



**PRACTICAL GUIDE**



**Lymeherbs**

**APPLICATION OF HERBAL THERAPIES  
FOR LYME DISEASE AND COINFECTIONS**



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## CHAPTER I – LYME DISEASE AND COINFECTIONS – THERAPY PLANNING

If you have decided to treat Lyme disease with natural therapies, you will encounter several well-known protocols. Below we will discuss practical aspects of the most popular and, in our opinion, the most effective protocols:

- Buhner Lyme Protocol
- Cowden Protocol
- Researched Nutritionals® Protocol

We will also present you our practical tips which can improve your therapy.

The start is always the most difficult part. Let us assume that you are diagnosed with Lyme disease with Bartonella and Mycoplasma coinfections. You decide to try herbal therapy, or you have just finished taking antibiotics and want to continue treatment with herbs. Not everyone has the opportunity to get professional help from a physician or a phytotherapist who can help select proper herbs and assist you throughout the entire therapy. Usually, people decide to plan herbal therapy on their own. They learn about the available protocols and are faced with plenty of questions and doubts, such as:

- which protocol to select?
- how to mix herbs used to treat Lyme disease with herbs that target coinfections?
- what is the sequence in introducing various herbs?
- what form of herbs will be the best?
- what herbs would be best for my symptoms?

We will help you go through these and other questions. We have prepared for you a “Practical Guide - Application of Herbal Therapies for Lyme Disease and Coinfections”, a “Therapy Planner” that will help you plan your therapy, a “Herbarium – Herbs and Supplements for Lyme Disease” that briefly presents the most important properties of herbs and a “Lyme Disease Diet Guide”. That's a lot of practical knowledge gathered in four e-books. Start by reading the Practical Guide on Application of Herbal Therapies for Lyme Disease and Coinfections. It will form the basis for the following parts.

### Can herbs help fight disease?

Millions of years of evolution have made some plants our allies in facing various bacteria and other microbes. Bacteria have the capacity to analyze a single compound that is, as a rule, a chemical antibiotic, and to generate a series of mechanisms used to neutralize it. Later, they communicate this

information to other bacteria. The power of plants does not just lie in their single, isolated elements or chemical compounds. It lies in their ability to produce various chemical substances. It is the whole plant and synergy of its numerous compounds that causes microorganisms to surrender and retreat. Bacteria cannot cope with so many complex and deadly elements. They die before they are able to produce a defense mechanism allowing them to fight against the plant's chemical arsenal. In addition, when used properly, herbal remedies have very few side effects unlike many chemical medications that are used.

The approach of Buhner, Cowden or other renowned authors of therapy protocols breaks the stereotypes connected with standard treatment of Lyme disease. As they understand it, antibacterial treatment is not enough. We cannot forget about strengthening our immune system, which is not only weakened by infection but also overmodulated to accommodate to bacterial needs. Let us also remember about cytokines induced during infections, about protecting the endothelium, structures and cells, which are infected by bacteria. We should not only kill the bacteria, but also create such an unwelcome environment in our organism that it will not duplicate, get food and aggressively expand all over our body. This multi-dimensional approach brings amazing effects, provided it is properly conducted.

Treating Lyme disease and coinfections with herbs will be a long journey, which must be planned with care. Such treatment may take up to one year and in the case of neuroborreliosis even longer. Please remember that any disease is an individual matter. The type of symptoms, their intensification, coinfections, which synergize with each other, age, condition of the immune system, all make up an individual clinical image of the patient. That is why everyone requires an individualized approach. The suggested treatment protocols are an excellent foundation. They can serve to build the perfect core for therapy, which you can then use as a basis to select various herbs specific that will ease your symptoms. That said, you must observe your body, and listen to it. Control what changes, and what does not. What suits you best and what makes you feel worse.

We will slowly run through the planning stages of therapy. We will show you the advantages of specific protocols. We will give you certain tips based on our experience. You may use this scheme in planning and monitoring your therapy. Adapt it to your needs, be flexible and listen to your body.

We have also prepared a therapy planner, which contains various sheets that may help you plan your therapy. It will help you monitor your symptoms, control stages of therapy, and calculate your dosage. It also contains comparative tables. It will be your guide through therapy.

### **How to use the Therapy Planner?**

Please note that there is space in the top left corner to write the date. You can print the cards you need many times, but remember to mark the start date of therapy on the first set of cards, print new cards with each subsequent change, and enter a new date. Arrange the sets in chronological order – this will make it easier for you to compare the stages of therapy.

The Planner is divided into the following parts:

- **Information on detected infections and observed symptoms** – page 4 in the Planner

This is the first stage of planning. Mark the diagnosed infections on the card. Do not focus on treating only the Lyme disease. Very often – or even without taking our look too far – almost always, Lyme disease is accompanied by other characteristic infections. The so-called coinfections must be fought simultaneously with Lyme disease. Later in the Guidelines we will return to the problem of coinfection and further explain their significance in treating Lyme disease. If you do not have any diagnosed coinfections, perform the suitable examinations.

The next stage consists in marking your symptoms. The card contains a list of the most frequent ones. If you are experiencing symptoms from outside the list, please specify them in a specially designed space. Write down everything that is bothering you, even those symptoms that may seem irrelevant. The card should be printed once a month and compared to cards from the previous months. Sometimes you may forget certain symptoms, which you had at the beginning. If you note everything, then you may notice that some symptoms subside, while some appear for the first time. Compare your cards month-on-month but also compare all of them simultaneously. You may also note down the severity of symptoms. The recommended scale is 1-5, where 1 is weak intensification and 5 is high intensification.

- **BORRELIA – herbs and supplements** - pages 5-7 in the Planner

Chapter V of the Guide includes a description of the Protocols: Buhner Lyme Protocol, Cowden Protocol, and Researched Nutritionals® Protocol. If you haven't selected your best protocol yet, please read Chapter V.

On pages 5-7 of the Planer you will find a list of herbs and various supplements for Lyme disease. In the upper left corner enter the starting date of the therapy then note all herbs you start the therapy with.

The first category is **“Basic Buhner Lyme Protocol”**. If you choose this protocol to be your basic source of treatment, tick which herbs you will be introducing. Buhner Lyme Protocol recommends introducing all herbs listed after the last update, i.e., Andrographis, Japanese knotweed, Cat's claw, Salvia miltiorrhiza (Red sage), Chinese skullcap, collagen, and selenium. Later in Chapter III of the Guidelines we will explain why it is so important to follow the complete protocol. If you are planning to introduce all herbs from the very beginning of your therapy, please mark it on the card. Some people need time to adjust to certain herbs. If you are afraid to use all herbs at once, do not hurry, listen to your body, and start with introducing three basic herbs: Andrographis, Japanese knotweed, and Cat's claw. Mark them on your card. If you find that you tolerate these herbs, add the following in the next month of treatment: Salvia miltiorrhiza, Chinese skullcap, collagen, and selenium. Print another card, write down the date and what you will be taking this month, i.e., in the second month

you are already taking: Andrographis, Japanese knotweed, Cat's claw, Salvia miltiorrhiza, Chinese skullcap, collagen, and selenium. We recommend marking the herbs which you have added in a given month with a color marker (in this case: Salvia miltiorrhiza, Chinese skullcap, collagen, and selenium). You may plan adding the herbs as you see fit. The important thing is to note the changes and write down what you feel. This will allow you to observe your reaction to the therapy. Buhner in his Lyme Protocol recommends using herbs for a period of 12 months in case of Lyme disease, and for 18 months in case of neuroborreliosis. These are general time frames. You know by now that Lyme disease is an infection, which is difficult to control. Buhner emphasizes that it all depends on the individual response of the body. Therapy may take longer in case of more serious cases of Lyme disease. Once the protocol is completed, some herbs may be continued as maintenance treatment but it all depends on your condition.

The second category is **"Researched Nutritionals® Protocol"**. Researched Nutritionals® has developed Lyme disease and coinfection protocols, which are enjoying growing recognition. Their products are used by many physicians. Later in the Guide we will describe the concept behind the Researched Nutritionals® protocol. If you decide to use their products as the main source of therapy, you should mark that on your card. Remember that here you do not choose particular products but a whole set. A single product will not work. Just like in the Buhner Lyme Protocol, you need a whole set – page 32 of the Therapy Planner contains detailed information about this protocol. We also recommend supplementing your treatment with collagen. Information about the significance of introducing collagen in your therapy is included in Chapter V.

The card does not contain products from the Cowden Protocol solely because each set is equipped with a sheet with a detailed therapy plan for each day. If you decide to use the Cowden Protocol, use the attached list.

Next, we categorized herbs depending on the most frequent symptoms. Here you will find such categories as: neuroborreliosis, chronic fatigue, brain fog and problems with concentration, anxiety, depression, problems in joints, muscle tremors, cardiac problems, sleep problems, Herx reaction and detoxication, oedema, swelling and problems with libido or with sight. As you can see, the list of symptoms is quite extensive. We tried to list as many herbs and supplements as may be useful for a given symptom. The set has been prepared based on a number of herbs and our experiences. It should be used as a guide for you. Remember that everyone can react differently. You should not introduce all herbs included in the set. Read more about the options we suggest. In a separate appendix, "Herbarium. Herbs and Supplements for Lyme Disease" there are descriptions of herbal uses and suggestions for choosing herbal combinations. The information there can help you choose additional herbs. Select 1-2 herbs, introduce them to your therapy, and observe your reaction. If you experience brain fog, choose Gotu kola. Use the Planner to mark what you introduced first. After 1 month, assess whether Gotu kola has helped you with your brain fog. If it has, keep it in your therapy. If you see no improvement, remember to note it. Print the next card, where you will mark another product from the list, e.g., ATP Fuel or Ginkgo biloba (NOTE: if you print a new card to enter information about a new product, do not forget to write down the other herbs used in your therapy, e.g., those from the Buhner Lyme Protocol"). Introducing herbs gradually based on the symptoms may allow you to clearly observe the response of your body. Writing down such observations may be useful for another person with Lyme disease; you may share your experiences with them.

Next to symptoms, the card also contains information on vitamin and mineral supplementation. Apart from the herbs you select, we also recommend adding a set of supplemental vitamins. In case of brain fog, apart from Gotu kola, you could also add: magnesium, vitamin B complex, omega 3, and Q10 coenzyme. Note everything down on the card.

Information contained in Buhner's book will help you make the decision. Buhner has categorized herbs depending on the symptoms and specified their precise dosage.

Remember that the herbs listed on the list are not the only ones that may help with troublesome symptoms. If you use another herb that turned out to be more effective, write it down on the card in the "Comments" section. You may also write down your observations there.

Remember to print a new card with every change in the protocol. Write down the new date, mark what you will be keeping in your therapy and what is new. In the "Comments" section write down your feelings, what you have excluded from the protocol, and why. Every month, compare your cards with those from previous months.

## COINFECTIONS

Now we will move on to coinfections. First of all, let us explain the concept of coinfections in Lyme disease.

Many people focus on treating only Lyme disease, i.e., the bacterium *Borrelia burgdorferi*. Unfortunately, Lyme disease is often accompanied by the so-called tick-borne coinfections. Tick-borne coinfections are coexisting infections causing tick-borne diseases along with Lyme disease spirochetes or coexisting diseases contracted through a different route. One coinfection increases the infectiousness of the next species of parasite and facilitates its transmission in the host organism, i.e., it is much easier to catch infections.

### Most common coinfections accompanying Lyme disease are:

- Bartonella
- Babesia
- Chlamydia pneumoniae
- Ehrlichia
- Anaplasma
- Mycoplasma pneumonia
- Rickettsia
- Yersinia

Every coinfection has its own specific mechanism of action in the body and causes more or less characteristic symptoms. You must also remember that there is synergy between bacteria. When infected with two or more tick-borne pathogens, their impact on the body is much more severe than if you were dealing with the attack of only one pathogenic factor. The symptoms of Lyme disease



worsen and the negative impact of Lyme spirochete on the human body increases. It is virtually impossible to remove the Borrelia bacteria without simultaneously removing coinfections. If you are treating Lyme disease, but are doing nothing about coinfections at the same time, then this is the most common cause of the so-called treatment-resistant Lyme disease.

Pathogens take advantage of one another. The synergy phenomenon can be presented on one example: the Borrelia-Bartonella relationship.

Let's assume that the Borrelia bacteria attacked the collagen structures in the knee joint (remember that the Borrelia bacteria has an affinity to collagen structures, thus it always looks for such structures because they provide nutrition). When collagen tissue breaks down, the human body reacts immediately and sends CD34+ cells there to help repair the damage. If the body is also infected with Bartonella, a new problem arises. Bartonella attacks CD34+ cells, which is specific for infection with these particular bacteria. In this situation, some of the CD34+ cells are already infected with Bartonella. The infected CD34+ cells are thus sent to local inflammation caused by collagen breakdown induced by the Borrelia bacteria. Bartonella takes advantage of the existing inflammation that facilitates its growth. It begins to multiply at this site. When it forms colonies, it begins to induce its own cytokine cascade, which will contribute to even greater collagen damage. The greater the collagen damage, the more severe the damage to the joint, and the symptoms become worse. The knee joint begins to hurt, and long-term inflammation can cause serious damage to the joint.

This is one of the many possible synergistic interactions. Please remember that more pathogens mean a greater burden on the immune system. The immune system is overloaded, which can lead to pathology. Each subsequent coinfection is not only the sum of its individual parts, it is a synergy that leads to advanced, intensified pathogenic reactions. There is a saying that "there is strength in numbers" - the same applies to pathogens. They work together and behave in a completely different way than if you were infected with just one individual pathogen.

You cannot ignore any coinfection. If you decide that the coinfection confirmed in clinical examination is not a priority at the moment because you want to focus on the Lyme disease, remember that it will be a failure. Fighting Lyme disease is only half the treatment. You will be fighting an unequal struggle. You will go through a yearly treatment, or longer and still find yourself at the starting point. Then, you will have to start all over again. Remember – check for coinfections!

### **How to introduce herbs aimed at particular coinfections?**

Remember that the herbs used to treat Borrelia should form the core of your therapy. They should be taken for 12-18 months. During this period, introduce different herbs to treat coinfections.

The first coinfection you should treat is always Babesia (of course, if it is confirmed by examinations or if you have reasons to believe that you are infected by it despite a negative test – which is the case sometimes). Babesia is a protozoan, i.e., an organism larger than bacteria. The organism of Babesia may „hide“ other bacteria, therefore please remember to treat it at the very beginning.

