin and spreads locally through inflamed tissue to other parts of the body (2, 7).This method of travel enables the organism to establish in joints and other hard to reach spaces in the body. According to Littman, et al., the Lyme spirochete is primarily found in the dermis, connective tissue, and synovia, but not in the blood, urine, joint fluid, or CSF (5). The persistent infection is maintained especially in the collagen-rich tissues (7).

Signs of LD vary, but the most common signs in dogs are lameness, fever, and lethargy. The lameness in dogs usually manifests as joint and limb inflammation, with possible lymphadenopathy of regional lymph nodes (such as inguinal or prescapular) (2, 8). Due to the manner in which the spirochete spreads, the limb closest to the tick bite is usually the one affected (7). Horses and cows seem to have the same signs (7). Untreated, LD in dogs can progress to cause protein-losing nephropathy, known as "Lyme nephropathy" (5). Humans develop fever and joint issues as well, but they also more commonly get a bulls-eye lesion at the site of the tick bite. This bulls-eye lesion is proposed to be due to the spread of the spirochete through the skin (7). Dogs and horses may develop such a lesion, but it often goes

unnoticed as they are covered in fur. Humans also can get cardiac sequela that are not generally seen in other species.

Diagnosis of LD is as debated as every other facet of the disease. According to Skotaczak, diagnosis of Lyme disease diagnosis is based on the 5 criteria:

1: the presence or absence of common clinical signs

2: differential diagnosis

3: specific response to diagnosis of Lyme disease

4: known tick bite or living in an endemic area

5: antibodies in the blood (2).

Littman, et al., have similar criteria for diagnosis, and also include "response to treatment" (5). Although it is controversial, this author treats every dog that is ELISA positive (a) for LD or any other tick-borne disease, regardless of obvious clinical signs. This author does not treat as a diagnostic tool, a method which runs contrary to holistic principles especially since treatment includes the use of antibiotics. Client feedback has reinforced this protocol; even in the patients that were not obviously symptomatic, the clients would say that after 48 hours of treatment, they had not realized how lethargic their dog had become and how active the pet was again once the LD was treated. This author personally believes there is significant sub-clinical disease being left untreated.

LD is hard to treat for a myriad of reasons. First, it hides in the body. Second, it mutates rapidly which also makes it hard to diagnose. The spirochete regulates its expression of antigens during its different life cycles so that it can more easily spread throughout the host body and survive indefinitely (6). Third, it can live in 3 forms: the spirochete itself, an encysted form (also called a spheroblast), and within a biofilm (9). These factors also explain why the host's immune system does such a poor job of fighting off the spirochete and why it persists despite treatment. According to Vojdani, et al., first the spirochete "borrows a practical coat from the saliva of its vector, the Ixodes tick" where it also undergoes a surface phenotypic change from its phenotype in the stomach of the tick (6). This new phenotype (Salp15) inhibits "IgG antibody response to foreign antigens by halting CD4+ T-cell activation, and inducing immune suppression...This Salp15-mediated immunosuppressive mechanism, along with the activation of the fibrinolytic system and proinflammatory cytokine production, allows for facilitated invasion of the host's immune [system] and CNS" (6). This is also why a simple course of antibiotics is ineffective in treating LD (8).

MATERIALS AND METHODS

Eleven dogs were tested by an in-house ELISA test (a). They were then prescribed doxycycline (5mg/kg BID PO) and an herbal tincture (b) of 1:1:1 dry volume Teasel (Dipsacus sylvestris), Japanese Knotweed (Fallopia japonica), and Sweet Annie (Artemesia annua) in 40% ethanol with 60% water (0.2 ml/2.27 kg BID for 4-8 weeks). Retesting by the same method was performed at least 6 months later.

RESULTS

From January 2012 – June 2013, the author's practice treated 11 dogs with the combination of doxycycline and the herbal tincture. Seven were lost to follow-up, 4 retested. Some of the dogs had concurrent Ehrlichia canis infections, which required a higher doxycycline dosage.

Table 1: Results for Dogs Treated with Antibiotics and Herbs

Dog	Breed	Gender	Age	Weight (kg)	Test Results (H/L/E/A)**	Original Test Date	Doxycycline Dose	Tincture Dose	Retest Results (H/L/E/A)
1	German Shepard	FS	6 yo	32.5	(-/+/-/-)	07/26/2012	150 mg BID x 4 weeks	2.5 mL BID x 4 weeks	(-/-/-/-)
2	German Shepard	FS	5 yo	38.8	(-/+/+/-)	03/13/2013	200 mg BID x 6 weeks	3.0 mL BID x 8 weeks	(-/-/-/-)
3	Pit Bull	FS	3 yo	18.6	(-/+/+/-)	04/10/2013	100 mg BID x 6 weeks	1.5 mL BID x 8 weeks	(-/-/-/-)
4	Sheltie cross	FS	10 yo	19.2	(-/+/-/-)	05/09/2013	100 mg BID x 4 weeks	1.5 mL BID x 4 weeks	(-/-/-/-)

*personal communication from owner ** H=Heartworm disease, L=Lyme disease, E=Ehrlichiosis, A=Anaplasmosis

As Table 1 shows, the 4 dogs that were positive for Lyme alone or with a co-infection all converted to negative on the ELISA test once treated with the combination of Doxycycline and herbs.

In the author's practice, every dog is ELISA tested as a diagnostic indicator. According to the manufacturer, the test sensitivity is 94.1% and the specificity is 96.2%. Littman, et al., concur that the commercial Lyme ELISA (a) test indicates natural exposure to the disease and shows good correlation with other tests. Additionally, the intensity of the blue in the response is a good indicator of antibody level but not of antigen level (6).

The author's original treatment protocol was simply 4-6 weeks of doxycycline at 5 mg/kg BID PO. However, while remission of signs occurred in the dogs, the ELISA test remained positive the following year. This persistence of positive tests was also mentioned in the literature (5). When the Lyme Tincture was added, the tests started coming back negative the following year. According to Vojdani, et al., integrative treatment of LD includes antibiotics, herbs, and nutritional supplements. The addition of CAM demonstrates that certain herbs and nutritional supplements prevent the tick from adhering to the skin, decrease the pathogen number by increasing phagocytosis and NK cell activity, down-regulate proinflammatory cytokines, impede the fibrinolytic cascade, and repair the blood brain barrier (6). It should also be pointed out that a negative ELISA does not necessarily mean that the spirochete has been eradicated from the body, only that there is not a detectable antibody level.

Doxycycline is the first choice of antibiotic for LD, both in allopathic and complementary medicine (1, 5, 6). The current treatment recommendation for dogs is 10 mg/kg QD for at least 4 weeks (5, 10). Doxycycline is not only a tetracycline antibiotic, but it also has anti-inflammatory and anti-arthritic properties (5). Doxycycline is well distributed in the body, including into spaces such as joints. Additionally, it is better distributed than other tetracyclines due to the fact that it is more lipid-soluble (10). Since renal disease is a concern, doxycycline is also a good choice because it is safe for use with renal insufficiency (10). Side effects include gastrointestinal distress and esophageal erosions, making it best to split the dose to 5 mg/kg BID and administer during or after meals. The food helps protect the GI mucosa from antibiotic irritation and damage.

