



Understanding the condition and standard, integrative, and herbal approaches to treatment

Katya Adachi, MD Ohlone Center for Herbal Studies Apprenticeship 2015 Pathology Report 10/12/2015

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#### **FIBOMYALGIA**

Fibromyalgia is a chronic pain syndrome characterized by chronic widespread musculoskeletal pain, often accompanied by fatigue as well as somatic, psychiatric, and cognitive symptoms. This condition was first described in the 19<sup>th</sup> century in France and England and has also been called fibrositis and myofascial pain syndrome.<sup>1</sup> Patients experience pain in muscles, ligaments, and tendons without demonstrable evidence of tissue inflammation. To the outside observer or physician's eye, patients look well, have normal labs (for the most part), normal radiographs, and, besides tenderness of otherwise normal tissue, have normal physical exams. For this reason, fibromyalgia (FM) has been a controversial syndrome diagnosis. In the past, fibromyalgia was described as a psychogenic condition. While it is indeed understood as a psychosomatic condition in that psychiatric illness worsens FM symptoms, and up to 50% of patients with FM also have anxiety or depression, FM is now better understood, from research and clinical studies, as a disorder of pain regulation.<sup>2</sup> Patients with fibromyalgia process pain differently in their nervous system and thus experience it differently. Specifically, their central nervous system seems heightened to experience pain. FM patients perceive pain from heat, pressure, and electrical current at lower levels of physical stimulation compare to healthy controls.<sup>3</sup> The cause of this central sensitization and the syndrome of fibromyalgia is not well understood.

#### **EPIDEMIOLOGY**

Fibromyalgia is the most common cause of generalized musculoskeletal pain in women age 20-55. Approximately 10% of the general population has some sort of generalized chronic pain condition. In patients who are referred to a specialist for a pain condition, 40% are eventually diagnosed with fibromyalgia. Overall prevalence in the US is 2-3% and increases with age.<sup>2</sup> In fact, the prevalence may be even higher due to underdiagnosis and under recognition. Similar prevalence has been found in countries all over the world, suggesting fibromyalgia is not a cultural phenomenon unique to the US (although culture may indeed play a role). Interestingly, the diagnosis is 6-9 times more common in women than men, although population studies have shown closer 2-3 times more prevalence in women.<sup>1,2</sup> This brings in to question how the experience, manifestation, and presentation of chronic pain, and fibromyalgia specifically, differs between men and women. Is there something about fibromyalgia that affects women's body's more? Do women experience pain in a way that is more consistent with FM? Do providers understand women's reports of chronic pain in a way that better

fits as fibromyalgia? Do men experience pain differently? Are women more likely to go to their health care provider because of pain, or report it once they are there? It is known that women are more likely to seek medical care for most conditions, and fibromyalgia likely falls in this category. The answer to many of these questions, however, is not fully known. The fact that the differential between men and women decreases in population studies suggests that having a standardized method for diagnosis may allow more accurate diagnosis, and may remove some of the gender bias that leads to women being more frequently diagnosed.

#### **CLINICAL MANIFESTATIONS AND SYMPTOMS**

#### Musculoskeletal pain

The predominant symptom of fibromyalgia is widespread musculoskeletal pain that is experienced on both sides of the body, above and below the waist. While the pain may first begin localized to one region, often the shoulders and neck, over time the pain will become diffuse. Fibromyalgia is a chronic condition, meaning symptoms are present most days for at least 3 months. It is during this time that the pain will spread. Patients will often report this pain with statements such as "I feel like I hurt all over" or describe feeling "like I always have the flu." Pain is predominant in muscles but patients often report experiencing joint pain and swelling, as well (although joint inflammation is not noted on exam). The pain of fibromyalgia is often diffuse and not easily localized. It is severe, difficult to ignore, and decreases a person's functioning.<sup>1,2</sup>

#### <u>Fatigue</u>

The next universal symptom of fibromyalgia is fatigue. For most patients the fatigue is most noticeable upon arising and mid-afternoon. Patients often report feeling stiff and unrefreshed in the morning, even after an adequate night of sleep (although many patients also have sleep difficulties as well). Patients may make comment they "feel like I was ran over by a truck."<sup>2</sup> Patients with FM often also struggle with pain, stiffness, and fatigue being worsened by exercise, new activity, or prolonged activity, experiencing what is called "postexertional malaise,"<sup>1</sup> although even minor activities can worsen their pain and fatigue. Thus, the impact fibromyalgia has on quality of life becomes significant as it limits patients' daily routines. Not surprisingly, chronic fatigue syndrome is a common diagnosis patients with fibromyalgia may also have been given. The two

can be difficult to differentiate, are very similar in their manifestations, have some similarities in their etiologies and are both poorly understood.

#### Psychological functioning

Many patients with fibromyalgia experience a mental fog, having difficulty with maintaining attention, clarity, and speed of thought, sometimes called "fibrofog." Sleep disturbance is also a common experience as patients tend to sleep lightly, wake early, and have difficulty getting back to sleep once awoken. Patients with FM have more frequent alpha-wave activity, which is associated with states of wakefulness, interrupting their sleep.<sup>4</sup> Many patients also are awoken by their pain. This sleep disturbance disrupts the restorative nature of sleep and can create a cycle of pain disrupting sleep and poor sleep worsening pain, fatigue, and mental functioning. Depression and anxiety are also common co-morbid psychological conditions that patients with fibromyalgia face, with 35-50% of FM patients also having depression and/or anxiety at the time of diagnosis.<sup>2</sup>

#### Somatic symptoms

Very commonly, patients with fibromyalgia experience as part of their condition symptoms in other systems in the body as well. More than 50% of patients with FM have headaches, including tension and migraine headaches. Irritable bowel syndrome (IBS) is also common. Several patients experience bladder symptoms including frequency and urgency in the absence of infection, and not surprisingly patients may be diagnosed with interstitial cystitis. Parasthesias, or abnormal sensations, are also frequent complaints, and may include the following: numbness, tingling, burning, creeping, crawling sensations, especially in arms and legs. Usually parasthesias are developed from abnormalities in peripheral nerves, but this is not the case in fibromyalgia. Patients with FM have normal neurological exam and testing of nerves, such as nerve conduction tests, are also normal, suggesting no true abnormality in the nerves themselves. Sometimes minor sensory or motor abnormalities will be found on neurological exam, but not usually consistent with the quality or degree of symptoms. Some patients report difficulty with balance. Patients may note sensitivity to noise, light, odors, cold, weather changes, and chemicals, and have symptoms worsening or other allergic symptoms when exposed. Some believe that multiple chemical sensitivity is a part of the spectrum of cause and manifestation of fibromyalgia. Many patients report sensitivity to weather changes; in research studies, these sensitivities to weather change have not been found to be as consistent as patients with rheumatoid arthritis (RA) experience, likely due to the difference in the etiology (RA being an autoimmune and inflammatory condition manifesting

directly in joints which are sensitive to pressure changes). Other somatic symptoms that patients with fibromyalgia may experience include ocular dryness, allergic symptoms, palpitations, dyspnea, vulvodynia, dysmenorrhea, sexual dysfunction, weight fluctuations, night sweats, dysphagia, dysgeusia, palpitations and orthostatic intolerance.<sup>1,2</sup>

#### DIAGNOSIS

#### **Diagnostic Criteria**

The diagnosis of fibromyalgia is described as chronic myalgias and arthralgias without evidence of joint or muscle inflammation on exam or labs. The American College of Rheumatology has developed criteria to more specifically define how to make the diagnosis. The 1990 American College of Rheumatology (ACR) Classification Criteria defines the diagnosis of fibromyalgia as:<sup>2</sup>

Tenderness at 11/18 points, pushing with 4 kg/cm<sup>2</sup> of pressure (enough to whiten examiners nail bed) in a patient with at least a 3 month history of diffuse musculoskeletal pain on both sides of body, above and below the waist.