In case of subsequent coinfections, there is no imposed order. It all depends on your specific test results and symptoms.

You can introduce protocols for coinfections one by one, or if you tolerate the herbs well, you can also deal with several coinfections simultaneously. We recommend starting with herbs for Lyme disease and after a month, when the body gets used to them, you can start introducing herbs for coinfections.

When you start checking the protocols for each coinfection, you may be scared by the enormity of potential herbs that you have to introduce. However, if you carefully analyze the protocols, you will see that some of the herbs overlap and you can efficiently act on several coinfections at once. For this purpose, we have prepared a list for you.

In case of Buhner herbs, take a closer look at the list presented in the “Planner” on page 22.

Example: You have *Borrelia* plus *Bartonella*, *Mycoplasma* and *Rickettsia* coinfections.

You use herbs for *Borrelia* as the core of your therapy. For this purpose, you need to blend in herbs for *Bartonella*, *Mycoplasma*, and *Rickettsia*. See the summary in the table below. Herbs used in the protocol are marked for each infection. The summary in the table allows you to see what overlaps. If you add herbs for *Bartonella*, you will see that they overlap to a great extent with the herbs used to treat *Mycoplasma*. Note that the herbs that are listed in the *Mycoplasma* protocol and are not included in the *Bartonella* protocol are Chinese skullcap and olive leaf extract. However, Chinese skullcap is listed in the protocol for *Borrelia* so you do not duplicate this herb. All of these herbs are the same as those of *Rickettsia*. Therefore, it seems that if you follow the *Borrelia* protocol and introduce the *Bartonella* protocol, it is enough only to add the olive leaf extract. This way, you will be acting on four infections at the same time: *Borrelia*, *Bartonella*, *Mycoplasma* and *Rickettsia*.

You can compare other infection sets in the same way. If you plan your therapy well, you can carry it out efficiently and reduce your costs.

In the case of co-infections, Buhner often suggests herbal mixtures. He generally suggests recommended intake for the whole mixture rather than for each herb separately. See more information about the herbal mixtures on page 24 of the Planner.

The situation is similar if you decide to implement the Researched Nutritionals® protocol.

Look at the list on page 23 of the “Planner”.

If we were to compare the same infections, i.e., *Borrelia*, *Bartonella*, *Mycoplasma* and *Rickettsia*, note that when introducing products that target *Borrelia*, they overlap with products for *Bartonella*, *Mycoplasma*, and *Rickettsia*. It is enough to include the proposed protocol for *Borrelia* in the therapy and the impact will be multidirectional on other coinfections, in this case on *Borrelia*, *Bartonella*, *Mycoplasma* and *Rickettsia*.

If you additionally have Babesiosis, you need to add only Artemisinin SOD and Crypto-Plus to the *Borrelia* protocol to simultaneously affect five infections: *Borrelia*, *Bartonella*, *Mycoplasma*, *Rickettsia*, and Babesia.

If you decide to go with the Cowden Protocol, it is basically already targeting Lyme disease and all its coinfections. Follow their instructions.

We hope that at this stage, after comparing the herbs in the tables, the coinfections will not seem so scary to you in the context of introducing your herbal treatment protocol.

Let us move on to next cards discussing individual coinfections. Familiarize yourself with those that apply to you.

- **BABESIA – herbs and supplements** – pages 8-9 in the Therapy Planner

Babesia is a parasitic protozoan that closely resembles the malaria parasite. That said, it is transmitted by ticks rather than mosquitoes. Babesia infection often co-exists with Lyme disease and/or other tick-borne infections. The symptoms of Babesiosis range from mild to severe. Mild forms very often go unrecognized because they are mistakenly taken for symptoms of Lyme disease. People in the early stages of infection often report high fever and chills. Chronic infections may be mildly symptomatic, and the most common symptoms are: periodic or slightly elevated fever, chills and muscle and joint pain, chronic fatigue syndrome, sweating and breathing problems referred to as “inability to take a deep breath”.

Infection with Babesia may also involve inflammation of the liver, kidneys and spleen as a result of blockage of capillary blood vessels and microcirculatory stagnation due to the deposition of fragments of damaged erythrocytes in the vessels.

**Important information about the mechanism of Babesia which should be included while planning treatment:**

Babesia enters red blood cells - erythrocytes, where it develops and by multiplying, leading to their destruction. Babesia infection may also involve blockage of capillary blood vessels and microcirculatory stagnation due to deposition of damaged red blood cells in the vessels. Their presence in the bloodstream can cause inflammation of the liver, kidneys, and spleen.

Furthermore, Babesia uses two distinctive mechanisms that defend it from the human immune system:

1. Babesia significantly inhibits the production of nitric oxide (NO) in the human body.

When the parasite attacks the red blood cells, the latter release nitric oxide (NO) as one of the main defense mechanisms. Nitric oxide is a toxic gas to many bacteria and intracellular parasites, including Babesia. Babesia has developed a defence mechanism: it secretes a component very similar to arginase, which is naturally present in the body. Arginase is an enzyme which inhibits the production of NO by red blood cells; it inactivates L-arginine, which is an essential substrate in the synthesis of NO. Babesia is very sensitive to L-arginine, so supplementation with it helps inhibit Babesia infection.

2. Babesia has the ability to alter the immune polarity, thereby changing the human immune response from Th 1 to Th 2.

The immune T cells (abbreviated as Th) become active during infection. Depending on the type of infection, the organism stimulates the production of different types of these cells: Th 1, Th 2, Th3, Th 9 etc. It is important because a given pathogen is usually fought with a particular immune response, and a misalignment of the mechanism to the pathogen causes that the body cannot eliminate the pathogen in question. Th1 cells participate in a cellular response against intracellular pathogens. On the other hand, Th2 lymphocytes are the basic cells that determine the mechanisms of the humoral response against extracellular pathogens. This mechanism makes use of most of the Lyme coinfections that reside intracellularly. This allows to effectively inhibit the proper immune reaction. The Th2 polarization pattern is associated with numerous autoimmune conditions such as lupus or systemic scleroderma.

Treatment for Babesiosis should include the following stages:

1. Antiprotozoal activity.
2. Protection of the red blood cells, but also protection of the endothelium, spleen, liver, and kidneys.
3. Modulation of the immune response, regulation of the cytokine cascade, inhibition of arginase production, increase in L-arginine and NO levels.
4. Anti-symptomatic activity.

With this knowledge, go to the “Therapy Planner” on page 8. If you decide to use the Buhner Lyme Protocol, you can choose from: “Buhner’s Basic Protocol” or “Buhner’s Extended Protocol”.

“**Buhner’s Basic Protocol**” lists three basic herbs: Alchornea cordifolia, Cryptolepis sanguinolenta, Sida acuta. These are herbs that exhibit a strong antiprotozoal effect and have a systemic effect, i.e., they spread throughout the bloodstream, thus affecting every cell and organ. In addition, they strengthen the immune system, and Sida acuta protects the erythrocytes. If you choose this set, check the herbs from “Buhner’s Basic Protocol” on the card. We recommend including L-arginine due to the specific mechanism described above.

However, if your Babesiosis symptoms are intensified, you can try the herbs from “**Buhner’s Extended Protocol**”. It is a very comprehensive approach that covers exactly every step described above. Remember that if you want the protocol to work, you must use all the herbs and products contained in it. A single herb won’t do much. If you decide to buy this set, check all products from the “Buhner extended protocol” on the card.

In the extended protocol for Babesia, Buhner recommends a mixture of herbs: Schisandra chinensis, Korean ginseng (Lat. Panax ginseng) and Licorice root (Lat. Glycyrrhizae glabra). You can either mix the 3 individual tinctures in the right proportions and use the herbs according to Buhner's guidelines



or use the ready-made SPL Herbal Mix tincture, which is a combination of these three herbs. If you decide to use the SPL Herbal Mix tincture, mark the herbs included in the tincture in the Planner, namely: Schisandra chinensis, Korean ginseng and Licorice.

Remember, use the table on page 22 in the Planner to see if any herb might overlap with others that you have already introduced. Do not duplicate herbs. Follow the rules described previously. The table is meant to help you choose herbs if you have more than one infection.

Buhner's herbs to treat Babesia are used according to his guidelines for a period of 30-60 days or repeated as needed. In practice, the therapy should last for about 60 days and in complicated cases up to 90 days.

If you have decided to use Researched Nutritionals® products, then in the case of Babesia, only include those products that do not overlap with those used in the treatment of Lyme disease; in this case, only Artemisinin SOD and Crypto-Plus should be added (see table on page 23 in the Therapy Planner). Do not duplicate preparations. Check everything you have chosen in the “**Researched Nutritionals® Protocol**” category.

You have the complete Researched Nutritionals® protocol on page 32 in the Therapy Planner.

Remember that nothing stands in the way of combining protocols. If you use the Buhner protocol for Lyme disease, you can either reach for the herbs proposed by Buhner or the products proposed by Researched Nutritionals® for Babesia, or vice versa.

The card additionally includes herbs categorized depending on the symptoms. You can supplement your therapy with additional herbs for a given symptom. The principle of selection is the same as already described for Lyme disease. Just note that some herbs used for Babesiosis symptoms overlap with those for Lyme symptoms. Analyze the sets on the cards and mark your choice on the card.

- **BARTONELLA – herbs and supplements** - pages 10-11 in the Therapy Planner

Bartonella is a gram-negative aerobic bacterium. Bartonella species undergo rapid and difficult to detect genetic changes. Therefore, the nomenclature BLO, i.e., Bartonella Like Organism was adopted, thus defining the organism causing tick-borne Bartonellosis in humans. It is not entirely clear whether tick-borne Bartonellosis is a typical Bartonellosis, known as cat scratch disease. The symptoms of tick-borne Bartonellosis are different from cat scratch diseases. For your convenience, let's stick to the term “Bartonella” as a tick-borne coinfection later in this Guide. Lyme disease is quite often accompanied by Bartonella. In the case of coexistence of these two infections, the symptoms exacerbate, especially if the central nervous system is involved.

Common symptoms of infections with Bartonella bacteria are: chronic fatigue, periodic flu-like symptoms, low-grade fever or temperature falls, swollen lymph nodes (often periodically), a burning sensation especially of in soles of the feet or stinging pain, hyperesthesia, disturbance of skin sensation, problems with sight including eye pain, headache, cognitive disturbance, mood swings, irritability, jitteriness, anxiety, depressive symptoms, sleep problems, tender lumps under the skin

along the limbs, red or blue longitudinal rashes (sometimes resembling stretch marks), papular rashes.

**Important information about the mechanism of Bartonella activity, which should be considered when planning therapy:**

Bartonella bacteria has a strong affinity to two structures in the body: the endothelium and the red blood cells. Bartonella is closely related to endothelial cells. The bacteria colonize endothelium and, through various mechanisms, stimulate the uncontrolled growth of endothelial cells in the body, creating a condition known as endothelial hyperplasia. Thanks to these structures, bacteria are provided with: shelter, nutrients and conditions for multiplication. The growth of endothelial cells stimulated by Bartonella bacteria, depending on the location, will give specific symptoms from this organ, which will be the result of an ongoing infection.

Bartonella needs a lot of heme to survive, so it likes red blood cells. By attacking red blood cells, it obtains access to heme. Heme breaks down into components to obtain the nutrients it needs, including iron. Bartonella infects red blood cells, takes heme from hemoglobin, and multiplies in them.

Protection of the endothelium and red blood cells from Bartonella invasion is necessary to disturb the bacteria's living conditions - its nutrition and multiplication. It is unable to produce nutrients essential for its survival on its own. By disrupting these factors, we will stop the infection from spreading.

Bartonella, like Borrelia, induces a complex reaction of the cytokine cascade. The bacteria use this intricate, highly synergistic mechanism to increase the number of blood vessels and the endothelium that lines them, giving them more living space, as well as greater access to blood, specifically red blood cells, which provide them with the nutrients necessary for survival. Inhibition of the cytokine cascade induced by Bartonella bacteria is necessary to constrain the multiplication and disrupt the nutrition of the bacteria.

In addition, the more weakened the immune system, the more severe the infection and the symptoms. The bacterium does not see a significant threat from the body 'and has an open path to feeding on it. Therefore, strengthening the immune system is as important as fighting the bacteria itself.

A properly selected Bartonella treatment plan should include:

1. Protection of the endothelium.
2. Protection of the red blood cells.
3. Disruption of the cytokine cascade.
4. Protection of organs.
5. Strengthening immunity.
6. Anti-bacterial activity.

Now go to page 10 of the Therapy Planner.

If you decide to use the Buhner Protocol, you can choose between the “Buhner Basic Protocol” or “Buhner Extended Protocol”. Regardless of what you choose, you cannot opt for a single herb. You have to select the whole set to achieve the full effect.

If your symptoms are not overly severe, you can start with the “**Buhner Basic Protocol**”, but if they are, we suggest introducing the “**Extended Buhner Protocol**”.

In the extended protocol for Bartonella Buhner suggests two herbal mixtures:

The first mixture contains two herbs: Ashwagandha and Rhodiola rosea.

The second blend contains three herbs: Alchornea cordifolia, Houttuynia cordata and Isatis tinctoria.

You can either mix the above herbs in the right proportions and use them according to Buhner's guidelines, or use ready-made herbal mixtures in the form of tinctures:

AR Herbal Mix contains macerate made from Ashwagandha root (Lat. Withania somnifera) and Rhodiola rosea root.

AHI Herbal Mix contains macerate made from Alchornea cordifolia leaves, Houttuynia cordata herb and Isatis tinctoria root.

If you decide to use the AR Herbal Mix and AHI Herbal Mix tinctures, mark the herbs included in these two tinctures in the Therapy Planner, i.e. Ashwagandha, Rhodiola rosea, Alchornea cordifolia, Houttuynia cordata and Isatis tinctoria.

Remember, use the table on page 20 in the Planner to see if there is any herb overlapping with others which you have already introduced. Do not duplicate herbs. If you are using the Buhner protocol for Lyme disease and want to add herbs for Bartonella, note that Japanese knotweed is included in the protocol for Borrelia and Bartonella. You will not duplicate the dosage of Japanese knotweed. Consider the dosage of Japanese knotweed that you are using for Lyme disease as common for Borrelia and Bartonella. Use the table if you are struggling with a complex infection, compare the herbs for Bartonella with those for other coinfections. As we mentioned earlier, the table will allow you to plan your therapy effectively.