Teasel (Dipsacus sylvestris) is a member of the Dipsacaceae family. The first-year unpeeled root (before it flowers) is used medicinally (3, 4). Most commonly, teasel is used in tincture form. Many historical and traditional philosophical modalities explain the use of teasel against LD. As a doctrine of signatures, teasel has 3 justifications. First, the plant has a purplish-red flower that blossoms by expanding in a ring around the flower head, similar to the bulls-eye ring caused by borreliosis at the site of the tick bite. Second, the term "Dipsacus" comes from the Greek "dipsan" which means "thirsty" because birds will drink from the leaf basins. Historically, this water was considered "Venus water" which was cleansing to "Venus organs," such as the kidneys, hence its applicability in Lyme nephropathy. Third, there are anecdotal reports of people with LD who took Teasel and felt "as if sharp barbs of energy were shooting from the inside of the body out toward the periphery…It is as though one can feel the energetic configuration, which gives the plant its barbs and pricks" (3). It eradicates the spirochete from the internal organs out to the skin (3). Historically, Teasel was believed to drive poisons from the body. In TCM, teasel has the following attributes which correlate with LD: it prevents and treats osteoporosis and wounded bones, it treats joints and muscles, improves the immune system, blocks bacteria, treats Kidney jing, and strengthens yang (3, 11). Wood adds that teasel treats intermittent fevers, which are a symptom of LD (11). Overall, Teasel clears the spirochete itself out of the host body (11).

Japanese Knotweed (Fallopia japonica or Polygonum cuspidatum) is a member of the Polygonaceae family. Its roots are also used medicinally, and it is effective in any form (tincture, tea, powder, etcetera) (1). Japanese Knotweed is an Asian native that has become naturalized and is highly invasive in the USA. As a doctrine of signatures, Japanese Knotweed and LD are spreading at the same rate in the same areas (3). The primary chemical constituent in Japanese Knotweed is resveratrol, contained in a higher concentration than in any other known plant (1, 12). (As an aside, grapes are the go-to source of resveratrol, but they do not contain a high enough concentration to combat LD and can cause acute renal failure in some dogs (1).) Both the plant and the constituent have been found to be anti-inflammatory, antibacterial, immunomodulatory, immunostimulatory, capillary-stimulating, and antioxidant, among other actions (3, 12, 13). Japanese Knotweed uses capillary stimulation to both increase blood flow in hard to reach areas (such as skin and joints) and to carry other medicines to these areas (13). It is both an allopathic drug and an herbal medicine synergist (3). The plant also kills the spirochete outright (12). The root strongly obstructs the cytokine cascade caused by the Lyme spirochete. For example, the spirochete fuels the release of matrix metalloproteinases (MMPs) through a variety of cellular pathways, and Japanese Knotweed is the only herb known that blocks MMP-1 and MMP-3 stimulation through 3 of these pathways (14). Borrelia burgdorferi also causes endothelial damage, which is prevented and repaired by Japanese knotweed (3, 14). In addition to all these defenses against LD, Japanese Knotweed also has been proven to both gently break up the biofilm form of the spirochete and to prevent its formation (1). Buhner sums this all up best when he describes Japanese Knotweed's actions specific to LD:

1. It increases microcirculation to carry chemical constituents (the medically active chemicals in the herb) to locations such as eyes, knees, heart, brain, and skin in order to decrease the number of spirochetes in these locations.

2. It decreases tissue inflammation, which in turn decreases clinical signs, such as arthritis.
3. It protects and improves heart function, especially in cases of Lyme carditis.
4. It decreases the autoimmune sequela of LD.
5. It increases broad-spectrum antibiotic and antiviral activity, and this includes antibiotic action against spirochetes.
6. It restores and increases healthy immune system functioning.
7. It is synergistic with other herbs and allopathic drugs for the treatment of LD.
8. It protects the endothelium from Borrelia burgdorferi and other spirochetes and common coinfections.
9. It has anti-biofilm activity.
10. It reduces brain and CNS inflammation, which leads to improved functioning in cases of Lyme neuroborreliosis (1).

Sweet Annie (Artemesia annua) is a member of the Asteraceae family, which has many medicinal plants. Even the genus Artemesia has a plethora of medicinal species besides Sweet Annie, such as Wormwood (Artemisia absinthium), from which absinthe is made. Unlike the previous 2 herbs, Sweet Annie's pre-blooming leaves are used (15). Sweet Annie is most famous as both a preventive and treatment for malaria, another insect (mosquito) borne disease (15, 16). This herb also treats the spirochete that causes leptospirosis (17). Sweet Annie bonds with parasitic proteins, thus rendering the parasite inert. Sweet Annie is a febrifuge (fever reducer) antimicrobial, immunomodulatory, and is synergistic to other compounds that fight Lyme spirochetes (1, 17). The main constituent is artemisinin, but the whole plant has internal synergy, thus rendering its effectiveness greater than the sum of its parts (16). Lastly, it crosses the BBB to attack any spirochetes there (17).

One other benefit of this herbal combination is that in a review of the literature, no safety concerns were found. These 3 herbs are safe to use individually, in combination, and with allopathic medications such as doxycycline.

CONCLUSION

LD is a rapidly spreading, seriously debilitating disease requiring knowledge on the part of holistic practitioners in the areas of prevention (not discussed in the scope of this article) and treatment, especially since no preventives are 100% effective against tick bites. This author has had preliminary success with this integrative approach of doxycycline and herbs. This author believes that doxycycline is an essential part of LD treatment, consistent with both herbal and mainstream literature. However, the combination of Teasel, Japanese Knotweed, and Sweet Annie seem to rid the body of Borrelia burgdorferi in ways that antibiotics alone cannot (1, 17). The preliminary success of the author's experience with this herbal mixture indicates that further clinical trials are indicated.

Endnote:

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b. Lyme Tincture, Purple Moon Herbs and Studies, LLC, Hartly, Delaware 19953

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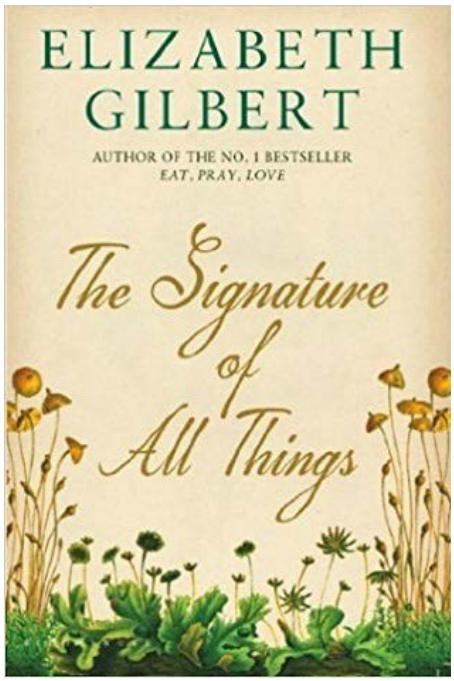
BOOK REVIEW

The Signature of All Things by Elizabeth Gilbert

by Dr. Ihor Basko



Elizabeth Gilbert of "Eat, Pray, Love" fame has a new book out which I just finished reading.

After seeing Elizabeth interviewed on an Oprah show "Super Soul Sunday", I was interested in getting her new book: *The Signature of All Things*. Beyond the herbalist theory "the doctrine of the signatures", this book goes beyond on how this also seems to address humans, their personalities, beliefs and spiritual development. In a time when women were considered as 2nd class citizens...homemakers, children makers, and housemaids...a girl arises from the norm to become a woman, courageous, adventurous...looking to find "purpose" in life through her interest and passion for botany.

This book would be an inspiration to any woman striving to understand nature and its science, as well as its meaning and importance...through commitment, self-study, exploration, experience, inspiration...and thinking "outside the box" of what the "norm" was...in the 19th century. Against "all odds"…women were...not acknowledged in the scientific world not taken seriously.

> *Rest assured, dear friend, that many note worthy and great sciences and arts have been discovered through the understanding and subtlety of women, both in cognitive speculations, demonstrated in writing, and in the arts, manifested in manual works of labor. I will give you plenty of examples. - -Christine de Pizan "The Book of the City of Ladies" 1405 AD*

Although my perception that women would "get more out of it" from the novel "The Signature of All Things", left me inspired and in gratitude for the path and life I have chosen.