The 18 defined points of tenderness (Figure 1) include bilateral points at the:

- Insertion of the suboccipital muscle
- o Under the lower sternocleidomastoid muscle
- Upper mid-trapezius muscle
- Lateral epicondyle

(the so-called tennis elbow location)

- Second costochondral junction
  - (the site of costochondritis)
- Origin of the supraspinatus muscle
- o Greater trochanter
  - (site of trochanteric bursitis of the hip)
- Upper outer quadrant of the buttock
- Medial fat pad of the knee

#### Figure 1. Tender Points in Fibromyalgia<sup>2</sup>



The 18 "tender points" important for the diagnosis of fibromyalgia. Note the bilateral symmetry of the labeled regions. Tenderness on palpation of at least 11 of these sites in a patient with at least a three-month history of diffuse musculoskeletal pain is recommended as a diagnostic standard for fibromyalgia. Adapted from: Goldenberg, DL, Hosp Pract (Off Ed) 1989; 24:39.

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Importantly, these tender points can be identified by comparing them to sites that are not as tender in control locations, such as over the thumb, the mid-forearm, and the forehead, when these control areas are palpated similarly.

These criteria have been found to have 85% sensitivity and specificity for differentiating patients with FM from those with other rheumatic (such as rheumatoid arthritis) and autoimmune diseases. Mostly these criteria have been used to provide a homogenous way to diagnosis and define patients for research studies. These criteria have not been as useful for clinical diagnosis of patients with the condition. A provider can make the diagnosis with fewer than 11/18 tender points if other symptoms (such as the somatic or psychological symptoms mentioned above) are present and the history suggests the diagnosis. In clinical practice, tender point counts are often not obtained, and most clinicians have not been trained in the tender point examination. This inconsistency in training and practice has raised concerns about the accuracy of the diagnosis by non-specialists. The tender points serve to demonstrate heightened pain perception or decreased pain threshold rather than specific sites of inflammation or tissue pathology.<sup>2</sup> The tender points fall over sites of major muscles that are commonly used and function as significant weight bearers, pulleys, and central forces of action; thus tenderness of these muscles can be understood as a representation of the status of the musculoskeletal system as a whole. Therefore, the tender point exam is a proxy for detecting widespread pain, and the exact number of tender points necessary to diagnose FM clinically is somewhat arbitrary.

Given this controversy in the applicability of the 1990 diagnostic criteria, the ACR has developed new, more clinically applicable criteria. The 2010 ACR preliminary diagnostic criteria do not include a tender point evaluation. Instead, it uses a scale to measure the severity of symptoms and focuses more on cognitive and somatic symptoms. The criteria (Figure 2) are defined as follows:<sup>5</sup>

- o Patient with symptoms at a similar level for at least 3 months
- Widespread pain index (WPI): numerical value between 0-19 counting the number of painful body regions
- o Symptom severity (SS) scale score: an estimate of the level of severity of:
  - Fatigue
  - Waking unrefreshed
  - Cognitive symptoms
  - The number of somatic symptoms in general
- Diagnosis if made if WPI ≥7 AND SS ≥ 5 OR WPI 3-6 AND SS ≥ 9

#### **Diagnostic Clarity?**

In examining the use of these new criteria, when applied to populations there was a resultant increase in the overall prevalence of FM and a change in the sex ratio.<sup>1</sup> This suggests that the criteria may be either less specific and too broad, or less subject to gender bias and more accurate in diagnosing a greater number than we realized have fibromyalgia. This may be important in decreasing the delay in diagnosis that patients experience. In a patient survey analysis it was found that patients waited, on average, almost a year after experiencing symptoms before presenting to a clinician, and 2.3 years before receiving a diagnosis of FM, having presented to an average of 3.7 different physicians.<sup>6</sup> With more defined, applicable, and accurate diagnostic criteria, this delay may be decreased to improve patients' resultant access to appropriate care.



#### Figure 2: 2010 ACR Fibromyalgia Diagnostic Criteria<sup>5</sup>

With the controversy surrounding fibromyalgia, some have argued that providing a diagnostic label to everyday symptoms increases illness behavior; that people apply this label to themselves as a permanent disability or illness and thus limit themselves further, experience more symptoms, and define themselves by their condition.

However, there are now more studies suggesting that patients in fact improve after receiving a clear diagnosis. One study showed that after receiving a diagnosis, patients reported fewer symptoms and improved satisfaction with their health overall. <sup>7</sup> With a diagnosis defined, and discovering there is not something seriously wrong, there is significant saving of health care dollars as further unnecessary diagnostic studies are not pursued and care can be provided specific to fibromyalgia.

#### Physical Exam

Other than the tender points noted above, there are few other findings of fibromyalgia found on physical exam. The joint examination may reveal some tenderness over the joints and joint lines themselves but findings of joint deformities of inflammation would suggest a different diagnosis. As mentioned above, minor sensory or motor abnormalities may be found on neurological exam, but findings consistent with peripheral or upper nerve abnormalities would suggest a different diagnosis. In general, careful exam of muscles and joints is used to exclude abnormalities that suggest an etiology other than fibromyalgia.

### Laboratory Studies

There are not tests to confirm the diagnosis of fibromyalgia. Rather, labs are used to exclude other diagnoses. Examples of studies that may be used for this purpose include:<sup>2</sup>

- CBC, ESR, CRP: these are markers of inflammation and should be checked when an inflammatory condition is considered
- ANA, Rf: these are further markers of inflammation and should be considered if a systemic inflammatory condition such as Systemic Lupus Erythematosus (SLE) or Rheumatoid Arthritis (RA) is suspected. These tests can be intermittently positive in otherwise healthy people, so a positive test is not alone suggestive of a specific condition, and therefore should only be checked when clinical suspicion is high. This is why these tests are used to confirm a suspected diagnosis rather than decide on one. Furthermore, it is not uncommon for these tests to be intermittently elevated in some patients with fibromyalgia, and these tests alone do not provide diagnostic clarity one way or the other.
- $\circ$  TSH/thyroid panel: to evaluate status of the thyroid, if thyroid disease is suspected
- Creatine kinase: this is a marker of muscle inflammation and should be checked if an inflammatory muscle disease is suspected

- Vitamin D: often low in patients with chronic pain, this test can be considered for evaluative rather than diagnostic purposes (low vitamin D is not diagnostic of fibromyalgia, but treatment of hypovitaminosis D may help improve patient's symptoms)
- In some patients, there are autoantibodies that have been found to suggest an autoimmune disorder but this is not true for all FM patients.