If you have decided to use Researched Nutritionals® products, then in the case of Bartonella, note (see chart on page 23 in the Therapy Planner) that Bartonella products overlap with those for Lyme disease. Do not duplicate preparations. If you decide to mix the protocols and use the Buhner protocol for Lyme disease and the Researched Nutritionals® protocol for Bartonella, then select the products in the category “**Researched Nutritionals Protocol®**” on the card.

On page 32 of the Planner, you will find a detailed description of the Researched Nutritionals® Protocol.

You can also use the card to categorize herbs depending on the symptoms. You can supplement your therapy with additional herbs for a given symptom. The principle of selection is the same as described above for Lyme disease. Just note that some herbs for Bartonella symptoms overlap with

those for Lyme symptoms. Analyze the sets on the cards and if you decide on something, mark it on the card.

- **CHLAMYDIA – herbs and supplements** – page 12 in the Planner

*Chlamydia pneumoniae* is a Gram-negative bacterium, but with a cell wall much stiffer than is usually found in Gram-negative bacteria.

*Chlamydia pneumoniae* frequently affects the respiratory system, causing pneumonia (often referred to as atypical pneumonia), bronchitis, laryngitis, pharyngitis, rhinitis, sinusitis, and symptoms of asthma.

That said, *chlamydia pneumoniae* represents a major factor in the differential diagnosis of Lyme disease as it can lead to nervous system disorders, myocarditis, and reactive arthritis. The extrapulmonary symptoms of *Chlamydia pneumoniae* infection can be latent for a very long time and are often difficult to recognize.

Reactive arthritis caused by *Chlamydia pneumoniae* infection is often difficult to distinguish from Lyme arthritis. In *Chlamydia pneumoniae* infection, we should also take note of Guillain-Barré syndrome. Guillain-Barré syndrome is an autoimmune disease that causes acute poly-root inflammatory demyelinating in which the immune system attacks parts of the peripheral nervous system, causing muscle weakness and tingling sensations in various parts of the body.

In addition, *Chlamydia pneumoniae* can cause other symptoms, such as: chronic fatigue, burning sensation in various parts of the body, paralysis, strokes, problems with blood pressure, headaches, dementia, mental fog, mental disorders, testicular pain.

**Important information about the mechanism of Chlamydia, which should be considered when planning therapy:**

*Chlamydia*, like other intracellular pathogens from the group of tick-borne infections, induce the cytokine cascade. Cytokines are small informational molecules that facilitate the process of infecting bacteria and obtaining nutrients from the host cells. Therefore, the cytokine cascade must be inhibited to disrupt the infectious process of *Chlamydia*.

*Chlamydia* also intercepts the host's immune system responses and functions. Like *Borrelia*, it has the ability to transform the human immune response from a Th1 response to a Th2 one. The Th1 immune response is aimed at fighting intracellular infections and Th2 extracellular infections. The change of dynamics from Th1 to Th2 prevents the proper reaction of the immune system against intracellular bacteria such as *Chlamydia*. In short, the immune system does not take notice of the bacteria. Modulation of the production of interleukin 10 (IL-10) and interferon gamma (IFN- $\gamma$ ) plays a large role in the *Chlamydia* strategy, but we will not discuss these reactions here. What you need to know is that *Chlamydia* can dramatically rebuild your immune system, but it is possible to restore it to normal function. Herbs are very effective in modulating immune function. They are perfect for reducing the level of cytokines that cause inflammatory damage in the body, while increasing the



expression of those supporting immunity that have been inhibited by bacteria. Note that we are talking about plants that modulate the functions of the immune system, rather than stimulate it. Many people are afraid that herbs will excessively actuate the immune response and overstimulate the immune system. In protocols for tick-borne infections, both Buhner and other renowned phytotherapists and physicians use immunomodulating, non-immunostimulating herbs.

The plan for Chlamydia therapy should include:

1. Antimicrobial activity.
2. Disruption of the cytokine cascade.
3. Regulation of immunity.
4. Protection of cells and organs attacked by bacteria.
5. Anti-symptomatic action.

Now go to page 12 of the Therapy Planner.

If you decide to use the Buhner Lyme Protocol, choose herbs from the **“Buhner Lyme Protocol”**. Remember that you cannot choose a single herb. You have to apply the whole set to achieve the full effect.

In his protocol for Chlamydia, Buhner suggests a mixture of herbs: Ashwagandha, Cordyceps and Licorice. You can either mix the 3 single tinctures in the right proportions and use the herbs according to Buhner's guidelines or use the ready-made ACL Herbal Mix tincture which is a combination of these three herbs. If you decide to use the ACL Herbal Mix tincture, mark the herbs included in the tincture in the Planner, i.e. Ashwagandha, Cordyceps and Licorice.

Remember to use the table on page 20 on the Therapy Planner to check if there any herbs overlapping with the ones you have already introduced. Do not duplicate herbs. If you are using the Buhner protocol for Lyme disease and want to introduce herbs for Chlamydia, note that Chinese skullcap and Salvia miltiorrhiza are included in both the Chlamydia and the Borrelia protocols. You are not duplicating the dosage of these herbs. The dosage you use in case of Lyme disease should be considered common for Borrelia and Chlamydia. Use the table if you are struggling with a complex infection, and compare whether the Chlamydia herbs might be overlapping with those for other coinfections. As we mentioned earlier, the table will allow you to plan your therapy effectively.

If you have decided to treat yourself with Researched Nutritionals® products for Chlamydia, only enter those products that do not overlap with Lyme products, in this case you would only need to add AO Defense and Messenger N°1 (see the table on page 23 in the Planner). Do not duplicate preparations. Using the tab in the **“Researched Nutritionals® Protocol”** category, select only what you have decided to add to the therapy.

On page 32 of the Planner, you will find a detailed description of the Researched Nutritional<sup>®</sup> Protocol.

If you decide to mix the protocols and use the Buhner protocol for Lyme disease and the Researched Nutritional<sup>®</sup> protocol for Chlamydia, then select all products in the “Researched Nutritional<sup>®</sup> Protocol” category on the card.

You can also use the card to categorize herbs depending on the symptoms. You can supplement your therapy with additional herbs for a given symptom. The principle of selection is the same as described above for Lyme disease. Just note that some herbs for Chlamydia symptoms overlap with those for Lyme symptoms. Analyze the sets on the cards and if you decide on something, mark it on the card.

- **EHRlichia /ANAPLASMA – herbs and supplements** – pages 13-14 in the Planner

Ehrlichia is a gram-negative intracellular bacterium that usually attacks white blood cells, i.e., the leukocytes. Diseases caused by Ehrlichia are named after the type of leukocytes which they attack – human granulocytic ehrlichiosis and human monocytic ehrlichiosis.

Anaplasma is an intracellular pathogenic microorganism that attacks white blood cells, mainly polynuclear granulocytes (neutrophils, neutrophils).

The most common symptoms of Ehrlichiosis are flu-like symptoms, i.e., fever above 38°C, headache, muscle and joint pain, upper airway inflammation, cough, but also muscle and joint pain, malaise, thrombocytopenia, leukopenia, hyponatremia - low blood sodium, nausea and vomiting, systolic heart murmurs, enlarged liver and/or spleen, swollen lymph nodes, as well as mild skin lesions – maculopapular rashes.

Anaplasma causes similar symptoms to Ehrlichia. In addition, it can also cause gastrointestinal symptoms, such as diarrhea.

The herbal protocol for both of these infections is the same and due to this reason they were included together.

There are characteristic changes in morphology during both Ehrlichia and Anaplasma infections. As the disease progresses, the level of white blood cells (leukopenia) decreases, the level of thrombocytes (thrombocytopenia) decreases, and indicators of liver function such as AST and ALT increases.

**Important information about the mechanism of Ehrlichia, which should be considered when planning therapy:**

Ehrlichia virus attacks multinucleated blood leukocytes, hence the main site of its existence in an infected organism are neutrophils (also called neutrophil granulocytes or neutrocytes). The bacterium penetrates the cells, creating a vacuole, within which it receives nutrients from the host cells. The infection affects not only circulating blood leukocytes, but also the bone marrow, in which

some patients may develop granuloma-like changes. Ehrlichia owes its ability to survive inside the host cells to impairing the normal functioning of neutrophils, and thus each stage of the phagocytosis and microbial destruction process. Neutrophils represent the most numerous group of leukocytes. On the other hand, leukocytes are cells of the immune system. You can also see how Ehrlichia uses our own immune system to find shelter from its attack. It does this not only by hiding in immune cells, but also by impairing their functions. Furthermore, Ehrlichia inhibits the production of interleukin-2 in the spleen, contributes to an increase in the production of interleukin 4 and reduces the production of interferon gamma.

Ehrlichia has a negative impact on the functioning of organs such as the spleen, liver, bone marrow or the lymphatic system.

Let us not forget about its negative implications of inducing cytokine cascades. The induction cytokine cascades facilitates the infection process and bacteria's ability to obtain nutrients from the host cells. Therefore, the cytokine cascade must be inhibited to disrupt the Ehrlichia infection process.

The therapy plan should include:

1. Antimicrobial activity.
2. Disruption of the cytokine cascade.
3. Regulation of immunity.
4. Protection of cells and organs attacked by bacteria.
5. Anti-symptomatic action.

Now go to page 13 of the Therapy Planner.

If you decide to use the Buhner Protocol, choose herbs from the **"Buhner Lyme Protocol"**. Remember that you cannot choose a single herb. You have to apply the whole set to achieve the full effect.

Buhner in his Protokoll for Ehrlichia / Anaplasma uses as many as three herbal mixtures:

The first mixture contains two herbs: *Houttuynia cordata* and *Salvia miltiorrhiza*.

The second mixture contains three herbs: Chinese skullcap, Kudzu and Cordyceps.

The third mixture contains three herbs: Angelica, Licorice and Astragalus.

You can either mix the above herbs in the right proportions and use them according to Buhner's guidelines, or use ready-made herbal mixtures in the form of tinctures:

HS Herbal Mix contains macerate made of *Houttuynia cordata* herb and *Salvia miltiorrhiza* root (Red sage).

CKC Herbal Mix contains macerate made from Chinese skullcap root (*Scutellaria baicalensis*), Kudzu root (Lat. *Pueraria Lobata*) and *Cordyceps* (Lat. *Cordyceps sinensis*).

ALA Herbal Mix contains macerate made of *Angelica sinensis* root, Licorice root (Lat. *Glycyrrhizae glabra*) and *Astragalus* root (*Astragalus membranaceus*).

If you decide to use the HS Herbal Mix, CKC Herbal Mix and AHI Herbal Mix tinctures, in the Therapy Planner, select the herbs included in these three tinctures: *Houttuynia cordata*, *Salvia miltiorrhiza*, Chinese skullcap, Kudzu, *Cordyceps*, *Angelica sinensis*, Licorice and *Astragalus*.

Remember to use the table on page 22 in the Therapy Planner to check if there are any herbs overlapping with others which you have already introduced. Do not duplicate herbs. If you are using the Buhner protocol for Lyme disease and want to introduce herbs for Ehrlichia, note that Chinese skullcap and *Salvia miltiorrhiza* are included in both the Ehrlichia and the *Borrelia* protocols. You are not duplicating the dosage of these herbs. The dosage you use in the case of Lyme disease is common to *Borrelia* and Ehrlichia. Use the table if you are struggling with a complex infection, and compare whether the herbs for Ehrlichia might be overlapping with those for other coinfections. For example, almost all herbs for Ehrlichia coincide with herbs for *Rickettsia*. As mentioned earlier, the table will allow you to plan your therapy effectively.

If you have decided to use Researched Nutritionals® products, then in the case of Ehrlichia, note (see table on page 23 in the Planner) that the products for Ehrlichia overlap with those for Lyme disease. Do not duplicate preparations. If you decide to mix the protocols and use the Buhner protocol for Lyme disease and the Researched Nutritionals® protocol for Ehrlichia, then select the products in the “**Researched Nutritionals® Protocol**” category on the card.

You can also use the card to categorize herbs depending on the symptoms. You can supplement your therapy with additional herbs for a given symptom. The principle of selection is the same as described above for Lyme disease. Just note that some of the herbs for Ehrlichia symptoms overlap with those for Lyme symptoms. Analyze the sets on the cards and if you decide on something, mark it on the card.

- **MYCOPLASMA – herbs and supplements** – pages 15-16 in the Planner

Mycoplasma is a very small bacterium closely related to the group of gram-positive bacteria. However, its evolution has led to a significant reduction in the size of its genome, removed the cell wall and, as a consequence, created a unique form of microorganism. Its outermost part bordering on the external environment is the cytoplasmic membrane. The absence of a cell wall allows the mycoplasma to be more flexible and therefore to assume different shapes. The lack of a cell wall distinguishes it from other tick-borne coinfections.

Mycoplasma mainly causes infections of the respiratory and genitourinary systems. However, it is increasingly believed that it can cause systemic infections, affecting every organ and causing many



chronic diseases, including rheumatoid arthritis. The course of disease may vary significantly: from asymptomatic, through local symptoms (e.g., respiratory tract infections), to systemic infections. In an organism weakened due to another infection (e.g., *Borrelia* or chlamydia), mycoplasma infection can cause severe symptoms. In such case, it can attack the nervous system, the muscles (including the heart), and the joints. The symptoms of infection with this pathogen are very similar to those of Lyme disease.

Disseminated infection can manifest in the following ways: fatigue that does not subside after rest, exercise intolerance, neurological dysfunctions, mental problems, cognitive problems, insomnia, depression, headaches, muscle and joint pain, joint swelling, lymph node pain, breathing problems, sweating, nausea, abdominal pain, fever, chronic conjunctivitis, skin changes (rashes, erythema), inflammation of the heart muscle, pericardium, liver, pancreas and other symptoms.

**Important information about the mechanism of Mycoplasma, which should be considered when planning therapy:**

Mycoplasma is destructive to the human organism through:

- mimicking the antigens of the infected organism, causing symptoms of autoaggression,
- competition for nutrients with the body's cells,
- disturbance of metabolism,
- stimulating the release of reactive oxygen and initiating the cascade of nitric oxide/peroxynitrite reactions, leading to cell damage, especially of the nerve cells,
- oxidation and destruction of cell membranes, mainly those of the nerve cells and mitochondria,
- induction of the cytokine cascade,
- release of toxins.