A great summer read:

> *Love, adventure, and discovery are at the heart of The Signature of All Things which soars across the globe from America to Tahiti to tell the story of a brilliant woman named Alma Whittaker…..her research takes her deeper into the mysteries of evolution, she falls in love with a man who draws her in the opposite direction…into the realm of the spiritual, the divine and the magical.*

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VBMA ANNUAL HERBWALK

Featuring Christopher Hobbs, PhD, L.Ac, October 3, 2018, Kissimmee, FL

by Cynthia Lankenau, DVM, CVA, RH (AHG)

During the 2018 AHVMA convention, Christopher Hobbs led the VBMA on an herbal walk. Dr. Hobbs is a renowned clinical herbalist, mycologist and research scientist. Although we were staying on the well-manicured ground of a Gaylord complex, we found free growing plants and many medicinal plants on the edge of a cattle pasture.

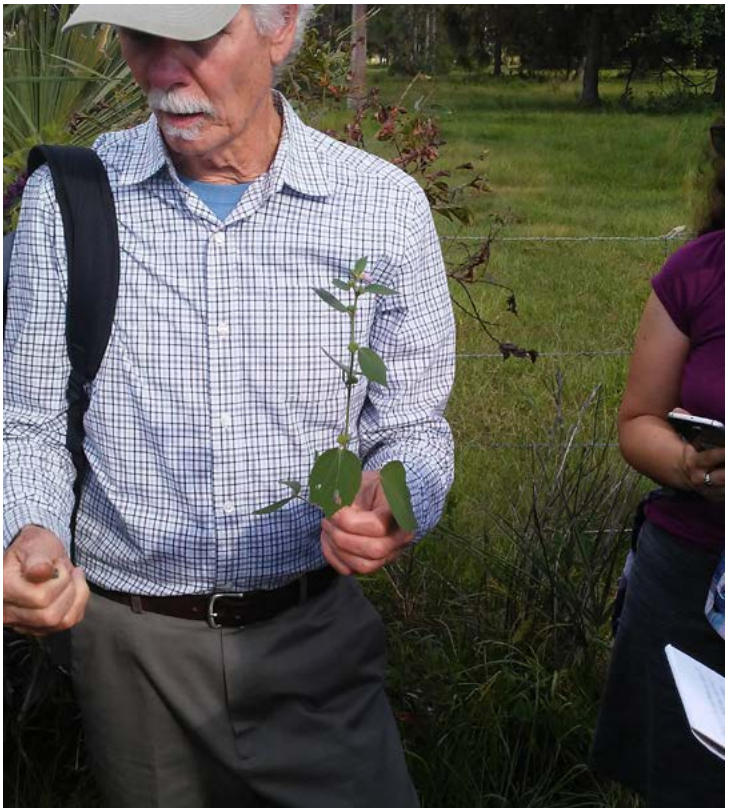
Beauty Berry, *Callicarpa americana L*, with its bright purple berries was the first herb we discussed. The berries are a food, the root is used as a tea for dysentery, colic, rheumatism, and UTIs. The leaves are useful as an insect repellent. Bidens a common herb found in Florida was very plentiful along this stretch. Bidens not only is a major player in Lyme treatment but also is very helpful in Mouth and stomach ulcers, diarrhea, and indicated in the treatment of headaches from hangovers.

"Sedges have edges, Rushes are round", a nice way to remember plant family identifications! So there was a Sedge we found, **Cyperus**. The tuber is the medicinal part used and it helps to treat Liver Qi stagnation, it moves bile and helps digestion.

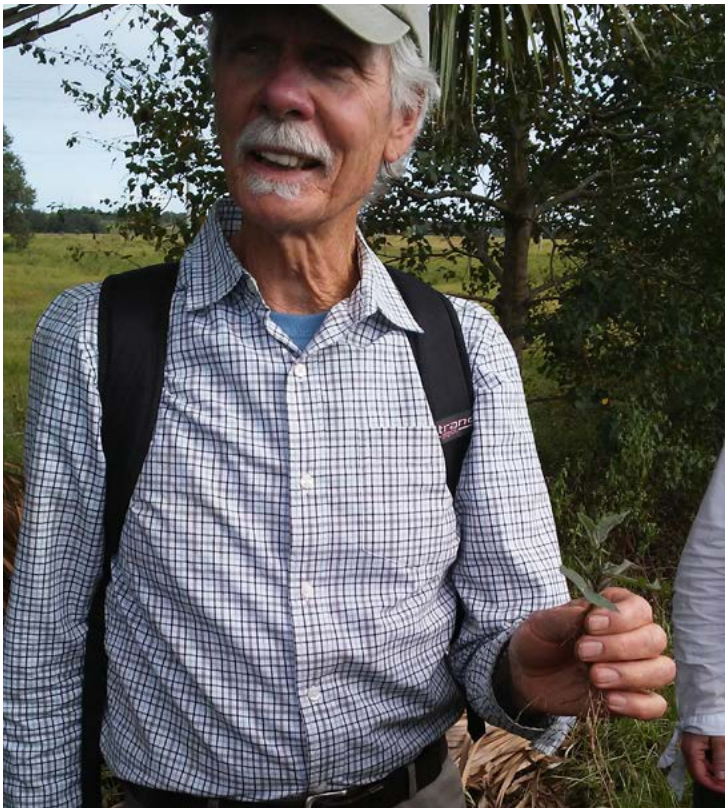
Ragweed, *Ambrosia*, is a wonderful herb to treat uterine cramps. A topical wash is useful for insect bites; it is a febrifuge and antiseptic.

Senna was another herbal friend found. Chris stressed that Senna does not cause bowel cancer and that it truly is not habit forming as others propose. It is a stimulate laxative. It can cure diarrhea and treat constipation depending on the pattern seen.

Also discussed were **Mallows**, **Pine Bark**, **Oaks**, **Palms**, **Moonseed**, **Bitter Melon**, **Sow Thistle**, and a species similar to **Gotu Kola**. The final tree discussed was **Popcorn Tree**, which is poisonous to cattle. It was a fantastic walk in the hot humid Florida weather.



Chris with a Mallow.



Chris with a Sow Thistle.

Berry Beauty - leaves used as bug repellent.

Chris with a Cyperus.

Chris discussing Oak Tree tannins.

Chris with Senna.

Lantana.

Popcorn Tree.

