

## Tick-borne diseases

### Their effective treatment, including the use of botanical & complimentary therapies

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#### ABSTRACT

The presenting symptoms, conventional treatment, and natural treatment for Lyme borreliosis and common co-infections is described. An herbal protocol used in more than thirty patients with Persistent Lyme disease Syndrome is described, and herbal treatments for common complications of the illness and side-effects of antibiotic medication are suggested.

#### INTRODUCTION

Until 1976, tick-borne diseases in the United States primarily referred to Rocky Mountain Spotted Fever, an acute and occasionally deadly tick-borne illness. Lyme disease was first recognized in 1976 in Lyme, CT, where physicians were treating an unusually large number of cases of what was thought to be Juvenile Rheumatoid Arthritis. Medical investigators eventually found that the condition was caused by a spirochete, *Borrelia burgdorferi*, and it was transmitted by the deer tick *Ixodes scapularis*. Several other tick-borne diseases have been recognized over the past 25 years, including Ehrlichiosis, Babesiosis, and Southern Tick-Associated Rash Illness. Lyme disease has become the most prevalent of these illnesses, but co-infections with one or more of these organisms is fairly common. According to Burrascano (2005) up to 66% of Lyme patients show evidence of a co-infection with the hemoprotzoan *Babesia*.

#### LYME DISEASE

Since surveillance of Lyme disease began by the CDC, the number of new cases of Lyme disease has risen steadily. In 2000, 18,000 cases were reported. Many authorities believe that the true number of Lyme infections is under-reported by a factor of ten times. This condition can be seen as having three stages:

- initial acute phase
- early disseminated phase
- chronic (persistent) stage that is difficult to treat

The preponderance of Lyme infections occur from late spring through early autumn (May-September), but deer ticks can be active anytime the temperature is above 45°. In the U.S., several areas have a high incidence of human *Borellia* infections. On the East Coast, these areas include eastern Massachusetts, Connecticut, Rhode Island, the Hudson Valley and Long Island regions of New York,

New Jersey, eastern Pennsylvania, and eastern Maryland. It is also found in the upper Midwest (Wisconsin, Minnesota, Michigan), and the northern California/Oregon coast. The incubation period from tick bite to the appearance of symptoms is typically seven to fourteen days, but can be as short as three days or as long as thirty days.

#### SYMPTOMS OF LYME DISEASE OR LYME BORRELIOSIS

Early or acute phase symptoms can include:

- skin rash (erythema migrans or EM)
- headache
- mild fever
- stiff neck
- fatigue
- muscle aches
- swollen lymph nodes

Secondary or early disseminated stage symptoms can include:

- Bell's Palsy
- migratory joint pain and/or swelling (especially the knees, hips, or elbows)
- numbness or tingling sensations

Symptoms associated with chronic infections [also known as Persistent Lyme disease Syndrome (PLDS)] commonly include:

- intermittent or chronic arthralgias
- cloudy thinking or confusion
- severe fatigue
- sleep disturbances
- optic neuritis
- neuralgia
- anxiety
- immune suppression, especially reduced CD-57 NK cells, as well as Killer B and T cells. This can lead to additional opportunistic infections with CMV, EVB, HHV-6, and mycoplasma.

Less common symptoms include:

- heart problems (myocarditis and transient atrioventricular blocks)
- paralysis and impaired coordination
- lymphocytic meningitis

- encephalitis

The diagnosis of Lyme disease is often based on subjective symptoms and a known or likely exposure to a deer tick bite. Objective diagnosis is primarily via three blood tests, the ELISA (Enzyme-Linked Immunosorbant Assay), IFA (Indirect Fluorescent Antibody), and the Western Blot test. The ELISA and IFA tests confirm Lyme antibodies are present but are often inaccurate, giving false negatives in up to 50% of tests. The Western Blot test is more accurate, but it depends on which version of this test is used. Be sure to get the full sixteen-band IgG, IgM test from IgeneX, which is more accurate than the CDC version of this test. Newer tests, including PCR (Polymerase Chain Reaction), Antigen Capture, and Bowen Institute's Q-RIBb test, have variable results as well. The recently introduced CD-57 test (Lab Corp.) can be helpful in determining PLDS and also indicate success or failure from treatment.