The therapy plan should include:

1. Antimicrobial activity.
2. Supplementing the nutrients that were “used up” during the infection.
3. Disruption of the cytokine cascade.
4. Regulation of immunity.
5. Protection of cells and organs attacked by bacteria.
6. Anti-systemic action.

Now go to page 15 of the Therapy Planner.

If you decide to use the Buhner Lyme Protocol, choose herbs from the **“Buhner Lyme Protocol”**. Remember that you cannot choose a single herb. You have to apply the whole set to achieve the full effect.

In the Protocol for Mycoplasma, Buhner recommends, among others, a mixture of herbs: Siberian ginseng (Eleuthero), Rhodiola rosea and Schisandra chinensis. You can either mix the 3 individual tinctures in the right proportions and use the herbs according to Buhner's guidelines, or use the ready-made ERS Herbal Mix tincture, which is a combination of these three herbs. If you decide to use the ERS Herbal Mix tincture, in the Therapy Planner, select the herbs included in this tincture, i.e. Siberian ginseng, Rhodiola rosea and Schisandra chinensis.

Remember to use the table on page 22 in the Therapy Planner to check if there are any herbs overlapping with others which you have already introduced. Do not duplicate herbs. If you are using the Buhner protocol for Lyme disease and want to introduce herbs for Mycoplasma, please note that Chinese skullcap is included in both the Mycoplasma and the Borrelia protocols. You are not duplicating the dosage of these herbs. The dosage you use in the case of Lyme disease should be considered common in Borrelia and Mycoplasma. Use the table if you are struggling with a complex infection, and compare whether the herbs for Mycoplasma might be overlapping with those for other coinfections. As an example, a large group of herbs overlap with the herbs for Bartonella. As we mentioned earlier, the table will allow you to plan your therapy effectively.

Note that there is an additional category **“Alternatives”** on the card. A very effective preparation for Mycoplasma is “Myco” by Raintree. “Myco” is a synergistic composition of seven herbs from the Amazon forests. It proves quite effective for many people. That said, it must be combined with a probiotic. To increase its effectiveness, add olive leaf extract and take care of the deficiencies caused by mycoplasma.

If you decided to use Researched Nutritionals® products in case of Mycoplasma, be sure to include those products that do not overlap with Lyme products; in this case, only AO Defense and Messenger N°1 should be added (see table on page 23 in Therapy Planner). Do not duplicate preparations. On the tab in the **“Researched Nutritionals® Protocol”** category, select only what you have decided to add to the therapy.

If you decide to mix the protocols and use the Buhner protocol for Lyme disease and the Researched Nutritionals® protocol for Mycoplasma, then select all products in the category **“Researched Nutritionals Protocol®”** on the card.

You can also use the card to categorize herbs depending on the symptoms. You can supplement your therapy with additional herbs for a given symptom. The principle of selection is the same as described above for Lyme disease. Just note that some herbs for the symptoms of Mycoplasma coincide with those for the symptoms of Lyme disease. Analyze the sets on the cards and if you decide on something, mark it on the card.

- **RICKETTSIA – herbs and supplements** - page 17 in the Planner

Rickettsia is a Gram-negative bacterium. Due to some atypical features, Rickettsia has long been regarded as a virus, and even more so, as an intermediate life form, something between viruses and bacteria.

Symptoms induced by Rickettsia can vary significantly - from mild flu-like symptoms with a slightly elevated temperature, to a significantly elevated temperature and septic shock. Varieties of the Rickettsia bacteria cause the so-called spotted fever group. Not all types of Rickettsia spotted fever cause a rash. In some cases, it may be mild, even imperceptible. The rash may appear on the soles of the feet and the palms. Many Rickettsia bacteria form a skin lesion called a scab - a non-healing, crusted wound that is formed at the site of a tick bite. This is one of the first symptoms that may suggest infection with Rickettsia. They also often exhibit non-specific symptoms such as headaches or general malaise, and in some cases nausea and vomiting.

Rickettsia also causes stagnation of the blood system and contributes to thickening of the blood, causing inflammation of the blood vessels and blotchy and mottled skin. Infection with this bacterium can also cause red eyes. Rickettsia can contribute to musculoskeletal pain, numbness, tingling, pain, and a burning sensation in the muscles. Swelling may also be a symptom of an infection.

**Important information about the mechanism of Rickettsia, which should be considered when planning therapy:**

Rickettsia is an intracellular bacterium that attacks the endothelial cells of the blood vessels. Bacterial infection of vascular endothelial cells initiates a very specific cascade of cytokines, which causes inflammation in the vascular system. As a result, the infected organs are damaged, and the permeability of the vessels increases, resulting in edema, hypotension and hypoalbuminemia. This leads to damage to vascular integrity and loss of barrier function which can cause disseminated intravascular coagulation. However, disseminated intravascular coagulation is very rare.

Rickettsia modulates the immune system, but compared to other tick-borne infections, it does so in a much more subtle way. This bacterium significantly affects the production of the p38 and IL-17 MAP kinase and the expression of IFN- $\beta$ .

The therapy plan should include:

1. Protection of endothelial cells and their short-circuit currents.
2. Modulations of the cytokine cascade.
3. Application of adaptogens of the immune system.
4. Inhibition of the p38 and IL-17 MAP kinase.
5. Increasing the expression of IFN- $\beta$ .

6. Increasing the level of glutathione in the body.

Now go to page 17 of the Therapy Planner.

If you decide to use the Buhner Lyme Protocol, choose herbs from the “**Buhner Lyme Protocol**”. Remember that you cannot choose a single herb. You have to apply the whole set to achieve the full effect.

Remember to use the table on page 22 in the Therapy Planner to check if there are any herbs overlapping with others which you have already introduced. Do not duplicate herbs. If you are using the Buhner protocol for Lyme disease and want to introduce herbs to Rickettsia then note that Chinese skullcap and Salvia miltiorrhiza are included in both the Rickettsia and Lyme disease protocol. You are not duplicating the dosage of these herbs. The dosage you use in case of Lyme disease should be considered common in Borrelia and Rickettsia. Use the table if you are struggling with a complex infection, compare the herbs for Rickettsia to check if they might be overlapping with those for other coinfections. For example, almost all herbs for Rickettsia are overlapping with herbs for Ehrlichia. As we mentioned earlier, the table will allow you to plan your therapy effectively.

If you have decided to use Researched Nutritionals® products, then in the case of Rickettsia, please note (see table on page 23 in the Therapy Planner) that the Rickettsia products overlap with those for Lyme disease. Do not duplicate preparations. If you decide to mix protocols and use the Buhner protocol for Lyme disease and the Researched Nutritionals® protocol for Rickettsia, check the products in the “**Researched Nutritionals® Protocol**” category on the card.

You can also use the card to categorize herbs depending on the symptoms. You can supplement your therapy with additional herbs for a given symptom. The principle of selection is the same as described above for Lyme disease. Just note that some herbs for the symptoms of Rickettsia are the same as those for the symptoms of Lyme disease. Analyze the sets on the cards and if you decide on something, mark it on the card.

- **YERSINIA – herbs and supplements** – page 18 in the Planner

Yersinia is a Gram-negative bacterium that lives in the digestive tract. The bacteria invade the intestines and causes diarrhea, vomiting, abdominal pain, and fever. Yersinia can cause pain in the right side of the abdomen that can be mistaken for appendicitis. Chronic infection with Yersinia contributes to arthralgia.

Now go to page 18 of the Therapy Planner.

If you decide to use the Buhner Lyme Protocol, choose the herbs from the “**Buhner Lyme Protocol**”. Remember that you cannot pick a single herb. You have to apply the whole set to achieve the full effect.

Remember to use the table on page 22 in the Therapy Planner to check if there are any herbs overlapping with others which you have already introduced. Do not duplicate herbs. The herbs for Yersinia do not overlap with the herbs for Lyme disease. If you choose herbs from the Buhner Lyme



protocol, select all products in the category “Buhner Lyme protocol” on the card with herbs for Yersinia.

If you have decided to use Researched Nutritionals® products, in the case of Yersinia, please note (see the table on page 23 in the Therapy Planner) that the products for Yersinia coincide with those for Lyme disease and you only need to include the CoreBiotic product in the protocol. Do not duplicate preparations. If you decide to mix the protocols and use the Buhner protocol for Lyme disease and the Researched Nutritionals® protocol in the Yersinia tab, select the products in the **“Researched Nutritionals® Protocol”** category on the card.

## CHAPTER II – ADDITIONAL RECOMMENDATIONS

Apart from applying herbal protocols that have antimicrobial effect, boost immunity, reduce inflammation and protect tissues and organs, we recommend introducing an additional intervention to comprehensively improve your health.

Do not forget to:

1. Improve intestine health to strengthen immunity.
2. Perform body detoxification.
3. Follow a diet.
4. Increase physical activity.
5. Reduce stress levels and take care of a good night's sleep.

If you take a holistic approach to therapy, you will notice the effects sooner and they will be long-lasting. Lyme disease and its accompanying infections have caused disturbances at many levels in your body. You have to give your body time and chance to not only fight the infection but also to regenerate and return to health.

### HOW TO TAKE CARE OF YOUR INTESTINES?

The intestines not only play a key role in providing the body with nutrients from food but they also are the key to a healthy immune system. The intestines are populated by microbiota, i.e. beneficial microorganisms (mainly bacteria). The gut microbiota activates the immune system and coordinates its work throughout life, while a dense network of nerve cells transmits signals about any threat to the headquarters, i.e. the brain. Almost 80% of immune bodies are formed in the intestines.

Many people suffering from Lyme disease complain of various intestinal complaints such as: diarrhoea, chronic constipation, change of stool consistency (loose, watery stool or stool with mucus, blood), heartburn, nausea, abdominal pain, flatulence, gas, a feeling of overflowing in the stomach. It is also important to check whether these symptoms were present long before the infection. Some

people already have gastrointestinal problems since childhood. In this case the dysfunction of the digestive system began long before the Lyme disease. Others have enjoyed a good functioning digestive system all their lives until they developed the disease. So note that Lyme disease is both a result of and a cause of immune weakness.

To improve bowel function, introduce to your therapy:

- Probiotics
- L-glutamine
- Sodium butyrate
- Omega acids (DHA and EPA)
- Digestive enzymes
- Borage oil as a source of gamma-linolenic acid

## PROBIOTICS

Probiotics are live microorganisms that, when taken in the right doses, are beneficial to health. Probiotic bacteria compete with pathogens for space in the intestines, thus maintaining the correct composition of the entire microbiota. This promotes the maintenance of a normal level of resistance of the mucous membranes and, consequently, supports the overall immunity of the body.

One of the best probiotics available on the market that caught our attention are the Lactibiane probiotics by PiLeJe. The PiLeJe laboratory carried out numerous tests over a period of 20 years on the basis of which the strains have been selected (these strains are deposited in the National Collection of Microbial Cultures at the Pasteur Institute in Lille, France) according to specific characteristics and needs.

For the general restoration of the gut microbiota it is important that the probiotic contains bacteria from the *Bifidobacterium* and *Lactobacillus* group. Lactibiane Reference probiotic contains the aforementioned strains and helps to regulate gastrointestinal disorders and to strengthen the intestinal flora of the gastrointestinal tract.

If inflammatory bowel disease occurs, it is worth introducing the stronger Lactibiane IKI probiotic for 3 months.

If you have identified problems with candidiasis caused by *Candida*, remember to introduce a strain of *Lactobacillus helveticus*. *Lactobacillus helveticus* strains have been proven to inhibit the multiplication of *Candida* yeasts and their adhesion to the intestinal epithelium. They also reduce the secretion of mucus by *Candida* cells which makes them less resistant. Probiotic bacteria also have a beneficial effect on the immune system, supporting the defence mechanisms. The probiotic containing the *Lactobacillus helveticus* strain is Lactibiane CND10.

If your problem is diarrhoea or loose stools, make sure you take a probiotic containing a strain of *Saccharomyces boulardii*. *Saccharomyces boulardii* is beneficial yeast and not a bacteria like other probiotics.

## **L-GLUTAMINE**

L-Glutamine is an amino acid that provides energy to the small intestinal mucosa. If mucosal cells are damaged, glutamine can help to rebuild them with new healthy cells. It also has immune-boosting properties.

NOTE: L-glutamine should not be used by people with inflammatory bowel diseases such as ulcerative colitis or Crohn's disease or by people with impaired liver function.

Start with 1000 mg twice a day before meals. You can gradually increase the dose. The recommended daily dose is 5-15 g. You should only take a dose of 15 g of glutamine under medical supervision.

## **SODIUM BUTYRATE**

Sodium butyrate is a short-chain fatty acid. Short-chain fatty acids are the main substances that nourish the intestinal epithelium. They help to maintain the intestinal barrier and reduce inflammatory processes within the intestines and throughout the body. It strongly inhibits the secretion of pro-inflammatory interleukins and takes part in immunoregulation.

However, the recommended dose is a capsule twice a day.

## **OMEGA ACIDS**

OMEGA 3 fatty acids, which include DHA and EPA, are key to staying healthy. EPA is a natural anti-inflammatory acid and also helps to relieve joint and muscle pain. Studies show that taking omega 3 fatty acids together with probiotics strengthens the intestinal mucosa.

## **DIGESTIVE ENZYMES**

Digestive enzymes break down food components into the smaller molecules of which they are composed: proteins into amino acids, complex carbohydrates into simple sugars and fats into free fatty acids. The *Borrelia* bacterium reduces the secretion of digestive enzymes. If your problem is gas, flatulence, belching, heartburn or diarrhoea, it is worth using preparations containing digestive enzymes.

## **FIBRE**

Fibre is necessary for the gut microbiota to gain energy. A by-product of fibre metabolism is short-chain fatty acids. A fibre-rich diet increases the diversity of the intestinal microbiota. Fiber functions

as prebiotics, i.e. substances that are necessary for stimulating the growth of probiotic bacteria in the intestines. Prebiotics include resistant starch, inulin and fructooligosaccharides.

The sources of resistant starch include lentils, rice, groats, beans, raw oatmeal, potatoes, sweet potatoes and unripe bananas.

The sources of inulin include chicory, Jerusalem artichoke, asparagus, artichokes, leek, onion and garlic. Inulin, apart from its prebiotic properties, improves the absorption of calcium and magnesium.

The sources of fructooligosaccharides include onions, garlic and artichoke.