HERBAL MONOGRAPH: EUCALYPTUS

Photo courtesy Wikipedia

COMMON NAME: Eucalyptus Leaves
LATIN NAME: *Eucalyptus globulus*

OTHER NAMES: Australian fever tree, Blue gum tree, An Ye

Common Name: Eucalyptus Leaves	***Eucalyptus globulus,* Eucalyptus leaves, Australian fever tree, Blue gum tree; An Ye**
Family	Myrtaceae
Part Used	Leaf; dried and ground or essential oil
Active constituents	Tannin, flavonoid pigment, eucalyptine, bitter resin, essential oils, eucalyptol, pinene, camphene; leaf wax
Actions: Clear Heat, reduce infection and resolves Hot Phlegm; Pungent cool antiseptic expectorants, antitussive	Expectorant, antitussive, anticatarrhal, anti-microbial, antispasmodic, antibacterial, immune stimulant; bronchodilator, sedative; **TCM Actions:** 1. Lung Phlegm Heat/ dryness and Lung Yin deficiency; promotes expectoration, resolves viscous phlegm, and relieves coughing, soothes the bronchi ; Disperse Lung Qi, clear retained pathogen; 2. Head damp Heat, external wind heat, promotes sweating, dispels wind heat, and reduces fever, promotes eruptions, opens the sinuses and relieves pain; 3. Wind/Damp//Heat obstruction; Bi syndrome; 3. stimulate Wei Qi; clears toxins, benefits the skin, expels parasites, repels insects; 4. Urogenital Damp Heat; 4. Qi tonic, supports the pancreas and lowers blood sugar; 5. Topical for tissue repair, insect repellant
Indications	Bronchitis, emphysema, pneumonia, allergic asthma, COPD, wheezing, cough; colds and flu; sinusitis, post-nasal catarrh, otitis media, remittent fevers, eruptive fevers, fever, sore throat; aches, acute rheumatism, arthritis, neuralgia; headache; cervicitis, cystitis, pyelitis, nephritis; skin eruptions; diabetes; sensation of obstruction in the chest; topical for burns, injuries, ulcers, abscesses; chronic peptic ulcers
Cautions	Works best when acute inflammations have died down and become subacute or chronic; Leaf: caution if inflammatory disorders of the GI track
Contraindications	Oil: not to be applied on the face of babies and very young children; safety during lactation and pregnancy has not been investigated; oil is toxic in human if ingest over 30 ml, lethal
Herb Drug Interactions	For the leaf, none; For the oil theoretical possibility of reducing the effect of other drugs
Dosage (use animal doses where available, otherwise human doses can be included here but specify):	Human: essential oil 2 drops three times a day in warm water; Fluid extract: 5-30 drops; specific medicine: 5-30 drops: Dried Herb: 2 gr of dried leaf as infusion, three times per day; Tincture: 1:5: 5-20 ml/day

Notes: evergreen tree, native to Tasmania, the most common plantation hardwood in Australia
Energetics: pungent, slightly sour-astringent; bitter, cool, dry and moist; Qualities: stimulating, dispersing, restoring, astringing. Meridians: Lung, large Intestines, Bladder

Holmes: the remedy is ideal in head colds with blocked sinuses, with or without signs of heat. As Eucalyptus causes sweat and alleviates pain, is is also very useful in acute rheumatic and neuralgic complaints of the wind or damp type. It is closely connected in action on the bronchi and treats syndromes involving empty heat, cold, phlegm, dryness. It treats congestive, spasmodic and infectious conditions that have purulent, fetor and secretions. The specific action of Eucalyptus on malaria is evinced in the way that the tree transforms malaria ridden areas wherever it is planted, It was called an antiperiodic, meaning that it reduces periodic, that is the remittent, and hectic or tidal fevers. The combination of pungent and bitter qualities makes Eucalyptus and important remedy for the Shao Yang stage where chills and fever alternate. As well as for the Shao Yin stage where the fever recurs daily or on every second/third/fourth day.

Ellington: (He warns of poisoning from the oil): Therapy: In therapeutic action this agent closely resembles cinchona. It is antimalarial, antiperiodic, febrifuge and tonic. If the tree is planted in an area high in malaria, the disease germs destroyed and the atmosphere purified, the locality becoming healthful and sanitary. In the condition known as dumb ague and masked intermittent fever, it will sometimes accomplish very satisfactory results. It is of much service in malarial neuralgia, in malarial headache and in vague intermittent conditions of an indefinable character. Where night sweats follow malarial disorder, where an enlarged liver and spleen remain after the periodicity is broken, where jaundice has been a more or less persistent complication, this agent has been of much value, combined with other indicated measures. It has a prominent place in the therapeutics of typhoid fever; it is a most active intestinal antiseptic. It is a valuable remedy in scarlet fever given in conjunction or alternation with aconite and belladonna. It prevents the symptoms developing in a severe form by destroying the germs and assisting in the control of the temperature. It cures the throat symptoms quickly. It stimulates a normal action in the glands of the skin and by encouraging elimination through these glands, prevents pot-scarlatina nephritis. In the treatment of diphtheria, it is an excellent remedy. It may be used as a gargle. It is used in tonsillitis in chronic post-nasal and bronchial catarrhs in asthma. It has been used with excellent results in the treatment of chronic ulceration of the stomach. It stimulates the mucous surface to normal action, destroys the germs of the disease, prevents putrefaction and corrects excessive acidity. The ulcers heal rapidly under the influence of this remedy. It is equally efficacious in chronic diarrhea and dysentery with offensive discharges. It has been extensively used in the treatment of catarrh of the bladder, nephritis, pyelo-nephritis and pyelitis, especially if the urine be decomposed and offensive. It is useful also in gonorrhea and in gleet and as a wash in specific vaginitis. In uterine catarrh this agent is valuable used as a douche in the proportion of two drams of the tincture to a pint of water.

Fyfe: Eucalyptus is valued highly as a stimulant expectorant. In fetid bronchitis, bronchorrhea and pulmonary gangrene, it has been employed with much success, but in acute affections of the broncho-pulmonary membrane it is contraindicated. It is many times useful as an antiseptic in cystitis and pyelitis. A solution of the oil of eucalyptus is used as an antiseptic inhalation in diphtheria. The oil or tincture of eucalyptus, well diluted, may be used as a deodorizing application in foul smelling ulcers and wounds. The oil is used locally as a lotion, inhalation or gargle. It is a tonic, stimulant, expectorant, diuretic and antiseptic. In large doses it is a mild antiperiodic. Indications: Nervous affections with coldness of the surface and cold perspiration; sensation of coldness and weight in the bowels; coldness of the extremities; chronic catarrhal affections of the respiratory organs, genito-urinary organs and the gastro-intestinal tract.
Felter and Lloyd: intermittent fevers; cold extremities, cold perspiration, perspiration during chill; for respiratory catarrh, especially if profuse and/or purulent; for laryngitis, whooping cough, asthma; for atonic dyspepsia, stomach catarrh, chronic catarrhal diarrhea; for chronic catarrh of the bladder with cloudy or purulent urine and dysuria, edema; for leukorrhea, gonorrheal discharge; for purulent wound or ulcers, gangrene
Ross: First collected from Tasmania, in 1792 by Labillardierel; it was introduced to Europe in 1866.
BHC: for upper respiratory infections, including common cold; sore throat, sinusitis, acute bronchial infections, catarrh
Published research: Based on the anti-oxidative and anti-inflammatory properties, recent clinical trials with 1,8-cineole have shown first evidence for the beneficial use of 1,8-cineole as long-term therapy in the prevention of COPD-exacerbations and to improve asthma control; therapeutic role of E. globulus leaf extract in the treatment of respiratory tract infection are warranted, pre-treatment with E. globulus and T. vulgaris extracts significantly inhibits iNOS mRNA expression; inhibitory effects on Epstein-Barr virus

TCM: An Ye: Energetics: cool, bitter and ; acrid
Actions:
1. treat colds and influenza
2. clear Heat and treat enteritis, dysentery, cystitis, joint Pain, burns, scabies, eczema, erysipelas, toxin swollen abscesses