### **PATIENT CHARACTERISTICS**

Patients with fibromyalgia often report having sensitive temperaments such as high levels of empathy and sensitivity to emotional cues from others, sensitivity to environmental factors, and a tendency to be caretakers. These tendencies are present even before being diagnosed with FM.<sup>8</sup>

High BMI and reduced physical activity have also been found to be risk factors for fibromyalgia.<sup>13</sup>

### **ETIOLOGY/PATHOGENESIS**

It is not fully understood what causes fibromyalgia. Although patients experience widespread muscle pain, research studies have found no evidence for significant biochemical muscle abnormalities. Furthermore, comparative studies of patients with and without fibromyalgia have shown they have similar muscle function, force, lactate production, and muscle pain after exertion, suggesting that the muscles themselves are not significantly different.

#### **Central Sensitization**

It is now understood that central sensitization to pain is at the core of the pain and fatigue of fibromyalgia. Central sensitization occurs when persistent nociceptive, or pain, signaling increases the excitability of neurons on the dorsal horn of the spinal cord, which is responsible for receiving sensory information from the body. When these neurons are hyperexcited, they are more sensitive to respond to nociceptive input, even to things that were previously experience as non-painful.<sup>9</sup> What causes this hyperexcitability is unknown and this proposes a sort of chicken-and-egg conundrum: does excessive pain signaling to the dorsal horn trigger central sensitization or is something else sensitizing the central nervous system making distal neurons perceive pain?

#### <u>Fascia</u>

It has been proposed that inflammation of fascia could be a peripheral cause of the excess pain signaling to the spinal cord. Fascia is the dense connective tissue that surrounds muscle cells, fibers, and bodies. It surrounds every part of a muscle and is a dense gel of ground substance in which muscle cells and fibers are suspended. The fascia is contiguous with tendons. Innervation of muscles is primarily located in the fascia, so the fascia is highly sensitive. Findings have not been consistent to support this theory of fascial inflammation as the etiology of FM, but 2 studies of cells from muscle biopsies of FM patients have found higher levels of collagen and markers of oxidative stress and tissue damage, suggesting fascial inflammation.

This inflammation may be due to low growth hormone production and HPA axis dysfunction. Growth hormone is released during deep sleep (stages III and IV) to repair and maintain healthy tissue. Levels of growth hormone has been found to be decreased in fibromyalgia. The combination of

disruption of sleep in FM, mentioned above, and elevated HPA activity due to stress may inhibit normal growth hormone secretion. This leads to a cycle (Figure 3) in which fascia that is under tension from increase stress triggering strain and inflammation in the fascia, which is not repaired due to inadequate growth hormone, and thus chronic fascial inflammation remains.<sup>9</sup> This inflammation leads to increased nociception, triggering central sensitization, and ongoing pain.

#### **Genetic Causes**

No specific gene has been found to cause fibromyalgia. There are genes that are involved in serotonin and/or catecholamine metabolic or signaling pathways that may be related to susceptibility to developing fibromyalgia. A few genes that play a role in nociception, inflammation, and affect including GABRB3, TAAR1, GBP1, RGS4, CNR1, and GRIA4 have been found to be associated with fibromyalgia. Certain alleles for these genes were more commonly present in patients with fibromyalgia than in controls. Genetic variations have also been found in the activity of the catechol-O-methyltransferase (COMT) enzyme. This enzyme is one of several enzymes that





degrade catecholamines such as dopamine, epinephrine, and norepinephrine. One study showed that low COMT activity was significantly higher in patients with fibromyalgia than in healthy volunteers, and another study showed that those who had low activity were more sensitive to pain.<sup>3</sup>

Another finding suggestive of a possible genetic role in fibromyalgia susceptibility is that a relative to someone with fibromyalgia is 8.5 times more likely to have fibromyalgia as well compared to a relative of someone with rheumatoid arthritis (which has much better understood genetic risk factors).<sup>10</sup> This alone, however, is not enough to suggest strictly a genetic role, as environment and other exposures and influences cannot be separated when looking solely at familial relationship.

#### Altered biochemistry

Substance P, a neurotransmitter that facilitates transmission of pain signals to the central nervous system and is associated with chronic pain, has been found to be elevated in the cerebral spinal fluid (CSF) of patients with fibromyalgia compared to controls.<sup>3,11</sup> Meanwhile, neurotransmitters involved in influencing sensory processing and inhibiting pain transmission, such as serotonin, norepinephrine, and dopamine can have low levels or low activity.<sup>11</sup> This supports the understanding of altered central pain processing in FM (Figure 4). The cause of these changes, however, is not known.

## Figure 4: Pathways of pain processing implicated in chronic pain<sup>11</sup>

- Neurotransmitters that are known to either facilitate or inhibit sensory/pain transmission. Arrows indicate levels of several of these neurotransmitters either decreased or increased in patients with fibromyalgia.
- Augmented pain processing in fibromyalgia.



Some studies have shown altered cytokine levels including elevated interleukin (IL) 6, 8 and lower IL-5, 4, 13. These cytokines are involved in the inflammatory response system, among other things. The significance of these altered levels and their implication on the cause of fibromyalgia, however, is not well understood.

In some patients with fibromyalgia, autoantibodies have been found to suggest an autoimmune disorder, but this is not true for all FM patients.<sup>3</sup> While FM has similarities to autoimmune conditions, it is not at this time understood as such.

lodine deficiency has also been proposed as a possible contributing cause to fibromyalgia, given to overlap of symptoms seen with hypothyroidism, a known result of iodine deficiency. <sup>12</sup> This has yet to be studied.

### **Oxidative Stress and Mitochondrial Dysfunction**

On a cellular level, oxidative stress and mitochondrial dysfunction may play a role in fibromyalgia.<sup>3</sup> Coenzyme Q10 (CoQ10) is an essential electron carrier that operates in the mitochondria as part of cellular respiration, the key source of cellular energy production and utilization. CoQ10 is also a strong antioxidant (serving as an electron carrier, it can neutralize radical oxygen species (ROS) produced during cellular respiration to prevent further damage from being incurred). CoQ10 deficiency, therefore, alters mitochondria function and leads to increased ROS generation. Not surprising, treating CoQ10 deficiency in fibromyalgia can improve symptoms through support of cellular function.<sup>13</sup>

#### Altered anatomy

Patients with FM may have premature aging of their brain. Studies have shown a reduction in the volume of brain gray matter, and the longer the person had the disease, the more volume loss seen. However, this volume loss is likely due to co-morbid depression and not fibromyalgia itself (as this finding was not evident when depression was controlled for in the results).<sup>3</sup>

#### Trauma and Stress

Patients with fibromyalgia have been found to have altered Hypothalamus-Pituitary-Adrenal (HPA) axis activity, including altered cortisol levels. The differences seen in patients with FM are often linked to childhood trauma, especially physical abuse. A study looking at this correlation found that in patients with FM, a history of childhood physical abuse was associated with a flattened cortisol diurnal pattern and low levels of cortisol on

awakening. These findings suggest that this history of abuse may influence neuroendocrine dysregulation in fibromyalgia.<sup>14</sup> Thus, it is important to screen for a history and address the impact of trauma and abuse in patients with fibromyalgia.