The recommended amount of dietary fibre for healthy people is 20-40 g.

If you are unable to get enough fibre into your diet, you can support yourself with supplementation with inulin or fructooligosaccharides.

## **BORAGE OIL**

Borage oil is a rich source of gamma-linolenic acid. It has a protective and regenerative effect on the intestines and the entire digestive system. It exhibits anti-inflammatory effects.

## **WHEN TO START STRENGTHENING THE GUT?**

The aforementioned intestinal reconstruction regimen should be started at the beginning of the Lyme disease treatment and continued throughout the therapy. After the therapy, continue to take care of the good condition of your intestines. Try to maintain a fibre-rich diet. Limit processed food as well as sweets. Eat plenty of vegetables, fruit, cereals and oil. Try to replace wheat with rye, buckwheat, spelt, ancient grains and if gluten makes you uncomfortable, exclude it from your diet. Drinking long boiled broths is also very beneficial for the intestines. Use once a year (or more often if you need to) a booster 3-month probiotic treatment. Try to consume food rich in natural probiotics as often as possible e.g. pickled vegetables, juices from pickled vegetables (e.g. pickled beetroot juice), kombucha. Try to provide your body with omega 3 fatty acids as a regular part of your diet, e.g. in the form of cold-pressed oils such as linseed oil or camelina oil. If you are not able to provide oils in your diet then use supplements.

## **DETOXIFICATION AND CHELATION**

The body is loaded with many external and internal toxins. Toxins come from the environment, the food we eat, the air we breathe, the drugs we take. We are also loaded with internal toxins produced by the body which are a side effect of metabolic processes. Our body is naturally programmed to remove toxins. Unfortunately, very often, the detoxification system is overloaded and can be weakened. Thus, the natural detoxification processes start to work less efficiently. People suffering from Lyme disease are sensitive to this type of strain.

Many people choose to do detoxification or chelation therapy. You can use gentler methods that will support the detoxification process during therapy or you can use intensive chelation therapy. If you decide to do chelation therapy, you should first be tested for the presence of heavy metals. Chelation is a long process. For many people it is very effective, but for some it can be difficult to go through. Read the information below.

#### How to support detoxification of the body during therapy in a gentle manner?

We recommend to support the detoxification process during therapy with products of natural origin. Many people feel very well when using the following products together with herbs for Lyme disease.

Nutramedix has very effective products in this scope:

**Burbur** by Nutramedix is an extract made from the leaves of *Desmodium molliculum*. The herb is traditionally used to cleanse the body. It is very effective in supporting detoxification of the liver, kidneys, lymphatic system and cellular matrix. It protects the liver from external toxins such as certain chemicals and toxic moulds. It also alleviates the Herx response, the disordered effects of pathogen die-offs.

**Burbur-Pinella** by Nutramedix is a combination of two extracts: Burbur - derived from *Desmodium molliculum* and Pinella derived from *Pimpinella anisum*. Burbur-Pinella supports detoxification of the brain and central nervous system, cleanses the body of toxins and biotoxins, detoxifies the liver, kidneys, lymphatic system and intercellular spaces, purifies the blood. It eliminates toxins from the brain, the spine and the peripheral nervous system. Burbur-Pinella is also effective in reducing Herx reactions.

**Parsley Detox** by Nutramedix is an extract of parsley leaves (Latin: *Petroselinum crispum*). It cleanses the body of toxins and biotoxins, detoxifies the liver, kidneys, lymphatic system and intercellular spaces, purifies the blood. Parsley Detox is also effective in reducing Herx reactions. Moreover, it supplements deficiencies of calcium, iron, thiamin, riboflavin, carotenes, vitamin A and vitamin C.

**Sealantro Metal Detox** by Nutramedix is a unique blend of extracts from three plants: chlorella, *Chondracanthus chamissoi* seaweed and coriander leaves. It helps to detoxify the body from heavy metals, various biotoxins and many other toxic substances.

**Sparga Sulphur Detox** by Nutramedix is an extract of asparagus root. It helps to remove sulfa drugs and other sulfonamide-based drugs that block the body's sulphate pathways and glutathione toxin conjugation pathways.

In addition, introduce:

**Supplementation with minerals used in the detoxification reaction**, namely: magnesium, zinc and copper.

**Supporting elimination of toxins and detoxification of the liver:** glutathione, milk thistle extract, NAC, phosphatidylcholine.

Glutathione is a key substance protecting cells from the toxic effects of free radicals formed as toxic metabolites during natural intracellular metabolism as well as those entering with toxins from outside. If glutathione levels in the body decline, the body's overall ability to detoxify itself is significantly reduced.

The production of glutathione is supported by NAC, so it is worth using these two products together.

If you have the opportunity to use an infrared sauna then this would be a great addition. Sweating is one of the most natural ways to eliminate toxins, making it an essential part of the detoxification process.

## CHELATATION

Chelation is performed in the case of heavy metal poisoning. When we write about heavy metal poisoning, we mean chronic poisoning, not acute poisoning, or more precisely, chronic loading of the body with low doses of heavy metals.

Heavy metal load refers mainly to mercury, lead, arsenic, cadmium, nickel and aluminium. Mercury, lead and cadmium are not fully metabolised and are not fully removed from the body through digestion and if they accumulate they can damage health in various ways. Their impact on our health depends on many factors: the general load of the body with toxins, the body's detoxification capacity, the state of the immune system, diet, coexisting chronic diseases and inflammatory conditions.

Dr Andrew Cutler describes the exact chelation process and once you have a detailed understanding of his protocol it is easy to put it into practice.

Dr Cutler combines DMSA and alpha lipoic acid (ALA) in the chelation process.

Two chelating substances are known and have a high degree of safety for health: DMSA and alpha lipoic acid (ALA). Both of these substances have the ability to bind heavy metals. DMSA binds mainly mercury, lead, cadmium, arsenic and arsenic. Alpha lipoic acid primarily binds mercury and arsenic.

DMSA does not penetrate the blood-brain barrier, whereas ALA can do it. Therefore, according to Dr Cutler, the removal of mercury from the brain can only be performed with ALA and is recognised as the main chelator. However, it is important to start the chelation process with the administration of DMSA only, in order to get rid of the mercury from the various tissues of the body, before starting to remove it from the brain with ALA. Remember that alpha lipoic acid, due to its property of passing through the blood-brain barrier, can carry mercury in both directions (depending on the concentration gradient). If mercury levels in the blood were higher than in the brain, the mercury would enter the brain instead of being removed from it. Therefore, as a first step, it is necessary to lower the blood mercury level with DMSA alone before starting the chelation with ALA.

Before performing chelation, read Dr Andrew Cutler's publication carefully. It is very important to carry it out correctly. We will present only a general outline of the idea of chelation to draw your attention to important aspects.



Chelation is performed in cycles. For example, 3-4 days of chelation and 4 days of break. In the case of people whose bodies have slower mechanisms of removing heavy metals or are very exhausted, a cycle of 4 days of chelation and 10 days of break works better. Cutler also mentions longer chelation cycles of 7, 14 or even 21 days, but the procedure with administration of the chelator for 4 days and then 4 days of break is the most typical.

The second important aspect you need to bear in mind is the interval between doses. Here you have to stick rigidly to the rules. The preparations have a half-life in the body and must be taken every 3 hours. You cannot increase the intervals between doses because the preparations have a half-life in the body and after about 3 hours they start to break down and release heavy metals. This is prevented by administering successive doses at suitable intervals, thus maintaining their correct concentration in the plasma and lymph. Without following this principle, mercury will redistribute throughout the tissues and symptoms will worsen.

Another rule to follow is the order of inclusion of chelation preparations. As we mentioned above in the first stage you should lower the level of mercury in the blood with DMSA alone, before you start the chelation stage with ALA. In practice, the first 2-4 cycles (with high mercury load even longer) use only DMSA. For subsequent cycles add ALA and use them together.

You can also use a modification. After 4 or 7 days (depending on which cycle you chose) of taking both chelators, on the last day of a given chelation cycle, first stop taking ALA, but take 2-3 more doses of DMSA. DMSA removes any residual mercury present in the blood, released by ALA from the brain and other tissues. This will help to reduce any symptoms accompanying the start of the break.

The doses of DMSA and ALA are set individually. Read the full protocol to choose the right dose of chelators.

The break between chelation cycles is very important and must not be shortened. Stick to the rules given.

Chelation cycles should be repeated many times, from several to even dozens of times. They should be continued for at least 3 months after the symptoms have disappeared. Cutler considers chelation therapy to be complete if no symptoms return 6 months after its completion.

## **WHEN WILL I START TO FEEL BETTER?**

Don't expect a quick cure. Pay attention to how you feel from week to week and month to month. When you notice that your symptoms are subsiding, that you are having more good days than bad, it means you are on the right track to recovery.

However, you must remember that for many Lyme disease patients the healing process will be like a sinusoid. Everything can go your way, you may feel better day by day until suddenly your symptoms return. There will be times when you feel more energetic. Other days it will be difficult to get out of bed and you will barely be able to function. You will find this frustrating, discouraging and irritating. Don't be discouraged. This is the nature of this disease. Watch your body. This may be related to your

body's response to the Herx reaction. If the worsening of the symptoms has not gone away after using Herx remedies then observe if some other factor has caused the worsening of your mood. It can be stress, lack of sleep, change in lifestyle or diet (coffee, sweets, dairy products, gluten etc.), introduction of a new preparation to the therapy. Such observations are important. That's what you have the Therapy Planner for, to record the changes you observe.

### **CAN THE BORRELIA BE COMPLETELY ELIMINATED FROM THE BODY?**

Unfortunately, there is no treatment that will guarantee you a 100% cure for Lyme disease. The *Borrelia* bacterium is a "master of camouflage." Not only is it able to imitate various diseases, but it is also very hard to diagnose. There is no perfect diagnostic test indicating what the real level of the bacteria is in the body and whether all and every single bacterial cell has been eliminated from the body. Serological tests such as Western Blot or ELISA, which are performed by most patients, are tests for antibodies produced by our body in response to infection. The amount of antibodies does not equal the amount of bacteria in the body. It does not even equal the severity of the infection. If your immune system is very weakened and has trouble producing antibodies then you can have low test results but very advanced symptoms and a very high bacterial load. There are people with chronic Lyme disease, suffering from a range of symptoms and having negative serological test results.

Sometimes, after a prolonged antibiotic or herbal therapy, you take a break and the symptoms return. Some call this post-Lyme disease syndrome, others say another infection or untreated infection. Should this mean a lifelong battle with Lyme disease for you? Do you have to be doomed to this disease all your life? There is no clear answer to this question confirmed by reliable research. One thing is certain. You can have Lyme spirochetes in your body and they will remain after the therapy is finished but the disease does not have to reactivate. It is the state of your immune system that will determine whether you will get Lyme disease under control or whether Lyme disease will take over again. You have to realise that the end of therapy is not the end of the fight. You have to keep your finger on the pulse because no test can tell you if you eradicated the bacteria in 100%. No therapy can guarantee that after a year you would not have a single living bacterial cell in your body. Even though you already feel well and your symptoms have subsided, you need to continue to take care of the state of your immune system after the therapy has finished so that your quality of life is at the highest possible level. Even if you have single, dormant bacterial cells in your body, with proper care they will not "dare" to attack again and a strong body will "knock out" the remaining bacteria.

By using herbal therapies throughout your battle with Lyme disease, you are not only fighting the bacteria, but also rebuilding and regulating your immune system. Once your therapy is complete, try to keep it in good shape. This could be your key to success.

## CHAPTER III - WHAT ELSE YOU SHOULD REMEMBER?

### HERX REACTION

The Herxheimer reaction or so-called Herx reaction is a temporary worsening of the symptoms of Lyme disease that occurs during the massive die-off of bacterial organisms as the disease progresses or is treated. During this reaction there is a production of cytokines that cause symptoms of inflammation, including fever, joint and muscle pain, headache, cognitive impairment or general malaise. Herx reaction does not appear in every patient. However, if you are suffering from a Herx reaction or would like to prevent it, you can use the following list of natural methods for counteracting the reaction. Remember do not use all of these products at once. Try out what works best for you.

#### Natural products recommended for Herx reaction and its prevention:

**Burbur** by Nutramedix is an extract made from the leaves of *Desmodium molliculum*. The herb is traditionally used to cleanse the body. It is very effective in supporting detoxification of the liver, kidneys, lymphatic system and cellular matrix. It protects the liver from external toxins such as certain chemicals and toxic moulds. It mitigates Herx reaction, i.e. the adverse effects of pathogen die-offs. For Herx reaction, start with 10 drops in 30ml of water twice a day. After dropping in the water, wait 1 minute and then drink. You can then increase the dose as needed to 10-15 drops in 30 ml every 30 minutes.

**Burbur-Pinella** by Nutramedix is a combination of two extracts: Burbur - derived from *Desmodium molliculum* and Pinella derived from *Pimpinella anisum*. Burbur-Pinella supports detoxification of the brain and central nervous system, it cleanses the body of toxins and biotoxins, it detoxifies the liver, kidneys, lymphatic system and intercellular spaces, it purifies the blood. It eliminates toxins from the brain, the spine and the peripheral nervous system. Burbur-Pinella is also effective in reducing Herx reactions.

**Zeolite** is a natural mineral of volcanic origin. Its main ingredient is clinoptilolite. Zeolite gives back valuable components to the body, while binding many harmful substances such as lead, cadmium, arsenic, chromium, nickel and ammonium ions. It is important to use high purity Zeolite designed for internal use. We recommend that you buy a certified product. You can find high quality zeolite at <https://www.zeolite-bentonite.com/>

For Herx reaction use 3 capsules 3 times a day or if you have the powder then 2 heaping teaspoons a day.