HERBAL MONOGRAPH: TEA TREE OIL

Photo courtesy Wikipedia

COMMON NAME: Tea Tree Oil
LATIN NAME: *Melaleuca alternifloia*

OTHER NAMES: Tea Tree

Common Name: Tea Tree Oil	***Melaleuca alternifloia;* may refer to many different species within the *Melaleuca* and *Leptospermum* genera; Tea Tree**
Family	Myrtaceae
Part Used	Volatile oil extract of the leaves from Melaleuca alternifloia
Active constituents	Essential oil 1.8%; sesquiterpenes-pinenes, paracymene, monoterpenes-terpenes, cymenol. Globulol, viridiflorol
Actions:	Antimicrobial, antibacterial, antifungal; expectorant; dermatological agent, vulnerary, antiparasitic; TCM actions: 1. Clear fire toxins; reduces infection; and stimulates immunity, clears parasites; protects from radiation; 2. Clears Lung Phlegm Damp/Cold/Heat; 3. Treats venous Blood stagnation; vitalizes the Blood, removes congestion, and moderates menstruation; 4. Treats nerve and brain deficiency; restores the nerves, heart and capillary circulation, promotes clear thinking and relieves depression
Indications	Yeast, fungal, and bacterial skin infection, inflammatory skin lesions; boils furuncles, abscesses, pyoderma, radiation burns, X-rays; coughing, cold extremities, expectoration of white or green sputum; bronchitis, flu, sinusitis, laryngitis; varicose veins; senile heart; coma, toxic Shock syndrome
Cautions	The extracted oil should not be ingested and should not be used over long periods. The extracted oil is mildly toxic; cat very sensitive, should use great caution; oleum at high strength may produce skin sensitivity
Contraindications	Reported dog and cat deaths from excessive use of the oil topically; must use small amount
Herb Drug Interactions	None found
Dosage (use animal doses where available, otherwise human doses can be included here but specify):	Ointment and creams: 1%-10% for use topically on animals Leaf can be used as a tincture and as a long infusion.; inhalation use

Notes:
Native to Australia and parts of New Zealand

Energetics: pungent, cooling (leaf)

Traditional use by Australian indigenous people: Leaves were crushed or make into tea and used to treat cough, colds, and skin infection. James Cook had his men drink the tea to prevent scurvy. Tea Tree oil has been used topically to treat: acne, athlete's foot, boils, burns, insect bites, lice, scabies, body and foot odor, vaginal infection, sinus congestion, hemorrhoids, ringworm, mouth and throat infection, herpes, warts, sprains, rheumatism and sore muscles.

Holmes: The tea tree leaf/essential oil is essentially a moderately stimulating remedy with pungent, bitter qualities that can be either warming or cooling, depending on the condition for which it is used. Because of its dispersing effect, Tea tree has an affinity for respiratory conditions, and can therefore address both surface and internal, hot and cold syndromes of the lung. The oil is a respiratory stimulant with expectorant, anti-inflammatory and mucostatic actions. Because of its known antibacterial, antiviral and antifungal actions, Tea tree may be used for a variety of other infections or overgrowths, including candidiasis and yeast infections. Antiparasitic activity has also been shown of this versatile broad-spectrum anti-infective remedy. Three other functions: 1. cardiac stimulant action, useful in heart deficiencies including shock; 2. cerebral/nervous restorative effect for neurasthenic disorders including chronic depression; and 3. blood decongestant action in cases of venous blood stagnation, varicose veins.

Recent research: may help treat difficult yeast infections; Results from this study support that antimicrobial activity; effective to eradicate a C. albicans biofilm formed in vitro and to reduce yeasts of C. albicans in an immunosuppressed mouse model; clinical evidence on the use of tea tree oil products for treating acne; confers potent antioxidant and hepatoprotective effects against CCl4-induced toxicity; these essential oils have insecticidal and repellent effects against the species of fly; the essential oil of Melaleuca alternifolia may have a great therapeutic potential for the treatment of human anisakiasis; can suppress the production of inflammatory mediators in LPS-stimulated human macrophages; this inhibition was mediated by interfering with the NF-kB, p38 or ERK MAPK pathways; influences the levels of inflammatory mediators and has trypanocidal effect efficient in bacteria control but needs improvement in taste and first sensation; TTO nanoparticles potentiated the inhibitor effect of pure TTO on the reproduction of R. microplus; is not genotoxic in in vitro mammalian cells; prevent influenza virus from entering the host cells by disturbing the normal viral membrane fusion procedure.

A Case of Intevertebral Disc Disease in an Eight Month Alpaca

Cynthia Lakenau, DVM

Abstract:

An eight month old, male alpaca with severe paresis resolved using Chinese Herbal Medicine and Acupuncture. The alpaca had radiographic evidence of intervertebral disc disease. Radiographs found narrowing of the dorsal intervertebral space with a cystic lesion found in the thoracic-lumbar disc.

Introduction:

Intervertebral disk disease is uncommon in Alpacas (1). There have been no reports of this disease as a genetic predisposition and no reports of this found as an acquired disease. Most cases of recumbence are attributed to meningeal worms. As a generality, the paresis seen with meningeal worms does not present with any degree of pain. This alpaca exhibited a high degree of pain; found 'writhing' in pain. A unique aspect of this case is that of the 25 weaned crias in this herd, this cria, and another cria who showed similar symptoms, were raised in the basement of the house for the first 6 months of life with no sunlight exposure.

Case report Presentation

Signalment and pertinent history:

Comet, an 80 pound intact male 8 month old alpaca, had become paretic on August 2, 2018. The owner's son had observed Comet being knocked down the day prior. Comet could stand for brief periods of time with assistance but was unable to use his right hind leg. He was examined by their conventional veterinarian on August 2, 2018. The veterinarian diagnosed meningeal worms and Comet was treated with ivermectin. The owners felt that Comet was in an unusual amount of pain, unlike the typical case of meningeal worms, and took him in for x-ray evaluation on the 6 of August. The owners were informed that there were no abnormalities found. Their conventional veterinarian continued to feel it was a meningeal worm issue. After three more weeks of no improvement, the owners decided to seek alternative care. Other past unique information was that Comet was a 'mistaken' breeding. He was born at the start of a very cold snap the previous winter, December of 2017. He and his mother were taken to live in the basement of the house for the winter with one another 'mistaken breeding' cria, Chip, and his mother. The basement was totally enclosed with no external sunlight. No visible toxins were found in the cellar but had new white wash on the wall.

Conventional exam: History from the owner was that no abnormalities were found on radiographs. X-rays were not made available from the conventional veterinarian for several weeks. On August 29, Comet was first examined. He was recumbent lying on his left side. He had minimal sensation on his right hind leg. Patellar reflexes were intact. His seemed to be 'writhing' in great pain, and was humming with a very nervous pitch. He was very sensitive to any touch in his thoracic lumbar area. His tentative chiropractic diagnosis was vertebral subluxations in the T-L area, or conventional western diagnosis was presumed intervertebral disease protrusion or nerve root impingement in the T-L area from a known trauma.

1st TCVM Evaluation: August 29, 2018: Comet was alert but in obvious pain and discomfort; writhing in pain. His Shen was disturbed; he was humming continuously, he was grinding his teeth. He was distant and distracted. He exhibited pain and sensitivity around his thoracic-lumbar area (BL-18, 19, 20, 21, 22) with a decreased skin sensation and motor ability in his right leg. BL-25, 26, and 27 were cold. He could not stand even with assistance.

TCVM signs: Right pulse very deep and weak; left pulse; lowest position weak, overall thin and tight; tongue was dry and weak, flaccid, underside pale purple, vessels were engorged, extremely painful over Thoracic-lumbar area, (BL-18,19, 20, 21, 22), recumbent, no perceivable skin sensation in Right hind, low back was cold.

TCVM Pattern DX: Qi deficient, Kidney Yang/Qi/Jing deficient, Slight Blood Deficiency with local stagnation of Blood and Qi in TL area. Qi deficiency indicated by the weakness and flaccid tongue, deep weak Right pulse; Blood Deficient indicated by the dry and pale tongue, and thin left side pulse, the symptom supported with the potential of vertebral ligament fragility and Shen disturbance; Kidney refers to the low back as our area of concern; Kidney Yang deficiency refers to the coldness in his low back; and Jing deficiency refers to the young age at which the symptoms are occurring; the severe pain in his back is caused by local by local Qi and Blood stagnation with channel obstruction.

Blood stagnation is also indicated by the engorged vessels on the underside of the tongue with the tight pulse.

TCVM Treatment Principles: Open channels to move the local Qi and Blood stagnation; activate the blood to relieve pain, also tonify Qi and Blood; and then treat the root problem with tonification of Kidney Qi and Jing.