#### **Infection**

Various infections have been found to be associated with fibromyalgia, although no specific infection has been found to be a cause. 5-10% of people exposed to certain infections later develop chronic pain.<sup>15</sup> The incidence of fibromyalgia is higher among patients with Hepatitis B<sup>16</sup>, Hepatitis C<sup>17</sup>, and perhaps mycoplasma and parvovirus infections.<sup>18</sup> One study found that 27% of patients diagnosed with FM had an identifiable precipitating event prior to developing symptoms, such as an infection or trauma. Those with infection as a precipitating factor, which was one-fifth of the 27%, had worse severity of physical symptoms but improved mental health. Infections reported by these patients varied and included influenza, upper respiratory infection, pneumonia, Ebstein-Barr virus, *Borrelia Burgdorferi* (Lyme), and Varicella zoster.<sup>15</sup> This suggests that the stress placed on the immune system, and perhaps disrupted sleep, during illness may play a role in the development of fibromyalgia syndrome.

#### ALLOPATHIC TREATMENT

Given the complexity of the etiology and influences of fibromyalgia, standard allopathic treatment emphasizes a multi-disciplinary approach. Utilizing a combination of non-pharmacological interventions including physical therapy and mental health care along with medications is recommended. Education about the diagnosis is a critical first step. As many patients have likely faced uncertainty and confusion on the way to being diagnosed, ensuring patient understanding will be key to leading them down a path of recovery and wellness. Empowerment is important with any condition, and fibromyalgia is no exception. Patients need to be empowered with an understanding of their condition that can serve to motivate them to do what is needed to care for themselves.

#### Support

The first key step to treating fibromyalgia after the diagnosis is made (which can be therapeutic in itself) is to provide a supportive listening space. Patients may have been sent to a variety of different specialists for

different elements of their condition (such as to a gastroenterologist for their IBS symptoms, an OB/GYN for their vulvodynia, a urologist for their interstitial cystitis, a rheumatologist for their muscle and joint pains, etc.). Because of the lack of objective data associated with the diagnosis of fibromyalgia, patients may report having felt dismissed, disrespected, not believed, or may simply be frustrated by not having an answer or not getting better. Given this experience, holding a healing space for listening and affirmation is crucial to the therapeutic approach to fibromyalgia.

Furthermore, loneliness has been found to be a significant factor for patients with FM. In a study comparing patients with different rheumatic disease, patients with FM had significantly higher rates of loneliness compared to others. They were also a younger patient population with lower rates of employment and education and had less social support. Thus, connecting patients to supportive environments and resources is a key step in pursuing the healing process.<sup>19</sup>

### Sleep Hygiene

Sleep is the next key to fibromyalgia management. As discussed above, disrupted sleep perpetuates the nonrestorative cycle of fibromyalgia, and is common for patients with FM. Thus, work to optimize sleep becomes crucial in managing FM symptoms.

The components of sleep hygiene include<sup>a</sup>

- o A quiet and comfortable sleep environment: bed and room
- The bed is for sleep and intimacy
  - Avoid doing other activities in bed. Train your brain to know that the bed is for sleep
  - Sleep when you are sleepy. If you don't fall asleep in 20 minutes, get up and do something boring (non-stimulating) until you are sleepy
- Avoid naps (sleep at night)
- Have a routine
  - Get up and go to bed at the same time every day so you train your circadian rhythm and keep stable melatonin cycles

<sup>&</sup>lt;sup>a</sup> Adapted from "How to Sleep Well" Ben Brown, Santa Rosa Family Medicine Residency Program, Integrative Medicine Handouts, <u>http://www.srfmr.org/integrative-medicine/im-handouts</u>

- Have a sleep ritual of relaxing activities like a bath, massage, a warm nighttime beverage,
   breathing/meditation exercises to help calm your body down
- Journal any thoughts that need to be let out so they don't keep you up or wake you up
- Take care of your body
  - Exercise during the day (at least 3 hours before bed) to help your body be ready for sleep and sleep more deeply at night
  - Get sunlight during the day to help your circadian rhythm
  - Avoid caffeine, nicotine, alcohol
  - Don't go to bed too hungry or too full

### <u>Exercise</u>

Finding and maintaining a sustainable exercise regimen is also vital in FM, and should include a combination of aerobic, strengthening, and stretching activities. The goal should be for some form of physical activity for 30 minutes at least 5 days a week. There is no specific activity better than another, what is important is that exercise is done regularly, and so finding something the patient enjoys and can commit to is essential. The intensity should be enough that the activity indeed exercises the muscles and heart. The American College of Sports Medicine (ACSM) has the following general guidelines to inform the intensity of exercise training:

### Aerobic Training

- $\circ \quad \text{At least 3 days per week} \\$
- Intense enough to noticeably increase heart rate (by at least 40% of heart rate or to 64% of predicted maximum heart rate)
- At least 20 minutes a day (20-60 minutes), all at once or in blocks of 10 minutes or more throughout the day

Any type of exercise that uses major muscle groups repetitively is just fine. What's important is that it is done regularly and exercises the heart and gets the blood pumping too! I especially like the tip about 10 minutes at a time because for many people having a 20 or 30minute block of time to exercise is difficult to attain, but 10 minutes is much more doable.

#### Muscle Strengthening

- o 2-3 days per week
- At least one set of 8-12 repetitions with a weight that is appropriate for 8-12 repetitions (70-80% of maximum weight)

Again, any type of exercise is fine, using different ones for different muscles, of course. The weight can be increased over time.

### Flexibility Training

- At least 2 days per week
- o Stretching to a position of mild discomfort (you feel the stretch but not the burn)
- 3-4 repetitions of each stretch held for 10-30 seconds<sup>20</sup>

Maintaining the strength and vitality of muscles and the entire musculoskeletal system through is important for minimizing peripheral pain signals from muscles, fascia, and joints in order to decrease the sensitization of the central nervous system. A recent study was able to actually document with functional magnetic resonance imaging (fMRI) how exercise normalized brain connectivity patterns in patients with fibromyalgia.<sup>21</sup> Aerobic and strength training are particularly important for improving fibromyalgia symptoms.<sup>20</sup> Given the limitations that patients with fibromyalgia experience, the starting point appropriate for a patient may be well below the minimal goals for intensity listed above. Supporting a patient to start at a level appropriate for their current state and to build from there, rather than over exert into worsened pain and fatigue, will help them find success in developing an exercise program they can maintain. It is important their regimen evolve and adjust over time according to their needs so that it can be an enjoyable and regular part of their self-care. By optimizing blood flow and cellular health, exercise helps decrease pain and improve functioning, well-being, and even mood in fibromyalgia<sup>20</sup> and is a cornerstone to fibromyalgia care.