**Bentonite** has the property to attract and absorb toxins and heavy metals without entering into any chemical reactions in the body. Bentonite creates an "electrical charge" in its hydrated state. When it comes into contact with water it assumes a negative electrical charge. Toxins, bacteria, viruses, parasites and other impurities have a positive charge. When the clay enters the body, the toxins are attracted to it. What is extremely important is that bentonite is not absorbed into the body, so it is completely safe. It passes through the entire digestive system, absorbing toxins and heavy metals. At the same time, the minerals that are in the clay, such as calcium, magnesium, silicon, aluminium and potassium, are released and available for the body's metabolic processes. Finally, it is naturally excreted. You can find high-quality bentonite for internal use at <https://www.zeolite-bentonite.com/>

**Chlorella** has unique properties that neutralise toxic substances accumulated in the body as a result of environmental pollution or the consumption of contaminated products. It cleanses the body of heavy metals and some pesticides. Chlorella also absorbs toxins from the intestines, it helps get rid of chronic constipation and neutralises intestinal gas. Take 1 teaspoon 3 times a day

**Activated carbon** effectively absorbs toxins, which significantly accelerates their removal from the body. When using activated carbon, it is important to remember that it does not act selectively in the body, but binds everything without exception, including food substances and taken medications. Combining activated carbon with permanent medicines can contribute to absorption of the active substances of the medicine. Do not use activated charcoal in combination with medication. In Herx reaction it is recommended to take 2 capsules 1-2 times a day

**Alkalizing** - during a Herx reaction it helps to alkalize the body. In the course of the illness, the body acidification often occurs. This is an unfavourable process because enzymatic processes work best at a neutral pH (approx. 7.4). Therefore, if the body becomes acidic, it is worth shifting the acid-base balance and balancing the pH. A proven product is Alka-Seltzer (3-4 times a day 1 tablet dissolved in water). Other ways include taking vitamin C and drinking lemon-lime water. Drinking lemon-lime water can also be regarded as prevention. Lemon and lime juice, despite the fact that it tastes sour, is converted into alkali in the body, thus temporarily increasing the alkaline reserves.

**Epsom salt baths** are an excellent support in cleansing the body and restoring balance. These are so-called alkaline baths. They have deacidifying and detoxifying properties. The sulphates contained in Epsom salt help to rid the body of toxins and heavy metals.

**NOTE:** Use all strong binding substances such as zeolite, bentonite, chlorella and activated charcoal separately from medications and herbs you are taking. Keep an interval of at least 1.5 hours. We do not recommend using them for the entire treatment period. Use in the event of a Herx reaction.

## BIOFILM

Borrelia bacteria in unfavourable environmental conditions, in order to protect themselves against antibiotics or an immune system, are able to form aggregates and colonies in the form of the so-called biofilm. This is a form of bacterial resistance to unfavourable environmental conditions.

Biofilm are aggregates of microorganisms that serve to protect these pathogens from adverse environmental conditions. Microorganisms within the biofilm structure are immersed in an Extracellular polymeric substances (EPS) that maintains the biofilm structure. Biofilms are covered with a protective layer, consisting of a mixture of extracellular polymeric substances secreted by cells formed in the biological membrane. The biofilm adheres to human tissue where tissue damage and inflammation occur. Within the biofilm, bacteria can communicate with each other, multiply, transfer acquired resistance to antibiotics, and carry out vital processes such as metabolism, protein synthesis and DNA repair. Other species of adult microorganisms can also be present within the biofilm. The main factor enabling bacteria to form biofilms is the “quorum sensing” reaction. The quorum sensing phenomenon is a way for microorganisms to communicate with each other using special chemical compound molecules called autoinducers. The secretion of these molecules promotes biofilm formation. The ability to form a biofilm is one of the main strategies of Borrelia bacteria used for long-term, chronic infections.

Breaking up the biofilm is important, but it should not be broken up aggressively. Aggressive biofilm breakdown can cause rapid release of bacteria, bacterial fragments and biofilm fragments into the body, sometimes in large numbers. These fragments can also travel through the body and root in another part of the body and cause new health problems to arise.

Therefore, Borrelia biofilms should be broken down slowly, gradually leading to its elimination. There are many herbs and supplements available that effectively but gently break down the biofilm formed by Lyme spirochetes and inhibit quorum sensing. This will avoid the risk of biofilm fragments being released too rapidly into the body.

Especially at the beginning of the treatment, when the bacterial load is very high, we recommend using milder methods to break down the biofilm. Once the bacterial load has decreased, it is advisable to introduce enzymes to aid digestion and breakdown of the biofilm.

Some of the most effective plants for safe, gradual breakdown of biofilm include:

- Andrographis paniculata
- Japanese knotweed (Latin: Polygenum cuspidatum)
- Rhodiola spp.,
- Chinese skullcap (Latin: Scutellaria baicalensis)
- Apigenin
- N-acetylcysteine (NAC)

As you can see there are herbs from the Buhner Protocol. Adding N-acetylcysteine (NAC) to the protocol will aid biofilm removal, but will also enhance glutathione synthesis.

You can also include coconut oil in your diet. It contains a compound called monolaurin. Monolaurin prevents biofilm formation. You can try adding 1 tablespoon of oil twice a day to your food.

A more intensive action on the biofilm will be recommended when the bacterial load is lowered. Admittedly, opinions are divided on this subject. Some recommend applying proteolytic enzymes much earlier.

Enzymes to help digest and break down biofilm (do not use all at once, take some out):

Serrapeptase - an average dose of 40-60 thousand units per day, 30 min before a meal

Nattokinase - the average dose is 20,000 FU twice a day, 30 min before meals.

Lumbrokinase - 1 capsule 2 times a day, 30 min before a meal.

Dr Horowitz recommends combining the proteolytic enzyme with stevia and monolaurin.

## MITOCHONDRIA

Lyme disease can contribute to mitochondrial dysfunction. Mitochondria are the energy centers of the cell. Research shows that *Borrelia* can reduce the amount of mitochondria and also damage them. As a result, ATP production decreases which in turn reduces the energy. Mitochondrial dysfunction is a very common cause of chronic fatigue.

You can improve the functioning of mitochondria by taking the supplementation necessary for proper energy metabolism.

It is recommended to use:

**Coenzyme Q 10** (a key compound in the Krebs cycle) - You can start by taking 100 mg in the morning and 100 mg at noon. Taking Coenzyme Q10 in the evening may disturb sleep. If necessary, the dose can be increased. Stay with a dose that will make you feel a surge of energy. Some people take even 600 mg twice a day. Coenzyme Q10 is well tolerated. Higher doses may cause mild gastrointestinal discomfort.

**L-arginine** (supports the functioning of the mitochondria by influencing the nitric oxide pathway) - 1000 mg 3 times a day is recommended. Do not take it if you have an active form of herpes.

**Acetyl L-Carnitine** (transports fats to the mitochondria) - 500 mg 3 times a day.

**D-ribose** (serves as a fuel for energy production, but should not be used by people with metabolic syndrome and diabetes who have high levels of glycation) - use 1 scoop (5 grams) 2-3 times a day for 3-6 weeks. It is preferable to combine it with apple cider vinegar or magnesium in an effervescent form.

**NADH (nicotinamide adenine dinucleotide)** (it is part of the electron transport chain that produces energy) - 10 - 20 mg 2 times a day.

**Vitamin B6** (a cofactor of many energy-producing metabolic pathways) - start with 100 mg of vitamin B6 in the morning with breakfast. You can increase the dose to 200 mg per day (2 x



100 g). We do not recommend exceeding this dose. Vitamin B6 should be taken in such doses for a maximum of 90 days.

**Magnesium** (a cofactor for most energy-producing metabolic pathways) - start with 100 mg twice daily. The dose can be increased up to 200-400 mg up to 3 times a day. Use magnesium citrate or magnesium glycinate. Too much magnesium can cause loose stools or diarrhea. In this case, reduce the dose.

**Alpha-lipoic acid (ALA)** (a cofactor that works with enzymes to increase energy production) - 200-600 mg per day, in divided doses. Many people recommend taking alpha lipoic acid. Alpha-lipoic acid may help redistribute mercury. Due to this reason you need to be careful with this product if you have high levels of mercury in your body.

**Resveratrol** (can increase mitochondrial production) - you already have it on the Buhner protocol for Lyme disease. Japanese knotweed is a source of resveratrol.

**A good-quality set of multivitamins and minerals** (necessary for the proper course of many biochemical reactions in the body) - pay attention to the content of vitamin B6 in the vitamin complex and adjust the additional dose of vitamin B6 in order to not exceed the recommended intake indicated above.

#### **Omega 3 fatty acids**

All these products will improve the production of ATP and energy.

The products of the Researched Nutritionals® company are also very effective preparations. Researched Nutritionals® conducts advanced research on products and largely focuses on reconstruction of the mitochondria. In order to restore the proper functioning of the mitochondria it is recommended to take the following products:

**ATP Fuel**

**ATP 360<sup>0</sup>**

**NT Factor Energy<sup>TM</sup>**

These products have the following properties:

- contain a patented phospholipid matrix, which affects the proper functioning of mitochondrial membranes,
- support the Krebs cycle and mitochondrial mitogenesis,
- contain antioxidants that protect mitochondria against oxidative stress,
- contain nutrients such as NADH and CoQ10 which are important for a healthy electron transport chain.

For best effect, Researched Nutritionals® recommends to take all three products at the same time. They can also be used separately.

From our experience, the use of ATP Fuel or ATP 360<sup>0</sup> gives very good results.

## CHAPTER IV – SELECTING THE FORM OF HERBS

The choice of herbs used in your therapy is another dilemma for people who are just starting treatment.

You can use herbs in the Buhner Lyme protocol in the following forms:

- alcohol-based tinctures
- alcohol-free extracts
- encapsulated herbs
- ground herbs
- cut herbs.

Let's analyze all variants step by step.

### ALCOHOL-BASED TINCTURES

Alcohol-based plant tinctures are made by macerating a fresh plant in full-value alcohol or macerating a dried plant in a mixture of alcohol and water. In the case of tinctures from dried plants, water must be added since plants lose their natural moisture during drying. When making tinctures from a dried plant, add as much water as the plant would contain if it were fresh. The amount of water is selected on the basis of tables that detail the moisture content of the medicinal plant. This makes it possible to extract water-soluble components. This information is important for people who prepare tinctures on their own. We will return to the preparation of tinctures later in the text, when we will discuss ground herbs.

Let's start with discussing the advantages of alcohol-based tinctures.

Alcohol is an excellent medium for extracting herbs, and alcohol-based tinctures are the most popular form for making use of herbs by professional herbalists. Alcohol is an excellent solvent for most herbal ingredients and can be used to make tinctures from fresh or dried plants. Alcohol-based preparations have the longest shelf life of all herbal extracts, so they can be stored for years, in most cases without losing potency.

Maceration of herbs with alcohol ensures that the active ingredients will be delivered to the bloodstream faster, making tinctures a fast-acting form of herb consumption.

The Buhner protocol uses tincture concentrations of 1:5. A concentration of 1:5 means that 5 parts of alcohol were used for 1 part of the plant.

A concentration of 1:5 is well tolerated by most people. All tincture doses given in the Buhner protocol also include a concentration of 1:5.

With a greater amount of tinctures used (e.g., when combining the Lyme disease protocol with the Bartonella protocol), the amount of alcohol consumed might be too much for many people, which is why we have introduced tinctures in a concentration of 1:2.

Tinctures in a 1:2 concentration are stronger, so you can use less and therefore the amount of alcohol consumed decreases significantly. The intake is 2.5 times less compared to 1:5 tincture. It is a good alternative for people who consume more tinctures and want to limit the amount of alcohol consumed.

If you are using the Buhner protocol and you want to use a different concentration of tinctures, it is important to choose the right dose.

Page 27 of the Therapy Planner contains recommended intake of herbs in the form of 1:5 and 1:2 tinctures.

If you decide to introduce a 1:2 concentration, see the table.

You must absolutely remember about one very important thing.

The dosage presented by Buhner works well for most people and is generally well tolerated. However, you must keep in mind that your body may react individually and the doses specified in the protocol may be too high or too low for you. If you are very sensitive to external substances, you may need to use very small doses, even one to five drops of the 1:5 tincture at a time. In this case, you may find a 1:2 concentration too strong. Observe your body. If you feel unwell when using a concentration of 1:2, then go back to 1:5.

Due to this fact, the highest concentration we recommend is 1:2.

## **ALCOHOL-FREE EXTRACTS - GLYCERITES**

Alcohol-free extracts are made mainly on the basis of glycerin. Glycerin has become a popular alternative to alcohol-based tinctures and is ideal for children and people who don't like alcohol or just cannot drink it.

Glycerin is very sweet, but it is not sugar. This means that glycerin does not affect blood sugar levels in healthy people, nor does it cause yeast problems.

However, glycerin is not as effective in extraction as water or alcohol. Glycerin only has about 60% of the alcohol extraction value. Glycerites will therefore be 40% weaker than alcohol-based tinctures. Compared to alcohol-based tinctures, they should be taken in doses from one and a half to two times higher. So, if you were advised to use 2.5 ml of alcohol-based tincture, use 5 ml in case of an alcohol-free one. If you remember this rule, you will maintain the desired effect.

Page 28 of the Therapy Planner contains recommended intake of herbs in the form of 1:5 and 1:1 alcohol-free extracts.

The list includes 1:5 and 1:1 tinctures. 1:1 tinctures are five times stronger than 1:5 tinctures. Glycerin is a much weaker extraction medium, so a 1: 1 concentration is well tolerated by most people. However, if you find it too strong, go back to using tinctures in a concentration of 1:5.

## **ENCAPSULATED HERBS**

Another possible form of herbal intake is encapsulated herbs. In his protocol, Buhner also refers to this form of herb consumption.

Capsules have become a very popular way to take herbs because they are an easy and convenient dosage form. Dried, ground herbal powders are placed in cellulose (vegetarian) or gelatin capsules so that the herbal powders can be swallowed. One of the main advantages of the capsules is that we do not feel the taste of the herbs. As a result, they are especially desirable in the case of unpleasant, bitter or pungent herbs.

When taking the herb as ground in a capsule, remember that you are consuming all the plant material along with the plant fibers. The extraction of the herb takes place in your digestive system with the help of digestive enzymes.

Taking herbs in capsule form comes with one disadvantage. Together with the ground herb enclosed in the capsule, you also swallow the capsule shell. The capsule shell does not contribute to the therapy and must be digested by the body. The Buhner Lyme Protocol includes consuming a large amount of herbs per capsule. The highest intake is 4 capsules 3-4 times a day for each herb. For people with a weakened digestive system, this can be problematic with heavy use of herbs.

Pages 29-31 of the Therapy Planer contain information on choosing the right dose of encapsulated herbs from the Lymeherbs line.

## **POWDER HERBS**

Powder herbs are a dried, ground form of the plant. When buying ready-made ground herbs, you can be sure that the degree of grinding is appropriate, it will not burden your digestive system and will be easy to extract by digestive enzymes. We do not recommend grinding herbs yourself at home. With dried leaves, homemade grinding is still acceptable. Most of the dried plants are formed from their hard roots or hard aerial parts. It's not possible to grind such hard parts at home to the desired degree. Grinding herbs in a household grinder can leave splinters that can injure your digestive system.