TCVM Treatment

Acupuncture: (Table 1) acupuncture points used. mmediate relief was given with acupuncture. In the author's opinion, the long term benefits were maintained by his herbal formulas.

Tui na-Tui fa on back muscles in the thoracic-lumbar area, gentle pressure in caudal to cranial direction. While doing gentle myofascial work, a dramatic and large pop was felt and heard. Comet looked surprised rolled into sternal and he was then able to push himself up, and able to stand on his own. Immediately he walked; while his right hind leg would buckle slightly, he was able to ambulate.

Follow-up care: gentle tui-fa was demonstrated and owner was instructed to do twice a day.

Herb formula used:

1. Bone Stasis, (Table 2) a Jing Tang formula (a) concentrated granule form was started for pain relief, to clear the Channel blockage, and to activate the Blood. Of all the potential formulas, this formula was used as it matched then needed treatment principles and was in stock on the vet truck enabling an immediate start to his treatment. With no available radiographs, this formula was deemed useful if there was a sclerotic area in the lumbar area. Dose: 2 grams twice a day
2. Jie Gu Die Shang Wan (Table 3); Plum Flower tea pills (b) to Tonify Kidney Yang and Qi and Blood and promote bone healing process; Dosage 10 tea pills four times a day. This formula offered additional pain relief and also would promote healing if any intervertebral ligaments had been strained or torn.

Follow up:

9/10: Comet was up and walking with only a slight weakness noted in his right hind leg, he was running with the other crias with only a very slight buckling noted and very slight proprioceptive deficient noticed. T- Not as dry, underside not as purple. Very little evidence of pain, Shen was bright and alert. Same treatment. Our plan was to continue with no change, except the dose of Bone Stasis was reduced to 1 gram twice a day.

9/18: Comet was clinically normal; due to economics the owner did not want Comet examined, instead a new herd development:

Chip, a black 8 month 75 pound male cria was found acutely down that day with no history of trauma. He also was born in December and was the other cria housed inside the house during the winter with Comet. Chip had a deep tight pulse with a nonexistent pulse in the third position, tongue underside pale purple. He had a severely painful lumbar sacral area. His TCVM diagnosis was Kidney Deficiency due to location of his lesion and deepness of pulse and extreme weakness of the third position; local stagnation of Blood and Qi in the lumbar-sacral area due to the sign of pain, and

Jing deficiency due to the young age of this disease occurrence and deep pulse.

Treatment goals: Open channel and relieve Qi and Blood stagnation, tonify Kidney Qi and Jing, Nourish and activate the Blood to relieve pain.

Acupuncture: See Table 4 for Chip's points, as with Comet, in the author's opinion, acupuncture gave immediate relief but herbal formulas were crucial to maintain the initial treatment and to tonify the underlying deficiencies and ensure pain relief.

Tui-Na: Nie-fa Gentle pinching and rolling in the Lumbar-sacral area moving from caudal to cranial. When he started treatment, Chip was in severe pain; he relaxed during the tui-na/acupuncture, showing an immediate improvement. After treatment, although standing in a hunched position, he seemed much less painful and able to walk.

Herbal formulas used: Chip was started on Bone Stasis and Jie Gu Di Shang Wan. His pattern was very similar to Chip's and the owner was very comfortable with using the same formulas. Both Chip and Comet were the only two in the herd that were raised inside. It seemed more important to incorporate an herb with a specific action for a Kidney Jing deficiency, Huang Jing, Polygonatum kingianum, (c), was added to both alpaca's formulas, 2 grams twice a day. Chip was given Bone Stasis, extract granules, 2 grams twice a day and Jie Gu Di Sang Wan, 6 pills three times a day. Huang Jing tonifies Kindy Jing in cases of soreness of low back or weakness of the knees. It also has slight action on the tonification of Spleen Qi (2).

9/19/18: With both alpacas affected, assessment of Comet's X-rays (figure 1-3) was formally requested of their conventional veterinarian. On 10/6/18, the conventional veterinarian finally complied. Potential explanations for their reluctance to share the films may have been due to their mislabeling of Comet as a canine mastiff. Radiographically, there is significant vertebral pathology seen. T13 and L1 vertebrae have sclerotic end growth plates. There are abnormalities in the dorsal aspect of many lumbar IV disc spaces with a narrowing of the dorsal space and in L3-L4 there is a sclerotic area possibly a collapse OCD lesion, small areas of dorsal calcified disc material are also seen.