### LYME DISEASE AND ANIMALS

In addition to humans, dogs and horses can get Lyme disease. Cats seem to be immune to this disease. Veterinarians who treat canine Lyme disease report dogs usually respond well to treatment and are much less likely than humans to develop PLDS.

### ORTHODOX TREATMENTS

Oral antibiotics are the first line of treatment for acute or early disseminated Lyme disease. They are the only proven protocol that effectively treats a Lyme infection. All other treatments are experimental and should not be thought of as replacements for antibiotics. Commonly used antibiotics include:

- Doxycycline (also used to treat Ehrlichiosis)
- Amoxicillin (use for children and pregnant women)
- Cefuroxime axetil (Ceftin)
- Telithromycin

Intravenous antibiotics are usually used for neurological symptoms and chronic arthralgias associated with PLDS. These include:

- Ceftriaxone – use five days on, two-to-three days off to prevent cholecystitis
- Benzathine penicillin (Bicillin-LA) can be used IM or IV
- Cefotaxime
- Doxycycline

Oral antibiotics are usually administered for 3-6 weeks. Most Lyme specialists now routinely continue medication at least four-to-six weeks and combine two-to-three different types of antibiotics in a protocol for PLDS. Intravenous antibiotics are administered at least four-to-six months, even though there are no studies confirming the effectiveness of this therapy beyond a six-week time frame. The common side effects associated with oral antibiotics include nausea, diarrhea, sun sensitivity, vaginal yeast infections, rash, glossitis, and abdominal pain. The use of probiotics with FOS during antibiotic treatment can reduce many of the digestive adverse effects, such as yeast overgrowth, antibiotic-related colitis, and infection with *C. difficile*.

Many of the IV antibiotics require a central line, as they are caustic and they frequently cause a Jarisch-Herxheimer reaction in patients.

A study by Nadelman (2001) suggests that if a prophylactic antibiotic is given within seventy-two hours of a tick bite, it is effective for preventing transmission of Lyme disease. In this study a single two-hundred mg dose of Doxycycline prevented patients from developing Lyme disease 87% of the time compared to placebo. Readers should be aware that even with the placebo transmissions rates were surprisingly low. Most Lyme specialists would strongly advise against using this type of abrogated therapy.

***The ELISA and IFA tests confirm Lyme antibodies are present but are often inaccurate, giving false negatives in up to 50% of tests.***

In PLDS, the use of steroids and other immuno-suppressive medications should be absolutely avoided as they contribute to the progression of this illness and will likely cause treatment failure. Lack of sleep, alcohol use (except for small amounts in tinctures), cigarette smoking, and nutrient deficiencies can also contribute to poor patient response.

### ALTERNATIVES FOR TREATING PERSISTENT LYME DISEASE SYNDROME (PLDS)

In PLDS many patients are highly resistant to treatment. There are several causes for this. First, the *Borellia burgdorferi* (Bb) organism can be found in fluids (blood and intercellular fluids), as well as muscle, nerve, and organ tissue. No single antibiotic is effective for treating infections disseminated both in bodily fluids and in various tissues. Secondly, Bb is pleomorphic and can exist in at least two and possibly three forms. The L-form, or spheroplast, has no cell wall and is not susceptible to the same types of antibiotics as is the spirochete. The existence of a third possible form, a cyst form, is controversial, but may be able to lie dormant during conventional treatment and cannot be killed by most antibiotics.

Metronidazole and Tinidazole are recommended treatments (Burrascano, 2005).

The following protocol has been used with some success in patients with PLDS who had previously been treated with oral and intravenous antibiotics. Most of these patients were symptom free as long as they continued intravenous antibiotics but for various reasons (especially cost) they were unable to continue with that therapy. Of the more-than-thirty patients who have used various incarnations of this protocol, approximately 60% are symptom free or have greatly reduced symptoms; 20% showed moderate improvement, and 20% did not respond. A larger, well-designed study is needed to substantiate these clinical findings.