Powder herbs can be taken directly, encapsulated or made into tinctures.

If you plan to take herbs directly, add the right amount of the herb to a glass and pour lukewarm water, stir and drink the liquid with sediment. You can add a few herbs to the glass at a time and cover them with water. This way, as we mentioned before, you consume all the plant material along

with the plant fibers. The extraction of the herb takes place in your digestive system with the help of digestive enzymes.

The disadvantage is the flavor. Most herbs are bitter and taste bad. You can add a little honey and lemon juice to improve the taste.

You can also easily encapsulate ground herbs using a capsule machine.

Powder herbs are great for making tinctures. Tinctures can be prepared from ground or cut herbs. Due to the large fragmentation, ground herbs are well extractable. If you are preparing a tincture from cut herbs, try to crush the herbs into smaller pieces before covering them with alcohol.

In a domestic environment, it will be easiest for you to prepare the tincture in a concentration of 1:5, i.e., 1 part of the plant to 5 parts of alcohol. In the case of tinctures from the dried plant, we do not use pure 96% alcohol. Alcohol should be diluted with water due to the fact that plants lose their natural moisture during drying. When preparing a tincture from a dried plant, add as much water as the plant would contain if it were fresh. The amount of water is selected on the basis of tables that detail the moisture content of the medicinal plant. This makes it possible to extract water-soluble components. This information is important for people who prepare tinctures on their own.

To prepare tinctures, usually we use 50-70% alcohol. If you do not have high-percentage alcohol, you can use 40% vodka, although higher concentrations are better.

To obtain a concentration of 50-70%, pure spirit should be diluted with water in appropriate proportions. In his book "Herbal Antibiotics", Buhner describes the exact tincture recipes for each suggested plant. He takes into account the tables that detail moisture content for given medicinal plants. We suggest you follow his tips presented in the book.

Preparation of the dilution is simple. It is enough to mix pure 96% alcohol (spirit) with water in the following proportions (conversion for 500 ml of alcohol needed):

To prepare 70% alcohol, add 135 ml of water to 365 ml of spirit.

To prepare 65% alcohol, add 162 ml of water to 338 ml of spirit.

To prepare 60% alcohol, add 188 ml of water to 312 ml of spirit.

To prepare 50% alcohol, add 250 ml of water to 250 ml of spirit.

Note: Laboratory precision is not important. The point is to obtain more or less the proposed concentration. For example, instead of 338 ml of spirit and 162 ml of water, you can use: 340 ml of spirit, add 160 ml of water. Don't worry if the measurement is not perfect. The macerate will be a success anyway.

The above conversions are presented to obtain 500 ml of the required alcohol. If you need more or less of it, reduce the required amount of alcohol and water proportionally. For example, if you need 250 ml of alcohol, then divide the above figures in half.

The next step is to weigh out the right amount of herb. If you are preparing a concentration of 1:5, you need 1 part of the plant (in grams) to 5 parts of alcohol (in ml). This means that for 500 ml of alcohol you need 100 g of herb. If you have the whole herb, then it should be ground before maceration. You can also use ready-made ground herb. The more powdered the herb, the greater the surface area that will be macerated. This allows more active ingredients of the plant to be released into the macerate.

Pour the appropriate amount of the herb with the previously prepared alcohol in the relevant concentration. Leave to macerate for 2 weeks in a dark jar away from light. Shake the jar daily. After 2 weeks, the macerate should be filtered. Store the finished macerate in a dark bottle or in an ordinary one wrapped in aluminum foil in a place without access to light.

## **CUT HERBS**

Cut herb is a dried form of herb cut into smaller pieces. You can use it to prepare infusions, decoctions or tinctures.

Tinctures are prepared in exactly the same way as described above for ground herbs. Just remember to grind the herb in a grinder before maceration. This will allow more active ingredients of the plants to be released into the macerate.

The two most common forms of water extraction of herbs are infusions and decoctions.

## **Infusion**

Infusions are weaker. They can be prepared by pouring cold or hot (but not boiling) water over the herbs. Infusions must be prepared every day, and they are weaker. In the case of most plants used in Lyme disease, infusions are far too weak an extraction method. Only in the case of the Boneset plant (Lat. *Eupatorium perfoliatum*), Buhner recommends consuming it in the form of infusions.



## **Decoctions**

Decoctions are stronger water extracts. In case of Lyme disease, alcohol-based extracts or direct consumption of herbs (they will be extracted by digestive enzymes) is more effective. If you wish to use decoctions, stick to the following principles.

You can prepare decoctions from one ingredient or from many ingredients. They can be consumed hot or cold, or applied externally. After making the decoction, keep the unused portion in the refrigerator (up to 3 days).

### **Standard decoction**

Pour 1 liter of water into 30 grams of herb, cover it and cook on low heat for 10-20 minutes. Turn off the heat and brew for another hour.

### **Strong decoction**

Pour 1 liter of water into 30 grams of herb, cover it and boil on low heat until the amount of water decreases by half.

## CHAPTER V – NATURAL THERAPY PROTOCOLS USED IN THE TREATMENT OF LYME DISEASE AND COINFECTIONS

In this chapter, we will discuss the three most common protocols for natural therapies for Lyme disease and coinfections. The following protocols are, in our opinion, the most effective and are based only on natural products (they can also be combined with antibiotic therapy after consulting a physician). In addition to the protocols discussed below, other protocols of known phytotherapists are available.

### BUHNER PROTOCOL

Buhner protocol is one of the best-known natural protocols for the treatment of Lyme disease and tick-borne coinfections. Stephen Harrod Buhner is a well known specialist in herbal medicine. He developed a natural treatment for Lyme disease and tick-borne diseases based on clinically tested herbs. Buhner's meticulous work and deep understanding of Lyme disease has allowed him to select unique, most useful herbal responses to this disease. The herbs recommended by Buhner, due to their complex chemical structure, have a very wide spectrum of activity. Not only do they directly kill *Borrelia* bacteria, they also increase the efficiency of the immune system and alleviate various symptoms of Lyme disease. The Buhner protocol consists of herbs included in the Basic Protocol and numerous additional herbs that enhance the effect of the entire protocol.

Buhner Lyme protocol is currently one of the best known and efficient herbal protocols used in the treatment of Lyme disease, with thousands of people achieving positive results.

Buhner has published three books where he describes in detail the protocols of natural treatment of Lyme disease and coinfections:

Borrelia, Chlamydia and Rickettsia treatment protocol: Stephen Harrod Buhner "Natural Healing of Lyme Borreliosis and the Coinfections Chlamydia and Spotted Fever Rickettsiosis."

Bartonella and Mycoplasma treatment protocol: Stephen Harrod Buhner "Healing Lyme Disease Coinfections: Complementary and Holistic Treatments for Bartonella and Mycoplasma."

Babesia and Ehrlichia, Anaplasma treatment protocol: Stephen Harrod Buhner "Natural Treatments for Lyme Coinfections: Anaplasma, Babesia, and Ehrlichia."

The treatment regimens in the Buhner protocol have been developed based on an in-depth knowledge and understanding of the dynamics of Lyme disease and tick-borne diseases, their impact on humans, the experiences of physicians, thousands of articles, and a look at the history of plants used to treat these and similar conditions around the world, but primarily the personal experience of

Buhner, an outstanding phytotherapist who has been working with patients with Lyme disease since 1986.

Buhner broke the standard thinking patterns about the approach to Lyme disease treatment. According to him, the use of only antibacterial activity is insufficient. Buhner believes that Lyme disease and infections that cause tick-borne diseases, due to their specificity and complexity, require a more comprehensive approach:

1. **Strengthening collagen structures**, which will protect the body against damage caused by *Borrelia* bacterium infection. The most important thing to understand the basis of Lyme disease is the fact that the *Borrelia* bacterium has a high affinity with collagen structures. This becomes the source of each symptom that develops later in Lyme disease. Each concurrent symptom is based on the primary damage to the collagen structures of a given organ or system. If we realize this, it will be easier to understand how to deal with burdensome symptoms. If you protect the collagen structures, the symptoms will begin to subside. Buhner places great emphasis on strengthening collagen structures and gives specific guidelines for it.

2. **Strengthening the immune system**, thanks to which the body mobilizes itself to fight the infection. One of the main strategies of action of *Borrelia* bacteria and tick-borne infections is their ability to interfere with the immune system. The proper functioning of the immune system is disturbed, mainly by increasing the level of IL-10 and stimulating the level of Th2 response instead of Th1. Buhner presents a list of herbs responsible for restoring a normal immune response. Remodulation and depletion of the level of IL-10 cytokine and Th2 response allows for the reduction of many symptoms of Lyme disease and elimination of the infection from the body.

3. **Elimination of bacterial-initiated inflammation**, especially in the central nervous system, by modulating the cytokine cascade. In short, the bacterium initiates the cytokine cascade that leads to tissue breakdown, which is the source of many symptoms in patients with Lyme disease. There are herbs that are specific to disrupting the cytokine cascade that the body initiates during an infection. The use of specific herbs stops most inflammation in the body and interferes with the ability of pathogens to locate and penetrate target cells and to accumulate nutrients and reproduce. If we disturb the bacteria's nutrition and ability to reproduce, it will not survive in the body.

4. **Protection of structures and cells infected by the *Borrelia* bacterium**. Buhner has selected herbs intended to protect these structures. This is extremely important because it allows to stop the expansion of bacteria and eliminate many concurrent symptoms.

5. **Help in neutralizing toxins produced by microorganisms**.

6. **Treating symptoms**. Buhner lists numerous herbal combinations in his extended protocol for neurological, articular, cardiological, skin symptoms, migraine headaches, sleep problems, and many other symptoms.

7. **Killing Lyme disease spirochetes and tick-borne pathogens**. Antimicrobial activity is important but not sufficient. For the treatment to work fully, it must go hand in hand with the inhibition of a whole series of processes induced by bacteria in the body, described above.

**8. Breakdown of the biofilm.** Biofilms are aggregates of microorganisms that serve to protect these pathogens from adverse environmental conditions. Microorganisms in the biofilm structure are immersed in an extracellular polymeric substance (EPS) that maintains the biofilm structure. In the biofilm, bacteria can communicate, multiply, transfer acquired resistance to antibiotics, carry out life processes such as metabolism, synthesize proteins or repair DNA. The main factor that enables bacteria to form a biofilm is the “quorum sensing” reaction. This phenomenon is a way of communication between microorganisms with the help of special molecules, chemical compounds called autoinductors. The structure of the biofilm gives shelter to a larger group of bacteria. The ability to form biofilm is one of the main strategies of *Borrelia* bacteria used in long-term, chronic infections. Breaking down the biofilm is important, but it shouldn't be done aggressively. Aggressive breakdown of biofilm can cause bacteria, bacterial fragments and biofilm fragments to be rapidly released into the body, sometimes in large amounts. This can severely aggravate your symptoms. Fragments can travel and take root elsewhere in the body, causing new health problems. Therefore, the *Borrelia* biofilm should be broken slowly, gradually leading to its elimination. There are many herbs and supplements that break down the biofilm created by Lyme spirochete effectively but gently, and inhibit quorum sensing. This will avoid the risk of biofilm fragments being released into the body too rapidly. Buhner chose the protocol in such a way that the already used herbs break the biofilm in a gradual and gentle manner. These herbs include *Andrographis paniculata*, Japanese knotweed, Chinese skullcap, NAC and *Rhodiola rosea*.

Such a comprehensive approach gives very good therapeutic results.

We will stop here for a moment.

Don't ignore any of the steps mentioned above. Each one is equally important. Combining all the steps together gives a great effect. Buhner describes it in great detail in his book, *Healing Lyme: Natural Healing of Lyme Borreliosis and the Coinfections Chlamydia and Spotted Fever Rickettsiosis*, 2nd edition. “ We recommend that you read this publication.

If you decide to use this protocol, read the guidelines in Buhner's book. If you have doubts or any questions, please contact us and we will help you. When you become familiar with the scheme, go back to Chapter I of this Guide and learn how to effectively plan therapies using our Therapy Planner.

**Some important, practical tips that you should not forget when using the Buhner Lyme Protocol:**

1. Do not stop treatment before the passage of 12 months. Even if you feel well after a few months, it's not a sign that you have healed completely. The *Borrelia* bacterium creates complicated biofilm structures, takes various developmental forms, closes into cysts, which means that it takes time to fight all its forms and if the therapy is terminated too early, the untreated infection will return in some time, the symptoms will intensify again and you will have to start it all over again.

2. Buhner determines the maximum doses of herbs. Maximum doses should be maintained until symptoms resolve. After this time, you can gradually reduce your doses and switch to a maintenance dose, but don't do it overnight. If the symptoms return on lower doses, go back to the maximum doses.
3. If you have asymptomatic Lyme disease, stay on the maximum doses for at least 60 days and then switch to maintenance doses.
4. The dosage presented by Buhner works well for most people and is well tolerated. However, you must remember that your body can react individually and the doses specified in the protocol may be too high or too low for you. Buhner points out that if your immune system is very healthy, or if your condition is very mild, you will likely need smaller doses. If your immune system is weak or your condition is very bad, you will probably need larger doses. If you are very sensitive to external substances (this affects about 1% of patients), you may need to use very small doses, even one to five drops at a time.
5. Buhner gives his guidelines on what herbs to use and how. However, that doesn't mean you can't include other additional herbs. If you respond well to an herb that is not on the protocol, you can still use it. The herbs recommended by Buhner do not exhibit negative interactions with other herbs. They work synergistically.
6. You can mix herbs. You do not have to take them separately. You can pour all the measured tinctures into one glass and drink them together, or pour all the necessary ground herbs into one glass, cover them with lukewarm water and drink with the sediment.
7. If you use a product with detoxifying properties, e.g., zeolite. Take it after at least 1.5 hours after the herbs.
8. A lot of people ignore the use of collagen in therapy. This is a serious mistake. We have already mentioned the importance of collagen. Be sure to introduce a diet rich in collagen, and if you are not able to provide the body with enough collagen in the diet, add supplementation.
9. Remember, bacteria 'doesn't build up resistance to herbs. The chemical structure of herbs is very complex, too complex for resistance to exist. Instead of a single chemical, plants contain hundreds or thousands of different compounds.
10. Give your body time and a chance to regenerate. Your body needs at least a year to do that. Don't push yourself too much even if you feel better. Rest. This is not the time for intense workouts. Moderate physical activity is advisable as much as possible, but avoid very intense workouts or marathons.