#### **Medications**

As central sensitization is understood to be at the core of fibromyalgia, pharmacologic treatment of FM works on central nervous system processing. This includes medications that work on serotonin, norepinephrine, substance P, and other neurochemicals, and have been used as antidepressants, muscle relaxants, and antiepileptic classes.<sup>7</sup>

There are only three medications that are currently FDA approved to treat fibromyalgia: Lyrica (Pregabalin, marketed by Pfizer), Cymbalta (duloxetine, marketed by Eli Lilly and Co.), and Savella (milnacipran, marketed by Forest Pharmaceuticals). These medications are or were still under patent, and so pursuing a new FDA-approved indication for fibromyalgia was financially beneficial to these companies. Other medications in similar classes are also used, and in fact may be more useful, for fibromyalgia, but FDA approval has not been sought as they didn't carry the same monetary incentive (and medications are frequently used for non-FDA approved, so-called "off-label" indications). The market success of these medications has been impressive. Lyrica was the 10<sup>th</sup> most prescribed medication in 2013 and moved up to #8 2014 at ~10 million prescriptions (not just for fibromyalgia) and \$3.3 billion. Cymbalta was #8 in 2013 but fell off the list by 2014.<sup>22,23</sup> Interestingly, these medications, although the only FDA-approved fibromyalgia drugs, are not the most effective. In general, medications are not particularly effective in fibromyalgia; unfortunately, no one treatment is.

#### Tricyclic Antidepressants

A much older and cheaper class of medications, Tricyclic antidepressants (TCAs) such as amitriptyline and cyclobenzaprine have been used the longest in treating fibromyalgia. TCAs function by blocking the reuptake of serotonin and norepinephrine, thus making these neurotransmitters available in the nervous system for longer. Of the variety of medications studied, TCAs, and specifically amitriptyline, seem to have the most impact on pain. <sup>24</sup> Amitriptyline 25-50mg, a dose lower than is used to treat depression, has been found to provide pain relief for many patients (although starting at 10mg is recommended); one study found this benefit for 25-37% of patients.<sup>7</sup> This result is not consistent for all patients, however, and amitriptyline has inconsistent impact for fatigue and sleep quality, with some studies showing benefit and others not. <sup>4,24,25</sup> Side effects include drowsiness (the most common and sometimes a desired effect), as well as anticholinergic effects such as dry mouth, constipation, fluid retention, weight gain, grogginess, and difficulty concentrating. Cardiotoxicity in older patients is also possible. Desipramine is a TCA that has fewer of these side effects, but it has not been studies as much for use in fibromyalgia.<sup>24</sup> Cyclobenzaprine is another tricylcic compound, although usually classified as a muscle relaxant, and has been found to also help with pain and sleep in fibromyalgia.

#### Serotonin and Norepinephrine Reuptake Inhibitors (SNRIs)

Serotonin and Norepinephrine Reuptake Inhibitors (SNRIs) is the next class of antidepressant medications that work on neurotransmitter processing commonly used for affecting central processing in fibromyalgia. The newer medications duloxetine (60-120mg) and milnacipram (12.5-100mg) fall into this category. SNRIs have been found to have an impact on pain and improving sleep, but the degree of impact has been less impressive than TCAs; they also can help depression more so than low dose TCAs do. They have not been found to impact fatigue much,<sup>24</sup> although milnacipram may be slightly better for fatigue.' Thus, SNRIs are recommend to be used if treatment with TCAs didn't work or caused too many side effects, or if treatment for depression is also desired, although they are often used as a first line agent as well. Common side effects include nausea, headache, and constipation.<sup>26</sup> Other side effects include dry mouth, sedation, dizziness, insomnia, and diarrhea.

#### Antiepileptics

Medications used for seizure treatment work on electrical channels (such as the α2δ subunit of calcium channel noted in Figure 4) in the nervous system and affect the release of neurotransmitters such as glutamate, norepinephrine, serotonin, dopamine, and substance P. This influence on central processing has been found beneficial for pain management. Gabapentin (Neurontin) 25-450mg and Pregabalin (Lyrica) 150-450mg are the two in this class that have been found to be useful for fibromyalgia. Both have been studied, although Pregabalin the most, and shown to improve pain and sleep quality somewhat for some patients, but not to have a significant impact on fatigue. Overall, 23% of patients had an improvement in pain.<sup>27</sup> Pregabalin is recommended for use in patients who don't respond to or tolerate TCAs or who have more sleep disturbance.<sup>26</sup> In a few studies, about 20% of patients experience side effects that led them to stop the medication; these included dizziness (most common), sedation, dry mouth, weight gain, and edema.<sup>26,27</sup>

#### Selective Serotonin Reuptake Inhibitors (SSRIs)

Selective Serotonin Reuptake Inhibitors (SSRIs) is another class of antidepressant medications that work on neurotransmitter processing, specifically serotonin. In general, these have had less of an impact on pain in fibromyalgia, and seem to work best in combination with other medications like amitritptyline.<sup>7, 8</sup> These are not as commonly used as a primary treatment for fibromyalgia, but are more often used for treating co-morbid depression or anxiety. Side effects of SSRIs include being activating or sedating, depending on the medication, and some people experience weight gain, hot flushes, and sexual dysfunction.

### Non-steroidal anti-inflammatory drugs (NSAIDs)

Non-steroidal anti-inflammatory drugs (NSAIDs) such as ibuprofen (Advil, Motrin) and naproxen (Naprosyn), are frequently taken by patients with FM, especially early in their condition as they are available over the counter and commonly used for musculoskeletal pain. Research has not shown benefit, however, in treating fibromyalgia. Given that muscle and joint inflammation is not the cause of fibromyalgia, this is not surprising. For this reason prednisone is also not beneficial nor is it recommended for use in fibromyalgia.<sup>26</sup>

### Analgesics and Opiates

Analgesic medications like acetaminophen (Tylenol) and tramadol (Ultram) have been used to treat the pain of fibromyalgia. One studied showed that these two together improved pain in 35% of patients. Side effects include nausea, dizziness, sedation, and constipation. 20% of patients discontinue use due to side effects.<sup>28</sup> In general, these medications are recommended for short term use for symptom treatment only, and not as a primary therapy.

Stronger analgesic medications like opiates are not recommended. Opiates like oxycodone have not been found to significantly improve symptoms of fibromyalgia and in fact may worsen symptoms. One known effect of long term opiate use is hyperalgesia, where the upregulation of opiate receptors leads to heightened central sensitivity to pain. Other common side effects of opiates include somnolence, dizziness, and constipation.<sup>29</sup> Importantly, opiates also have the potential for addiction, dependence, misuse, abuse, and diversion. For these reasons, opiates are not recommended for use in treating fibromyalgia.<sup>26</sup>

Not surprisingly, medications do not seem to be the answer for addressing fatigue in fibromyalgia. There is some benefit from TCAs and SNRIs in addressing pain, but they do not provide complete relief nor do they help everyone. This is why the treatment for fibromyalgia is multi-faceted, should be individualized to meet the needs of the patient, and why integrative and herbal medicine becomes an important part of the approach.