### Lyme Formula (Spirolyd Compound)

This formula is taken on a daily basis, 3-4 ml TID. Take for 2 weeks before adding in the Spirolyd Support formula.

Sarsaparilla rhizome (*Smilax spp.*) – traditional syphilis treatment

Guaiaic resin (*Guaiaecum officinale*) – traditional syphilis treatment

Stillingia root (*Stillingia sylvatica*) – traditional syphilis treatment

Andrographis herb (*Andrographis paniculata*) – clears blood heat (infections) – anti-amoebic, anti-bacterial, hepatoprotective

Prickly Ash bark (*Zanthoxylum clava-herculis*) – anti-bacterial, antiviral, relieves bone and arthralgia pain, enhances circulation and absorption

In patients with gastritis or gastric ulcers take with food to prevent further GI irritation.

### Formula #2 (Spirolyd Support)

This formula is taken concurrently with Formula #1 for two weeks, then discontinued for four weeks, then reintroduced for two weeks; this pattern should be continued throughout treatment.

Houttuynia herb (*Houttuynia cordata*) – clears blood heat (infections) antibacterial, antiviral, antifungal

Teasel root (*Dipsacus spp.*) – anti-inflammatory, helps relieve Lyme arthralgia

Boneset herb (*Eupatorium perfoliatum*) – diaphoretic, antibacterial, immuno-stimulant; relieves bone and muscle pain

Isatis root (*Isatis indigotica*) – antibacterial/antiviral-clears blood heat (infections)

## Lyme and tick-borne disease prevention

### Minimizing risk of exposure

(from [www.healthatoz.com](http://www.healthatoz.com))

Precautions to avoid contact with ticks including moving leaves and brush away from living quarters. Most important are personal protection techniques when outdoors, such as:

- Spraying tick repellent on clothing and exposed skin.
- Wearing light-colored clothing to maximize ability to see ticks.
- Tucking pant legs into socks or boot top.
- Checking children and pets frequently for ticks.

In highly tick-populated areas, each individual should be inspected at the end of the day to look for ticks.

### Minimizing Risk of Disease

The two most important factors are removing the tick quickly and carefully, and seeking a doctor's evaluation at the first sign of symptoms of Lyme disease. When in an area that may be tick-populated:

- Check for ticks, particularly in the area of the groin, underarm, behind ears, and on the scalp.
- Stay calm and grasp the tick as near to the skin as possible, using a tweezer.
- To minimize the risk of squeezing more bacteria into the bite, pull back steadily and slowly.
- Do not try to remove the tick by using petroleum jelly, alcohol, or a lit match.
- Place the tick in a closed container (for species identification later, should symptoms develop) or dispose of it by flushing.
- See a physician for any sort of rash or patchy discoloration that appears three to 30 days after a tick bite.

Lomatium root (*Lomatium dissectum*) – antibacterial/antiviral/antifungal

The rationale for this second formula is that the Borellia spirochete can become resistant to treatment if the same antibiotic or herb is used. The addition of the second formula is designed to prevent resistance, which

supposedly with herbs should not occur, but clinically seems to happen in some cases.

The herbs alone are not effective (except for canines)

#### HEAT THERAPY

Daily elevation of core body temperature to 101.5-102.5 twice per day for 15-20 minutes, inhibits *Borellia* reproduction and enhances effectiveness of the herbal or antibiotic treatment (Reisenger, 1996). Take care to hydrate the patient and replace lost minerals, especially calcium, magnesium, and zinc.

Saunas, hot tubs, and steam baths are probably the most effective methods for elevating body temperature. If not available, hot baths combined with taking a diaphoretic tea (Yarrow, Elder Flower, Ginger) can be substituted.

Fever therapy alone is not effective

These therapies together show greater activity than any one alone. Combining the use of the herbs and elevation of body temperature with antibiotic therapy results in improved outcomes over antibiotics alone or the alternative therapy by itself.

#### OTHER PROPOSED REMEDIES

**Teasel root** (*Dipsacus spp.*) Herbalist Matthew Wood says that he has had success treating Lyme disease with very small doses of Teasel root. My clinical experience with this herb has confirmed that it is effective for joint pain (Lyme arthralgia), but I have not been able to duplicate his experience in resolving confirmed Lyme disease.