Figure 1: Comet's radiographs taken 8/6/18

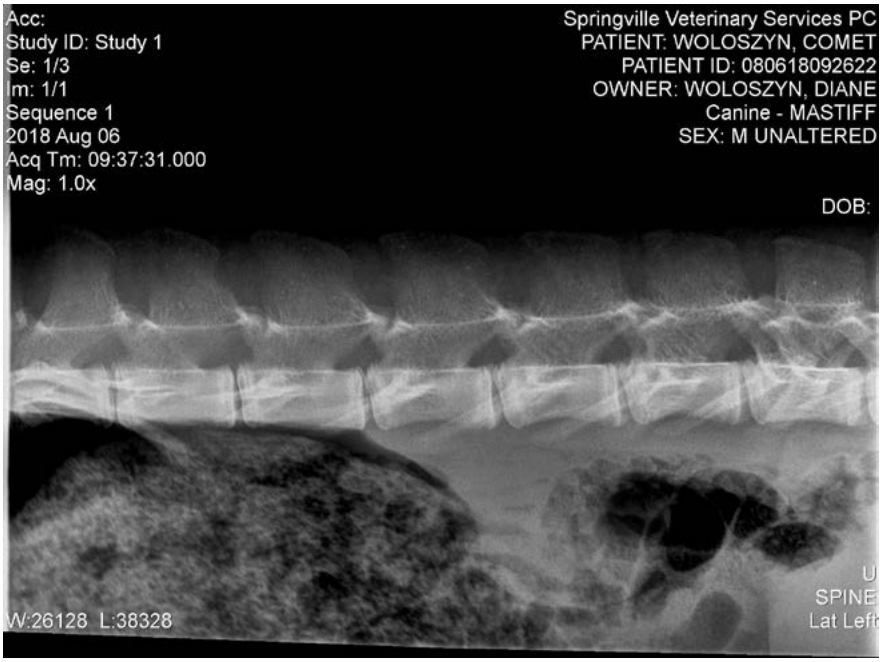


Figure 2: Comet's radiographs take 8/6/18

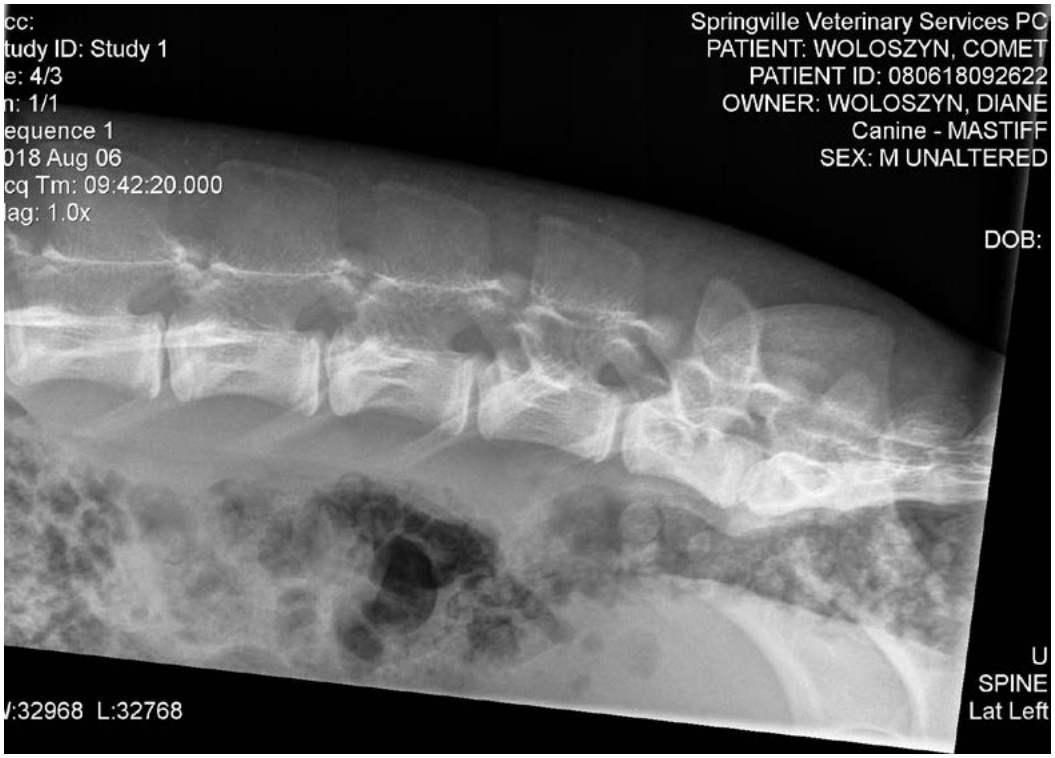
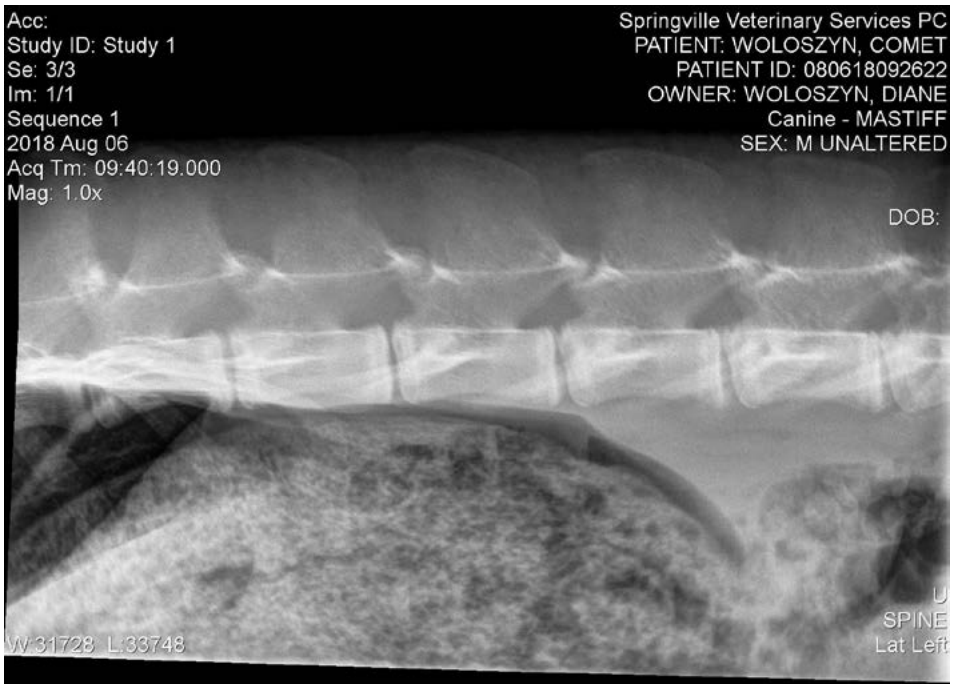


Figure 3: Comet's radiographs take 8/6/18



10/7/18: Both are much better; Comet is doing good; no acupuncture but due to the revealed abnormal disc; his formula was changed to Double P (Jing Tang formula) (see Table 5) which is a modification of Da Huo Luo Dan, 1 teaspoon twice a day, to help heal any potentially protruded discs with added Huang Jing.

Chip, although doing better, still had a hunched posture and was still weak. He was retreated with acupuncture and was maintained on Jie Gi Di Shang Wan. Bu Yang Huan Wu Wan (Table 6), 8 tea pills four times a day was

initiated. Bu Yang Huan Wu Wan is a formula used for weakness after IVDD to tonify Qi, nourish Blood, move blood and smooth the Channels.

Chip 10/7/18 during his acupuncture treatment; still painful in lumbar area.

Chip immediately after treatment, his stance is much better, just slightly weak on right hind.

Comet on 10/7/18 - now appears functionally normal.

10/18/18: All well, all herbal doses were halved.

11/1/18: With an onset of Cold damp weather, Comet was showing just a slight weakness in his hind legs. His low back was slightly cold. Tongue slightly flaccid, Pulse was deep. Diagnosis: Qi deficiency/Kidney Qi/Yang Deficiency. Due to the significant lesions in his spine, it was anticipated that Cold Damp invasion would have a negative effect. Comet was changed to Bu Yang Huan Wu Wan, 8 pills twice a day. Chip has been weaned off his herbs and is clinically normal.

Comet has a slightly hunched up posture on 11/1/18.

Chip is clinically normal, 11/1/18.

Case discussion: On a symptom treatment basis, both Chip and Comet responded very well to the use of Chinese Herbal Medicine, acupuncture, and Tui-Na. Their patterns of Qi deficient, Kidney Yang/Qi/Jing deficient, Slight Blood Deficiency with local stagnation of Blood and Qi in the back showed immediate improvement with acupuncture with a persisting curative effect seen with their herbal medicines. The acute pain seen in both alpacas was the focus of the Blood and Qi moving herbs to clear the channel blockage and relieve pain such as Chaenomelis, Mu Gua; Clematis, Wei Ling Xian as found in Bone Stasis (3). Other herbs in the formula were responsible to give additional pain relief by activating the Blood such as, Ligusticum, Chuan Xiong; Carthamus, Hong Hua; Myrrh, Mo Yao, and Olibanum, Ru Xiang. These herbal formulas were also treating the root cause, that is the Kidney Qi and Jing Deficiency with herbs such as Cyathula, Chuan Niu Xi; Drynaria, Gu Sui Bu, and reinforced with the patent formula Jie Gu Di Shang Wan.

Of particular interest is the unique early housing of these two alpacas with their subsequent disease. Facial and cardiac defects are reported to be the most frequent inherited anomalies in alpacas (1). There are no reports of inherited or acquired IVDD in alpacas, yet we have one confirmed young alpacas with radiographic evidence of disc disease and one with assumed disc involvement. Both of these alpacas had different dams and sires and there have been no other cases in this particular herd. But both were raised in a basement devoid of sunlight. Could Vitamin D deficiency be playing a role? Vitamin D deficiency is associated in humans with a higher risk of cervical disc herniation (4). More

studies are needed to determine if this is a possible factor. Another factor might be a chelating toxin fond in the basement. Due to limiting economics, the owners did not want to pursue either of those possibilities. Regardless of the specific cause, both of those animals suffered from some inherited or acquired Kidney Qi/Yang/Jing deficiency. With this Kidney weakness, they would have suffered from a general Qi deficiency, with secondary stagnation, with stagnation, a Blood deficiency/stagnation situation would have quickly ensued.

Summary: Comet and Chip illustrate that meningeal worm migration is not the only possibly etiology of paretic and paralyzed alpacas. IVDD must be considered as a rule out diagnosis. These cases were characterized by significant pain and veterinarians should be able to differential meningeal worms form IVDD.