#### **INTEGRATIVE TREATMENT**

#### **Counseling and Cognitive Behavioral Therapy**

Psychological counseling can play a critical role in treating fibromyalgia. Given the connection between trauma and fibromyalgia, the difficulty of a chronic pain diagnosis, and the controversy around this condition specifically, psychological support and healing becomes an important piece in addressing the cause and supporting the management of fibromyalgia. When researched, specifically Cognitive Behavioral Therapy (CBT) has had the best results in reducing pain, improving sleep, and decreasing depression, and the more therapy the better the improvement.<sup>30</sup> Thus, if patients are able to find a style of counseling to which they respond well, a practitioner they trust and with whom they are willing to work, and are willing to do their own psychological healing work over time, then they will gain the most benefit in helping their fibromyalgia.

#### Meditative Movement

Meditative Movement refers to practices that combine movement with meditation such as yoga, tai chi, and qi gong. Practices like these are important for patients with fibromyalgia because they provide a way to optimize and maintain the flow of blood and energy through the body, which is crucial for supporting a healthy nervous system. This is also why exercise is important in fibromyalgia. Meditative movements are unique in that they also work specifically with the mind-body-spirit connection, providing patients with FM the opportunity to maintain a healthy relationship with their body. In people with chronic pain conditions, it can be difficult to appreciate the body that gives them constant pain. Connecting meditation with movement provides patients with FM the opportunity to feel and connect with their body in a more positive and empowering way that isn't just focused on the pain; they can remember that their body gives them life.

When researched, tai chi has been found to be helpful for fibromyalgia physical and mental health symptoms<sup>31</sup> as well as sleep.<sup>32</sup> Yoga has been shown helpful for pain, fatigue, mood, and coping with FM. The more yoga patients did the better they felt. Qi gong has been found helpful for pain, quality of life, and sleep. The best part is these therapies have no adverse side effects.<sup>33</sup>

Whatever modality used, it is important that it be something that is suitable for the patient's life, lifestyle, culture, and physical capacity. As mentioned above, post-exertional malaise is a common experience for patients with FM, so the thought of physical activity can be daunting. The benefit of these practices can be best

accessed if patients start at an appropriate beginning level and listen to what their body can handle, working at an appropriate pace. When this is done, the most benefit will be gained.

#### Mindfulness and Meditation

Mindfulness and meditation techniques can be tools that help patients with fibromyalgia change their experience of their condition. Similar to meditative movement, mindfulness and meditation can provide patients with an experience and strategy that improves their relationship with their body and transforms their experience of pain. Research done has found meditation and mindfulness to help improve both physical and mental health symptoms.<sup>34,35</sup>

#### **Acupuncture**

Acupuncture is a treatment that can be used to address the central pain processing in fibromyalgia. Importantly, fibromyalgia is not a diagnosis that directly translates into Traditional Chinese Medicine (TCM). Thus, the pain, fatigue, and other symptoms a person diagnosed with FM experiences will be addressed according to how it presents for that person and is understood by the TCM practitioner. Put simply, acupuncture works on improving the flow of qi through the meridian channels through which qi flows in the body; pain is considered a blockage of qi and so opening blockages can improve the flow of qi.<sup>36</sup> Improved flow of qi also improves the status of the nervous system and system as a whole, and thus may improve the central processing as well. When researched, multiple studies have shown acupuncture to be beneficial in decreasing pain and stiffness, increasing pain thresholds, and decreasing medication use for patients with fibromyalgia. One study showed that 70% of patients experienced these positive benefits with acupuncture. Meanwhile other studies have not shown as much benefit.<sup>7</sup> Like many therapies that are meant to be individualized and that utilize a different diagnostic framework, acupuncture is not best understood with standard western research designs and so these conflicting results are not surprising. Side effects are usually mild and short lived and can include dizziness, soreness or bleeding at the needle insertion site. Some patients experience worsening before improvement after treatment, usually early in the initiation of treatment. Following a treatment plan by an experienced practitioner may prove significant benefit for the patient for whom acupuncture is a good fit.

### Osteopathic Manipulative Treatment (OMT)

Osteopathic Manipulative Treatment (OMT) is another healing modality to consider in the treatment of fibromyalgia<sup>b</sup>. Importantly, it is a technique that addresses all levels of the musculoskeletal system, including the fascia which, as discussed above, may be a major player in the pain sensitization cycle of fibromyalgia. Also an individualized treatment approach that has been found appropriate to individualize even in standardized research studies, OMT has been shown to improve pain, pain threshold, functioning, and experience,<sup>37</sup> although research has been limited.

The goal of treatment with OMT includes improving posture, range of motion, lymphatic flow, respirationcirculation and nervous system functioning, and metabolic efficiency. Through decreasing somatic dysfunction (impaired functioning of the body framework), the overall pain signals sent to the nervous system in decreased, allowing it to recover. A series of techniques for treating fibromyalgia, as taught at a lab on fibromyalgia at an American Osteopathic Association convention, included the following:

- 1. Seated lumbosacral functional technique
- 2. Side-lying rib functional technique
- 3. Seated upper thoracic spine muscle energy technique
- 4. Seated or supine diaphragm myofascial release technique
- 5. Supine cervical functional and strain/counterstrain techniques
- 6. Supine TMJ muscle energy techniques<sup>38</sup>

OMT can be further tailored to the specific somatic dysfunction the patient presents with in order to address their specific pain and limitations. Serious adverse events from OMT are exceeding rare and have not been documented for the techniques listed above.<sup>39</sup> Side effects such as mild soreness or dizziness after treatment can be expected reactions to treatment and increased water consumption after treatment is encouraged.

### Massage

Massage is another therapy that is able to directly address the fascial as well as muscular, nervous system, and circulatory influences on the symptoms of fibromyalgia. Research done on massage has shown it provides immediate benefit for pain and mental health symptoms. Other than post-treatment soreness, massage doesn't

<sup>&</sup>lt;sup>b</sup> OMT is also a particular interest of mine as it is a field of study and training I have pursued and is a part of my practice, despite my being an MD and not a DO.

have side effects.<sup>40</sup> Again, finding an experience practitioner who provides a technique appropriate for the patient is important.

### <u>Diet</u>

### Elimination Diet

While there are not specific food culprits that can be blamed in causing fibromyalgia, there are common allergens that should be eliminated if they are allergenic to the patient. This can be difficult to determine and so one strategy to determine which foods are problematic is through an elimination diet. There are a variety of ways to approach elimination diet. The simplest is to eliminate one food for 2 weeks and then reintroduce it to see if symptoms worsen or recur. A more extensive, and therefore more informative and potentially therapeutic, elimination diet is to simplify the diet way down to just a handful of core, low allergenic foods, and maintain this diet for 1-2 weeks. Then, foods are reintroduced one at a time every 3 days or so while monitoring for a recurrence or worsening of symptoms. For an elimination diet to be most useful, it is important that the patient keep a log of what they eat and what are their symptoms so that a pattern and correlation can be followed.