**Spilanthes** (*Spilanthes acmella*) Some practitioners suggest this herb has antispasmodic activity. I know of no published data to support this claim. It does have antibacterial, antifungal, and immunostimulating effects.

**Cat's Claw bark** (*Uncaria tomentosa*, *U. guianensis*) A small study (28 people) was done comparing a TOA free Cat's Claw product with antibiotic therapy. Reportedly, 85% of the Cat's Claw group (14 people) were sero-negative after 6 months for Bb and had dramatic improvements in their symptoms. The control group treated with antibiotics fared poorly. This study by Cowden W. et al, is available as a preliminary report on the internet. It is interesting but certainly not conclusive.

[**Editor's note:** Although this study is widely noted in marketing-oriented materials for a brand of TOA-free Cat's Claw products, in the 3 years since its first presentation it has never been published in a peer-reviewed medical journal, nor have the results been reproduced by these

or other researchers. Furthermore the Cat's Claw group in the trial also engaged in a number of other natural therapies besides the herbal treatment and it is impossible from the data to assign any beneficial results specifically to the herb. – Paul Bergner]

#### SYMPTOMATIC RELIEF FOR LYME DISEASE

##### Muscle and neck pain and spasms

Ashwagandha root (*Withania somnifera*) – adaptogen, antispasmodic

Black Cohosh root (*Cimicifuga racemosa*) – do not use with hepatotoxic antibiotics, antispasmodic

Fang Feng/Siler root (*Saposhnikovia divaricata*) – for liver wind-muscle spasms

Kava root (*Piper methysticum*) – do not use with hepatotoxic antibiotics, antispasmodic, anxiolytic

Wood betony herb (*Pedicularis spp.*) – for muscles that feel tired, overworked, and sore

Scullcap herb (*Scutellaria lateriflora*) – nervine for patients who, when stressed, develop nervous tics, tremors, palsies, and spasms

Kudzu root (*Pueraria lobata*) – muscle spasms, stiff neck, achy muscles

Magnesium – 400-600 mg per day – muscle spasms, restless leg syndrome, facial tics

##### Joint pain

Ba Ji Tian root (*Morinda officinalis*) – used for knee, ankle, and low back pain, antidepressant

Niu Xi root (*Achyranthes bidentata*) – painful tendons, ligaments, and joints

Solomon's Seal root (*Polygonatum biflorum*) – especially useful for joint, disc, and cartilage pain and injuries

Teasel root (*Dipsacus spp.*) – anti-inflammatory for joints, tendons, and ligaments

Yi Yi Ren/Coix seed (*Coix lachryma-jobi*) – increases joint mobility and relieves spasms

Glucosamine (500 mg-1000 mg) with MSM (500 mg) BID/TID – anti-inflammatory for joints and arthritic pains

##### General anti-inflammatories for Lyme arthralgia

Blueberry fruit (*Vaccinium spp.*) – nutritive anti-inflammatory, benefits visual problems, reduces allergic response

Boswellia gum (*Boswellia serrata*) – warming anti-inflammatory, analgesic, antifungal

Chai hu root (*Bupleurum chinensis*) – cooling anti-inflammatory, hepatoprotective, antibacterial

Devil's Claw tuber (*Harpogophytum procumbens*) – cooling anti-inflammatory, arthritic pain

Ginger rhizome (*Zingiber officinale*) – warming anti-inflammatory, carminative

Meadowsweet herb (*Filipendula ulmaria*) – cooling anti-inflammatory, arthralgic pain

Sarsaparilla rhizome (*Smilax spp.*) – cooling anti-inflammatory, binds endotoxins in the gut, enhancing excretion; useful for Babesia hemotoxins.