Footnotes:

a. Jing Tang, Reddick, FL, 32586

b. Plum flower, Mayway Corp. Oakland CA, 94607

c. KPC Products, Inc., Irvine, CA 92618

Table 1: Acupuncture points used on Comet:

Points: All points were dry needled:

- Da-Zhui, Great Vertebrae (GV-14)for intervertebral disk disease;
- Ling-tai, Spirit Tower, (GV-10); for Thoracolumbar intervertebral disease
- Ji-Zhong, Spine Center (GV-6)- for intervertebral disease
- Tian-ping, Scale, (GV-5)-for intervertebral disc disease
- Ming-men, Life gate, (GV-4)-Yang deficiency, thoracolumbar pain, intervertebral disc disease.
- Yao-yang-guan, Lumbar Yang Gate: (GV-3): Kidney deficiency, pelvic limb paresis
- Shen-Shu, Shen-Peng, Shen Jiao for Yang deficiency, intervertebral disc disease, pelvic limb paresis
- Yan-chi, Wing of Ileum for pelvic Limb weakness, Kidney Yang or Qi deficiency
- Hua-tu-jia-ji, Hua-tuo's Paravertebral points from T-12-L-2
- Ho-san-li, Rear 3 Miles; General Qi tonic
- Yang-ling-guan, Yang Tomb Spring (GB-34)- pelvic limb weakness, weakness and paralysis
- Tai-chong, Supreme Surge, (LIV-3)-pelvic limb paresis, Shu-stream point
- Liu-feng: between 2 digits-for pelvic limb weakness
- KID-3: tonify kidney

Table 2: Bone Stasis: Break down Stasis, activate Blood, clear Channel Blockage and relieve Pain.

Ingredients and Actions:

Herb	Pin Yin	Action
Chaenomelis	Mu Gua	Clears channel blockage, relieves pain
Corydalis	Yan Hu Suo	Invigorates Blood, relieves pain
Drynaria	Gu Sui Bu	Tonifies and strengthens the bones
Ligusticum	Chuan Xiong	Activates Blood and relieves pain
Carthamus	Hong Hua	Clears blood Stasis and relieves pain

Cinnamomum	Gui Zhi	Warms the channels
Morus	Sang Zhi	Clears Wind-Heat
Cyathula	Chuan Niu Xi	Strengthens the bones
Paeonia	Chi Shao Yao	Nourishes Liver Yin and blood
Myrrh	Mo Yao	Activates Blood and relieves pain
Olibanum	Ru Xiang	Activates Blood and relieves pain
Clematis	Wei Ling Xian	Clear channel blockage, relieve pain

Table 3: Jie Gu Die Shang Wan: Tonfy Kidney, tonify Yang, Qi and Blood, promote bone healing process

Name	**Pin Yin**	**Action**
Dipsacus	Xu Duan	Tonifies Kidney, promotes bone healing
Psoralea	Bu Gu Zhi	Tonifies Kidney Yang
Cyathula	Chuan Niu Xi	Tonifies Kidney Yang, Strengthens limbs, descends
Drynaria	Gu Sui Bu	Promotes bone healing, tonifies Kidney
Cervus	Lu Jiao Jiao	Tonifies Kidney Yang and Qi
Atractylodes	Bai Zhu	Tonifies Qi
Codonopsis	Cang She	Tonifies Qi
Astragalus	Huang Qi	Tonifies Qi
Angelica	Dang Gui	Nourishes Blood
Rehmannia	Shu Di Huang	Nourishes Blood
Draconis	Long Gu	Tranquilize Liver Yang
Ostrea	Mu Li	Tranquilized Liver Yang
Morus	Sang Zhi	Soothes limbs
Pritum	Zi Ran Tong	Strengthens bones

Table 4: Acupuncture points used for Chip

Points: All points were dry needled:

- Da-Zhui, Great Vertebrae (GV-14) for intervertebral disc disease;
- Ji-Zhong, Spine Center (GV-6)-intervertebral disease
- Tian-ping, Scale, (GV-5)-intervertebral disc disease
- Ming-men, Life gate, (GV-4)-Yang deficiency, intervertebral disc disease.
- Yao-yang-guan, Lumbar Yang Gate: (GV-3): Kidney deficiency, pelvic limb paresis
- Shen-Shu, Shen-peng, Shen Jiao for Yang deficiency, intervertebral disc disease, pelvic limb paresis
- Yan-chi, Wing of Ileum for pelvic Limb weakness, Kidney Yang or Qi deficiency
- Hua-tu-jia-ji, Hua-tuo's Paravertebral points from L3-S1
- Ho-san-li, Rear 3 Miles; General Qi tonic
- Yang-ling-guan, Yang Tomb Spring (GB-34)- pelvic limb weakness, weakness and paralysis
- Tai-chong, Supreme Surge, (LIV-3)-pelvic limb paresis, Shu-stream point
- Liu-feng: between 2 digits-for pelvic limb weakness
- KID-3: tonify kidney
- SP-6: Qi and Spleen Qi, Kidney and Liver Tonification.

Table 5: Double P II: Break down stasis in the spine, Move Qi, relieve pain

Name	Pin Yin	Action
Angelica	Dang Gui	Nourishes Blood, Activates Blood, relieves pain
Ligusticum	Chuan Xong	Activates Blood, resolves Stagnation
Paeonia	Chi Shao	Cools Blood resolves Stagnation and stasis
Carthamus	Hong Hua	Moves Blood, resolves Stagnation and stasis
Myrrh	Mo Yao	Resolves Stagnation and relieves pain
Olibanum	Ru Xiang	Resolves Stagnation and relieves pain
Notogenseng	Tian San Qi	Moves, Blood, Stops Hemorrhage
Sanguis Draconis	Xue Jie	Resolves Stagnation
Buthus	Quan Xie	Resolves Stagnation
Pheretima	Di Long	Activates the Channel, stops tremors
Eucommia	Du Zhong	Strengths back, tonifies Kidney Yang
Dipsacus	Xu Duan	Strengthens Bones, Tonifies Kidney Yang
Drynaria	Gu Sui Bu	Strengthess bones and tonifies Kidney
Morinda	Ba Ji Tian	Warms Yan and tonifies Kidney
Cyathula	Chuan Niu Xi	Tonifies Kidney Yang, strengthens rear limbs
Psolarea	Bu Gu Zhi	Tonifes Kidney Yang and strengthens bones
Astragalus	Huang Qi	Tonifies Qi
Strychnos	Ma Qian Zi	Activates Channels, relieves pain
Aconite	Fu Zi	Warms Yang and Channels
Lindera	Wuu Yao	Moves Qi and relieves pain
Glycyrrhiza	Gan Cao	Harmonizes

Table 6: Bu Yang Huan Wu Wan

Name	Pin Yin	Actions
Astragalus	Huang Qi	Warms and tonifies Qi
Angelica	Dang Gui	Nourishes Blood
Paeonia	Bai Shao Yao	Nourishes Blood and Yin, soothes Liver Yang
Pheretima	Di Long	Breaks Blood Stagnation
Ligusticum	Chuan Xiong	Activates Blood and relieves Pain
Carthamus	Hong Hua	Break Stasis and relieve Pain
Persica	Tao Ren	Break Stasis and relieve Pain

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Bacterial Isolate (n)	MIC90	MBC90	MBEC90
S. pseudintermedius (5)	12.5 ± 0%	25 ± 0%	35 ± 0.1%
MR S. pseudintermedius (5)	12.5 ± 0%	30 ± 11%	40 ± 14%
P. aeruginosa (5)	22.5 ± 6%	45 ± 11%	45 ± 11%

Palmeiro B, Soto E, Yun S, Abdelrazek S. 2017. Antimicrobial activity and biofilm inhibition of manuka honey against *S. pseudintermedius*, methicillin-resistant *S. pseudintermedius* and *P. aeruginosa*. *Veterinary Dermatology*; 28:446

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Image: Popcorn Tree, 2018 VBMA Herbwalk, by Cynthia Lankenau