### Common Allergens

Common possible allergens that should be considered for elimination include dairy, eggs, nuts, shellfish, wheat (gluten), corn, preservatives, and food additives. While not allergens per se, processed and refined foods including white breads, pastas, sugar, doughnuts, pastries, bread, candy, soft drinks, and foods with high sugar or caffeine content can also contribute to fibromyalgia symptoms.<sup>41</sup>

### Healing Diet

Food can be used as medicine itself by incorporating foods that promote healing and minimize inflammation. Essentials to a health promoting diet include:<sup>c</sup>

- o Healthy fats
  - Cook with and incorporate healthy oils like olive and coconut oils
  - Eat avocados, nuts, and seeds

<sup>&</sup>lt;sup>c</sup> Adapted from "Anti-Inflammatory Diet" Wendy Kohatsu, Santa Rosa Family Medicine Residency Program, Integrative Medicine Handouts, <u>http://www.srfmr.org/integrative-medicine/im-handouts</u>

- Eat lots of vegetables and fruits
  - Eat 5 9 servings of vegetables and fruit per day, with more than half as vegetables
  - Eat the Rainbow! Deeply-colored fruits and vegetables contain higher amounts of vitamins, minerals, and antioxidants
  - Use the plate method the biggest portion (half the plate) is where the vegetables go
- o Choose whole grain carbohydrates and limit the portion sizes
- Cook with herbs and spices
  - Cinnamon, Clove, Oregano, Peppermint, Thyme, Sage, Rosemary, Saffron, Turmeric are high in antioxidants<sup>42</sup> to protect healthy cells
  - Garlic, Turmeric, Ginger, Cayenne support healthy circulation
- o Drink lots of water to keep cells, muscle, and organs hydrated and nourished

### Supplements

Supplements patient with fibromyalgia can consider taking include

- Coq10: 100mg three times a day
- Vitamin D3: treat to serum 25-(OH) vitamin D level of 30-50 ng/ml, maintenance dose 1,000-2,000
   IU/day
- o Omega 3: 2,000-4,000mg/day
- Magnesium: 300-750mg/day
- Melatonin: 3mg-10mg 30minutes before bedtime

### CoQ10

CoQ10, as mentioned above, is an antioxidant and a key player in mitochondrial energy production and is often low in patients with FM. It has also been found to improve fibromyalgia symptoms including pain and fatigue<sup>13</sup> as well as impact serotonin levels and improve depression symptoms<sup>43</sup> when repleted in patients with fibromyalgia, although research is quite limited. CoQ10 is generally safe and has minimal mild side effects (<1% of people) that can include stomach upset, loss of appetite, nausea, vomiting, diarrhea, skin rashes, lower blood pressure, low blood sugar.<sup>44</sup> CoQ10 can be found naturally in organ meats, beef, sardines, mackerel, spinach, broccoli, and cauliflower which have 0.5-3mg per serving, so getting therapeutic doses in food is challenging.<sup>45</sup>

#### Vitamin D3

Low vitamin D can be associated with widespread pain, and has been found to be common, although is not known to be causative, for fibromyalgia. Given this association, checking levels of and repleting vitamin D should be considered as it has been helpful in improving pain in fibromyalgia, in limited studies.<sup>46, 47</sup> The optimal level for serum vitamin D is debated, but usually between 30-50ng/ml is both safe and helpful. Repletion for levels under 20 can start with doses ranging from 4,000IU Cholecalciferol (Vitamin D3) per day up to 8,000-50,000IU per week for 6-8 weeks, followed by maintenance dose 1,000-2,000 IU/day. Supplementation with cholecalciferol (D3) is the preferred form of vitamin D over ergocalciferol (D2) as it is more stable and better utilized in the body. Side effects of vitamin D have been seen when serum vitamin D levels get too high (>88), causing high calcium in the blood and urine.<sup>48</sup> Vitamin D can be found in food such as salmon, mackerel, sardines (160-400IU/serving)<sup>45</sup> and mushrooms (maitake mushroom has 786IU/cup!). Exposing the bottoms of mushrooms to sunlight for even a few minutes increases the vitamin D they contain.

#### **Omega-3 Fatty Acids**

Omega-3 fatty acids have an anti-inflammatory effect and can be helpful in supplementation to balance the high omega-6 content of the standard American diet. Omega-3 supplementation has been used for various pain conditions and has been found to be helpful for fibromyalgia in improving pain, fatigue, and depression in limited research.<sup>49</sup> The role of inflammation and use of anti-inflammatory properties of omega-3s in FM is still poorly understood. Side effects from omega 3 supplementation are uncommon. Fish oil sources should be stored in the fridge or freezer to avoid smelly burps. Mild nausea, upset stomach, and loose stools are the next most common side effects. Due to their anti-inflammatory properties, omega-3s can increase bleeding and should be stopped at least 2 weeks before a surgery or procedure. Sources of omega-3s include flaxseed oil, chia seeds, walnuts (2.6-7.3g alpha-linoleic acid/serving), herring, salmon, sardines, oysters (1-1.8g Eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA)/serving).<sup>45</sup>

#### Magnesium

Magnesium supplementation has a relaxing effect on muscles. Serum magnesium levels have been found to be low in some patients with fibromyalgia, and supplementation improved symptoms of fibromyalgia including tenderness and depression.<sup>50</sup> Research is also very limited. Side effects from magnesium are uncommon but are seen with excess intake, the most common being diarrhea and abdominal cramping. Low blood pressure and

muscle weakness can occur at very high levels. Food sources of magnesium include cereal, brown rice, mackerel, spinach, chard, almonds, hazelnuts, beans, and molasses (45-100mg/serving).<sup>45</sup>

#### Melatonin

Melatonin, a hormone that regulates our circadian rhythm through day-night/light-dark cycles, has been shown to also be helpful in treating pain. In addition to melatonin receptors, melatonin also works on various other neurotransmitter receptor pathways involved in pain transmission through the spinal cord and has even been shown to decrease central sensitization from excessive nociceptive signaling. Melatonin levels have been found, in some studies, to be low in patients with fibromyalgia, although this finding is not consistent. Treatment with melatonin 3-10mg has improved pain, fatigue, depression, and sleep.<sup>51,52</sup> Side effects of melatonin include morning or daytime grogginess, headache, nausea, irritability, depression, and vivid dreams. These are uncommon when appropriate doses of melatonin are used for no more than 3months at a time. Often using a lower dose will ameliorate these side effects.<sup>53</sup> There is some though that prolonged use of melatonin can alter the body's endogenous production of melatonin, although this has not been confirmed. The role of melatonin in improving pain also points to the importance of sleep hygiene practices to support healthy endogenous melatonin production in managing pain and fibromyalgia, as discussed above.