Turmeric rhizome (*Curcuma longa*) – hepatoprotective, warming anti-inflammatory

Yucca root (*Yucca spp.*) – cooling anti-inflammatory, arthritic pain

Cat's Claw bark (*Uncaria tomentosa*, *U. guianensis*) – immunomodulator, heals gut mucosa, cooling anti-inflammatory

Willow bark (*Salix spp.*) – cooling anti-inflammatory, arthritic pain

EPA/DHA - Omega 3 Fish Oils – 4 grams per day – anti-inflammatory, reduces inflammatory prostaglandin production

Alpha-Lipoic Acid – useful for Lyme-induced peripheral neuropathies – 250 mg BID

### Neurological and cognitive symptoms

(including poor memory, lack of concentration, and confusion)

St. John's wort flowering herb (*Hypericum perforatum*) – nervine, antidepressant

Gotu Kola herb (*Centella asiatica*) – cerebral stimulant, anti-inflammatory, anxiolytic

Bacopa herb (*Bacopa monnieri*) – anxiolytic, nervine, thyroid stimulant

Ginkgo herb (*Ginkgo biloba*) – cerebral stimulant, antioxidant

Lemon Balm herb (*Melissa officinalis*) – nervine, antibacterial, carminative

Rhodiola root (*Rhodiola rosea*) – adaptogen, antidepressant, antioxidant

Rosemary herb (*Rosmarinus officinalis*) – cerebral stimulant, antibacterial, carminative

Schisandra berry (*Schisandra chinensis*) – adaptogen, hepatoprotective, antioxidant

Holy Basil (*Ocimum sanctum*) – adaptogen, cerebral stimulant, antioxidant, antibacterial

### Bell's palsy

St. John's wort flowering tops (*Hypericum perforatum*) – useful for nerve pain and inflammation

Sweet Melilot herb (*Melilotus alba* or *M. officinalis*) – indicated for sharp, stabbing nerve pain

Mullein root (*Verbascum thapsus*) – specific for facial nerve pain

Prickly Ash bark (*Zanthoxylum spp.*) – circulatory stimulant, relieves nerve pain

Gou Teng hooks (*Uncaria sinensis*) – spasms, facial and neck pain

Sub-lingual B-12 (methylcobalamin form only) often works in 3-7 days – 1000 mcg per day

### Lyme insomnia

Hops strobiles (*Humulus lupulus*) – sedative, anxiolytic, analgesic

Passion Flower herb (*Passiflora incarnata*) – nervine/sedative, circular thinking

Gambir spines (*Uncaria sinensis*) – irritability and anxiety inhibiting sleep

Zizyphus seed (*Ziziphus spinosa*) – calms disturbed shen, insomnia, nightmares, palpitations, and anxiety

### Lyme anxiety

Bacopa herb (*Bacopa monnieri*) – anxiolytic, cerebral stimulant, thyroid stimulant

Motherwort herb (*Leonurus cardiaca*) – anxiolytic, controls palpitations

Blue Vervain herb (*Verbena hastata*) – anxiolytic, helps control muscle spasms and nervous tics

Pulsatilla herb (*Anemone patens*) – strong anxiolytic, toxic in overdose

Chinese Polygala root (*Polygala tenuifolia*) – strong anxiolytic, sedative

Fresh Oat (*Avena sativa*) – nervine, mild anxiolytic, for emotionally brittle patients

### Fatigue and HPA-axis depletion

Rhodiola root (*Rhodiola rosea*) – adaptogen, antidepressant, antioxidant

American Ginseng root (*Panax quinquefolius*) – adaptogen, immunomodulator

Asian Ginseng root (*Panax ginseng*) – adaptogen, anti-inflammatory, immunomodulator

Schisandra berry (*Schisandra chinensis*) – adaptogen, hepatoprotective, antioxidant

Ashwagandha root (*Withania somnifera*) – adaptogen, especially if the patient has hypothyroid function and low hemoglobin, immunomodulator

Maral root (*Rhaponticum carthamoides*) – adaptogen, antioxidant

Eleuthero root (*Eleutherococcus senticosus*) – adaptogen, immunomodulator, antioxidant

Cordyceps fungus (*Cordyceps chinensis*) – adaptogen, immunomodulator, hepatoprotective, antioxidant