## COWDEN PROTOCOL

The Cowden protocol was developed by Dr. W. Lee Cowden and is intended for people in the early and late stages of Lyme disease, as well as for minimizing the associated symptoms. The Cowden protocol is also used in other tick-borne coinfections and chronic disease states.

The Cowden Protocol uses 14 different Nutramedix products, including 7 herbs known as Microbial Defense, which exhibit antibacterial properties. The first two herbs, Banderol and Samento, were tested in vitro by Dr. Eva Sapi and her team at the University of New Haven, Connecticut. Both herbs have been proven to eliminate all forms of *Borrelia burgdorferi* bacteria (spirochetes, cysts, biofilm). It has also been shown that Banderol and Samento are more effective at breaking down the cysts and biofilm of *Borrelia* bacteria than doxycycline. Dr. Richard Horowitz of New York found the Cowden Protocol to be effective in 70-80% of patients with advanced Lyme disease who had coinfections in a period of 4 to 6 months, even if the patient's condition had not previously improved over several courses of antibiotics. Dr. Horowitz presented his research on the use of the Cowden Protocol in patients with Lyme disease and coinfections at the ILADS conference in the fall of 2007. A 9-month study using the Cowden protocol was also conducted at Borreliose Centrum in Augsburg, Germany. The studies were completed in 2012 and demonstrated that 80% of patients showed improvement in symptoms (assessed by patient interview) and 90% showed improvement in laboratory blood tests.

One of the reasons for the success of the Cowden Protocol is the fact that Microbial Defense products have a broad spectrum of activity against bacteria, fungi, parasites and even viruses; they are also anti-inflammatory and non-toxic to the body. The use of herbs helps to fight *Borrelia* and other microbiological infections, remove concurrent symptoms, and strengthen the immune system. They do not cause intestinal dysbiosis and are safe. Toxicology studies at the University of Guayaquil, Ecuador have shown that Cowden Protocol herbs can be administered to animals thousands of times over the recommended dose with no change in animal behavior or organ histopathology.

### **Description of the general properties of all products within the Cowden protocol:**

**Banderol** Microbial Defense: anti-inflammatory properties, a broad spectrum of antibacterial, antiviral, antiparasitic activity, effective against *Borrelia burgdorferi* and other *Borrelia* bacteria strains and tick-borne coinfections such as *Bartonella*, *Babesia*, *Chlamydia*, *Mycoplasma*, *Rickettsia* (including *Coxiella* and *Ehrlichia*) or Cytomegalovirus.

**Burbur-pinella** Detox: supports the detoxification of the brain and central nervous system, cleanses the body of toxins and biotoxins, detoxifies the liver, kidneys, lymphatic system and intercellular spaces, cleans the blood. Eliminates toxins from the brain, spine and peripheral nervous system. Burbur-Pinella is also effective in reducing Herx reaction.



**Cumanda** Microbial Defense: anti-inflammatory properties, a wide spectrum of antibacterial, antiviral, antiparasitic properties, effective against *Borrelia burgdorferi* and other *Borrelia* strains and tick-borne coinfections. It also shows a strong antifungal activity against *Candida*, *Aspergillus* and *Mucor* fungi. Furthermore, it can cross the blood–brain barrier.

**Enula** Microbial Defense: anti-inflammatory properties, a wide spectrum of antibacterial, antifungal, antiviral, antiparasitic properties, effective against bacteria from the *Borrelia* species and some *Babesia* species.

**Houttuynia** Microbial Defense: anti-inflammatory properties, a broad spectrum of antibacterial and antifungal activity, effective against *Borrelia burgdorferi* bacteria and other *Borrelia* strains and tick-borne coinfections. High efficiency against *Bartonella*.

**Magnesium malate** is a very well absorbed form of magnesium. Magnesium is an essential mineral that is required for the proper functioning of the body. Most chronically ill people are magnesium deficient. About fifty percent of the metabolic enzymes that ultimately produce ATP energy for the proper functioning of cells require magnesium as a co-factor. Magnesium is essential for the maintenance of normal heart rhythm, blood pressure, nerve and brain function, proper contraction and relaxation of skeletal muscles, as well as smooth muscles in the intestines, bile ducts, pancreatic duct, etc.

**Mora** Microbial Defense: anti-inflammatory properties, a wide spectrum of antibacterial, antifungal, antiviral, and antiparasitic properties.

**Parsley Detox:** cleanses the body of toxins and biotoxins, detoxifies the liver, kidneys, lymphatic system and intercellular spaces, cleanses the blood. Parsley Detox is also effective in reducing Herx reaction. In addition, it supplements deficiencies of calcium, iron, thiamine, riboflavin, carotenes, vitamin A, and vitamin C.

**Samento** Microbial Defense: an effective modulator of the immune system, has a wide spectrum of antibacterial, antifungal, antiviral and antiparasitic activity, effective against *Borrelia burgdorferi* bacteria and other *Borrelia* bacteria and tick-borne coinfections.

**Sealantro** Metal Detox: helps detoxify the body from heavy metals, various biotoxins and many other toxic substances.

**Serrapeptase** is a proteolytic (protein-breaking) enzyme obtained from the digestive system of silkworms. This enzyme digests the fibrin that protects *Borrelia* bacteria and helps break down microbial biofilm. By breaking down the fibrin that protects the bacteria, the cells of the immune system can effectively attack and fight the pathological microflora. In addition, Serrapeptase breaks down the fibrin adhering to the capillary walls and thus improves the transport of oxygen to the tissues. Thus, in those fabrics where anaerobic conditions favorable for the development of bacteria have prevailed, the environment is changed to aerobic, i.e., unfavorable for bacteria.

**Sparga** Sulphur Detox: helps remove sulfonamide antibiotics and other sulfonamide-based drugs from the body that block the 'sulfate pathways and glutathione conjugation pathways.

**Stevia:** has an anti-bacterial effect against all developmental forms of *Borrelia* bacteria and biofilm, a broad spectrum of antifungal and antioxidant activity.

**Takuna** Microbial Defense: has very strong antibacterial, antiviral, and antifungal properties. It reduces the symptoms that accompany infection.

#### Additional information:

People on the Cowden Support Program should drink 2-3 liters of water a day (correspondingly less for children depending on their weight). Individuals should limit their stress and use relaxation techniques. Proper rest at night is very important - you should sleep in a darkened bedroom no later than 11pm to 6am. The diet should contain large amounts of raw vegetables and fruits, preferably organic, and exclude sugar, excess starch, processed foods, products containing wheat, dairy products (cow-derived), and refined oils. Diet is an important part of improving your health.

NOTICE: Fiber and most products used as toxin binders should be taken at least 30 minutes after and 4 hours before taking any Cowden Protocol product. Products such as activated charcoal, bentonite clay and cholestyramine (Questran) should only be taken if absolutely necessary, e.g., in the event of a Jarisch–Herxheimer reaction.

If you decide to use the Cowden Protocol, please follow the instructions included with the products carefully. The instructions are very detailed and contain tables on how to use the product each day. The products are already prepared in ready-made sets and divided into sets for Month 1 – Month 9.

## RESEARCHED NUTRITIONALS® PROTOCOL

Researched Nutritionals® has developed protocols for Lyme disease and its coinfections based on proprietary products and research. Their protocols are often used by ILADS physicians. They can be used both with antibiotic therapy and as a separate, independent treatment regimen.

Researched Nutritionals® products are subjected to scientific research and clinical trials to demonstrate the effectiveness of the product. Individual product compositions, a high quality and the positive reviews of many patients with Lyme disease and tick-borne diseases have convinced us to include this protocol on our list of the best natural treatments for Lyme disease.

The products are not cheap. The price is possibly driven by the high costs of research and clinical trials that the products must undergo. However, when you look at the chart in the Therapy Planner on page 21 (Researched Nutritionals® Protocol Summary), you will find that by using Lyme products, you actually affect many other coinfections. If you have a *Borrelia* infection and 2-3 coinfections, then basing on the *Borrelia* protocol and depending on coinfections, it may be completely sufficient, e.g., with a confirmed *Borrelia* + *Bartonella* + *Chlamydia* infection, or you will only have to add one product to supplement the protocol, e.g., as in the case of *Babesia*.

When deciding on this type of therapy, use the tips in Chapter I and the Therapy Planner and the information contained therein. There is a Summary of Researched Nutritionals® Protocols on page 21 to help you plan your therapy, and pages 27-33 include detailed protocols.

Many people are unfamiliar with this protocol, so let's analyze the strategy adopted by Researched Nutritionals® in approaching the problem of Lyme disease.

**1. Regulation of the cytokine cascade.** We have already mentioned it when discussing the Buhner Lyme Protocol. Researched Nutritionals® has also recognized cytokine regulation as one of the major components of therapy. Their answer to this problem is the CytoQuel® - a multi-component formula that works very well in the regulation of cytokines. It consists of N-acetyl cysteine (NAC), black tea extract, turmeric extract, DeltaGold® Tocotrienols, and Resveratrol.

**2. Regulation of the expression of the cytokine IL-10 and of the cellular response,** i.e., appropriate regulation of the immune system, which has been disturbed during infection. This was also discussed in the Buhner Lyme Protocol. In order to regulate the immune system, three products are introduced: Multimessenger, Messenger N°1, and Transfer Factor L+.

**Multimessenger** contains: Betaine HCl, Inositol, Beta glucan, *Larix occidentalis* (Western Larch), *Camellia sinensis* (Chinese tea), *Punica granatum* (Pomegranate), *Astragalus membranaceus* (*Astragalus*), *Lentinula edodes* (Shiitake mushrooms), *Grifola frondosa* (hen of the woods), Zinc (as zinc citrate), Calcium, Methylcobalamin (Vitamin B12), Selenium (as L-selenomethionine)

**Messenger N° 1** contains: inositol, beta-glucan, colostrum, Lactobacillus acidophilus and Bifidobacterium bifidum

**Transfer Factor L+** contains: Beta glucan, IP-6, colostrum and Lactobacillus strains

**3. Increasing the activity of NK cells (Natural Killer cells) and optimization of detoxification.** NK cells belong to the immune system. In the context of Lyme disease, we are most interested in CD57 NK cells. Active, chronic disease suppresses the immune system and causes a loss of NK CD57 (Natural killer cell) lymphocytes, which form the natural line of defense in the human body. People with low CD57 NK cell counts are believed to feel worse and more likely to develop neurological Lyme disease. Therefore, it seems advisable to increase the activity of these cells. For this purpose, we propose **glutathione**, which additionally supports detoxification.

**4. Pathogen control: Borrelia and coinfections.** Here we propose BLt and Myc-P, which are used in Lyme disease and a number of coinfections.

**BLt** is a synergistic composition of the following herbs: New Jersey tea root (or Red root, Lat. Ceanothus americanus), Sarsaparilla root (Smilax Ornata), Lomatium dissectum (a plant from the carrot family, Lomatium dissectum), black walnut hull extract (Juglans nigra), Stillingia sylvatica (a plant from the spurge family, common boneset (Eupatorium perfoliatum), Dipsacus.

**MYC-P** is a synergistic composition of herbs: Isatis Root (Isatis Indigotica), Cordyceps (Cordyceps Sinensis), Houttuynia (Houttuynia Cordata), Chinese Skullcap Root (Scutellaria Baicalensis), Cat's Claw (Uncaria Tomentosa), Sida Acuta Leaf (Sida Acuta), Bearberry (Arctostaphylos Uva-Ursi), Stillingia Root (Stillingia Sylvatica)

**5. Protection of organs.** Another aspect overlapping with the Buhner protocol. The protection of structures and organs allows to stop the expansion of bacteria and eliminate many concurrent symptoms. Here we use exactly the same products as above, i.e., **BLt** and **Myc-P**. You can see how rich the composition of these products is. Herbs have protective properties in relation to a number of organs and structures such as the endothelium.

**6. Mitochondrial support.** Researched Nutritionals® places great emphasis on mitochondrial support. Mitochondria are the main energy centers of the cell. Lyme disease weakens mitochondria, they are not able to work properly, and they cannot keep up with the production of enough energy in damaged cells. This leads to a whole range of ailments. To support mitochondria, Researched Nutritionals® recommends ATP 360.

**ATP 360®** has been developed to provide complete mitochondrial support by promoting normal mitochondrial growth and mitosis, supporting a healthy mitochondrial membrane, and providing essential co-factors for optimal cellular energy production.

7. **Breakdown of biofilm.** This was discussed in the description of the Buhner Lyme Protocol. Researched Nutritionals® proposes BioDisrupt.

**BioDisrupt** contains: EnzymeDisrupt™ blend (Lysozyme, serratiopeptidase, beta-glucanase, lipase, protease 4.5, cellulase, hemicellulase), HerbDisrupt™ blend (cranberry fruit extract, berberine, rosemary extract, peppermint oil powder), and N-acetyl cysteine.

As you can see, the main objectives of the Buhner Lyme protocol and the Researched Nutritionals® protocol overlap. However, other substances are recommended. The biggest advantage of this difference is that if for some reason you cannot follow the Buhner protocol or do not respond well to it, you can try the Researched Nutritionals® variant. All the most important assumptions are met but the product composition is modified, so your body may react differently. It also works the other way. If you have not responded well to the Researched Nutritionals® protocol, you still have the option of using the Buhner Lyme Protocol or the Cowden Protocol.

## **WHERE CAN I ORDER HERBS AND SUPPLEMENTS DISCUSSED IN THIS GUIDE?**

Herbs from the Buhner Protocol, Cowden Protocol and most of the other herbs and supplements can be ordered at the store's website [www.lymeherbs.eu](http://www.lymeherbs.eu)

The store offers herbs in various forms:

- tinctures
- alcohol free extracts
- capsules
- cut herbs
- ground herbs

In the "Packages" tab you will find ready-made herbal kits for a given infection.

## References:

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Stephen Harrod Buhner “Herbal Antivirals: Natural Remedies for Emerging Resistant and Epidemic Viral Infections.”

William Rawles “Unlocking Lyme. Myths, truths and practical solutions for chronic Lyme disease.”





# Lymeherbs

[www.lymeherbs.eu](http://www.lymeherbs.eu)