Co-Q-10 (Ubiquinone) – 90 mg TID – enhances energy and oxygenation of tissues

### Immunodeficiency in PLDS

Astragalus root (*Astragalus membranaceus*) – immunopotentiator

Reishi mushroom (*Ganoderma sinensis*) – immunomodulator

Maitaki mushroom (*Grifola frondosa*) – immunomodulator

Cat's Claw bark (*Uncaria tomentosa*, *U. guaniensis*) – immunomodulator

Chaga sclerotum (*Inonotus obliquus*) – immunopotentiator

Also see adaptogens under Fatigue

### Liver protection

To prevent liver damage due to the use of potentially hepatotoxic antibiotics, i.e., Tetracycline, Ceftriaxone, Mepron (used for Babesiosis), Minocycline, and high dose Doxycycline.

Milk Thistle seed (*Silybum marianum*)

Turmeric rhizome (*Curcuma longa*)

Schisandra berry (*Schisandra chinensis*)

### Antibiotic side-effects

Herbs used to help prevent yeast overgrowth from long-term antibiotic use:

Berberine containing herbs – Hydrastis, Coptis, Mahonia, Berberis, Xanthorrhiza; also inhibit *C. difficile* bacterial growth

Cardamom seed (*Elettaria cardamomum*) – inhibits *Candida albicans*, antibacterial

Fireweed herb (*Epilobium angustifolium*) – inhibits *Candida albicans*

Spilanthes herb (*Spilanthes acmella*) – inhibits *Candida albicans*, antibacterial

### OTHER TICK-BORNE DISEASES

#### Ehrlichiosis

Ehrlichiosis is caused by at least 3 species of Ehrlichia bacteria. Symptoms of Ehrlichiosis include swollen glands, high fever, muscle pain, fatigue, and severe headache. The symptoms mimic Rocky Mountain Spotted Fever but without the characteristic rash. The disease, left untreated, can cause protracted and severe sequelae including leukopenia, thrombocytopenia, and renal failure. Tetracycline and Doxycycline are effective treatments for Ehrlichiosis.

#### Babesiosis

Babesiosis (Piroplasmiasis) is caused by several species of hemoprotozoans. In people with a healthy spleen, it is often a relatively mild condition resolving in several weeks or months. In patients without a spleen, it can cause febrile hemolytic anemia, with symptoms closely resembling malaria (profuse sweating and fevers). In this population this disease has a high mortality rate. Quinine and Clindamycin have been used in the treatment of Babesiosis, but due to significant side effects compliance is limited. Dr. Burrascano recommends using Mepron (atovaquone) 750 mg BID with azithromycin 250-600 mg per day. This regimen is expensive, liver function tests need to be done during therapy, and a Herxheimer-like reaction (a pronounced rash with fatigue, muscle pain, and headache) are common.

#### Rocky Mountain Spotted Fever

Rocky Mountain Spotted Fever is an acute infection with initial symptoms of fever, a red, spotted rash, nausea, vomiting, severe headache, and muscle pain. In some cases RMSF can be a severe illness. Infections in the elderly, men, African Americans, and alcoholics all are risk factors for more severe illness involving the central nervous system, respiratory or GI tracts, or kidneys. Long-term sequelae of RMSF can include hearing loss, cognitive dysfunction, loss of bladder or bowel control, partial paralysis of the lower body, and gangrene. Antibiotics, especially Doxycycline, are the appropriate treatment for this disease.

#### Southern Tick-Associated Rash Illness

Southern Tick-Associated Rash Illness (STARI) is caused by a spirochete that lives in the Lone Star tick (*Amblyomma americanum*) found in the southeastern and south-central United States. A Lyme disease-like rash (erythema migrans) will develop with this disease and other Lyme-like symptoms will probably develop as well. Antibiotics such as Doxycycline are effective for treating this condition as well.

## Tick-borne Bartonella

This bacteria is usually transmitted by scratches from cats, so it is most commonly associated with Cat Scratch Fever. It can also be transmitted via tick bites, which can cause symptoms such as splenomegaly, malaise, sore throat, lymphatic swellings, headache, confusion, gastritis, anxiety, weight loss, and insomnia. Several antibiotics including Levofloxacin, Rifampin, and Gentamicin class medications are effective for treating this bacteria.

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