#### **Other Supplements**

Other supplements that have been considered for use in managing fibromyalgia include S-adenosyl methionine (SAM-e), D-Ribose, 5-hydroxytryptophan (5-HTP), zinc, iodine, and thiamine. SAM-e is involved in energy, cellular, and neurotransmitter processing in the body and has been used for anti-inflammatory and pain relieving purposes. D-Ribose is also involved in cellular energy synthesis, especially in muscles. 5-HTP is derived from the amino acid tryptophan and is a precursor to serotonin, which can be low in patients with fibromyalgia, and can help symptoms of depression, anxiety, insomnia, and somatic symptoms in fibromyalgia.<sup>54</sup> Zinc is also involved with pain processing in the spinal cord<sup>55</sup> and has been found low in FM patients<sup>56</sup>. Iodine and Vitamin B12 (Thiamine) deficiencies have also been implicated. Research on the use and effectiveness of these various supplements is very limited.

#### HERBAL TREATMENT

The herbal medicine approach to treating fibromyalgia presented here is developed based on standard Western herbalism approaches, applied to what is known of the potential causes and contributors to fibromyalgia, the symptomatology, and the current research available for certain herbs. One of the strengths of herbal medicine is the ability to individualize treatments and formulas to the individual's presentation, constitution, and needs. Thus, what is presented here are general guidelines for an approach that can be used to inform an individualized treatment.

Herbs are often understood by the actions they are known to have in the body and on body systems. Herbal actions that will be useful in treating fibromyalgia include nervine, nervous system tonic, hypnotic, adaptogen, antioxidant, analgesic, lymphatic, alterative, circulatory stimulant, and nutritive. Other actions to consider are anti-inflammatory, antispasmodic, and immunomodulator. A description of these actions and herbs with such action to consider are provided below. Further details of the herbs are provided in the next section: Herbal Materia Medica.

#### **NERVINE**

Nervines act on the nervous system and can be stimulating or relaxing.<sup>57</sup> For fibromyalgia, relaxing nervines are helpful to decrease the impact of stress and anxiety. They are also helpful for improving sleep and can be taken at night for this purpose. For those for whom depression, lethargy, and anhedonia are prominent, stimulating nervines can be helpful.

Examples of mild relaxing nervine herbs for fibromyalgia include: Wood Betony, Lavender Examples of moderate relaxing nervine herbs include: Chamomile, St. John's Wort, Skullcap, Valerian Examples of strong relaxing nervine herbs include: California Poppy, Wild Lettuce, Jamaican Dogwood, Passionflower

#### NERVOUS SYSTEM TONIC

Nervous system tonics serve to strengthen and nourish the nervous system.<sup>57</sup> They are used to support recovery from stress, trauma, and injury and are useful for this purpose in fibromyalgia. They are core in the treatment of fibromyalgia for in supporting the nervous system they can help to decrease the hyperexcitability that contributes to central sensitization and support normalization in nervous system signaling.

Examples of nervous system tonic herbs for fibromyalgia include: Wild oats, Wood Betony, St. John's Wort Fibromyalgia Adachi 27

#### **HYPNOTIC**

Hypnotic herbs contain volatile oil and alkaloid compounds that work directly on the nervous system (and thus are also nervines) to help induce sleep.<sup>57</sup> Given the importance of regular sleep for repair and restoration of the body, including fascia, and the lack of deep sleep common to patients with fibromyalgia, as discussed above, hypnotic herbs can play a key role in restoring healthy sleep for patients with fibromyalgia.

Examples of mild hypnotic herbs for fibromyalgia include: chamomile, wood betony Examples of moderate hypnotic herbs include: California poppy, skullcap Examples of strong hypnotic herbs include: Wild lettuce, Passionflower, Jamaican Dogwood, Valerian

#### **ADAPTOGEN**

Adaptogenic herbs increase the body's vitality and resistance to physical and emotional stress. The mechanism of adaptogens is not fully understood, but is believed to be related to glucose metabolism and utilization in the liver and cells as well as influences on the HPA axis.<sup>57</sup> The role of stress as an associative factor in fibromyalgia was discussed above. The chronic pain, fatigue, and impact on functioning, as well as the difficulty with finding a diagnosis and appropriate management, can all contribute significant stress to patients with FM. Adaptogens can be very helpful in supporting the system's ability to handle and overcome these stresses. Adaptogens can also serve to directly address fatigue through increasing vitality and stamina.

Examples of adaptogenic herbs for fibromyalgia include: Ashwaganda, Reishi, Licorice, Tulsi, Siberian Ginseng

#### ANTIOXIDANT

Antioxidant herbs contain compounds that help absorb and eliminate free radicals to prevent them from causing cellular damage. The role of oxidative stress as a causative factor in fibromyalgia was discussed above.

Examples of antioxidant herbs for fibromyalgia include: Cinnamon, Clove, Meadowsweet, Oregano, Peppermint, Thyme, Sage, Rosemary, Saffron, Turmeric<sup>42</sup>

#### ANALGESIC

Analgesic herbs function to decrease pain and thus play an important role in treating fibromyalgia.

Examples of analgesic herbs for fibromyalgia include: Wild Lettuce, Jamaican Dogwood, California Poppy, Valerian, Cayenne

### **LYMPHATIC**

Lymphatics support movement of lymph and the integrity of lymph vessels. Their mechanism of action is not fully understood, but coumarins and lectins are believed to stimulate lymphocytes, and encourage fluid movement by increasing capillary perfusion, and stimulate circulatory and kidney functioning.<sup>58</sup>

Examples of lymphatic herbs for fibromyalgia include: Red root, Cleavers, Calendula

#### **ALTERATIVE**

Alteratives support detoxification and elimination of waste through kidney, liver, lungs, and skin and for this reason have been referred to as 'blood cleaners.' Clearing the blood of toxins and waste is important to provide the circulation and nourishment needed to maintain a healthy nervous system.

Examples of alterative herbs for fibromyalgia include: Nettle, Red Clover, Cleavers

#### **CIRCULATORY STIMULANT**

Circulatory stimulant herbs increase blood flow to muscles and joints. These are helpful in fibromyalgia to improve circulation to optimize the health of muscles, joints, and the nerves that feed them.

Examples of circulatory stimulant herbs for fibromyalgia include: Ginger, Cayenne, Gingko, Rosemary, Cinnamon, Arnica (topical)

#### NUTRITIVE

Nutritive herbs are rich in vitamins and minerals and thus serve to support tissue and cellular health. These nutrients are essential to maintaining healthy nervous and musculoskeletal systems in FM. Specific vitamins and minerals mentioned above have been found to improve fibromyalgia symptoms.

Examples of nutritive herbs for fibromyalgia include: Nettle, Wild Oats, Alfalfa

#### ANTI-INFLAMMATORY

Anti-inflammatory herbs aid the body in fighting inflammation. Herbs that contain salicylate compounds, including Meadowsweet and Willow, are particularly helpful for musculoskeletal inflammation.<sup>57</sup> Now, as discussed above, part of the definition of fibromyalgia is the lack of inflammation in tissues corresponding to

regions of pain, and on the other hand inflammation in fascia is proposed as one of the potential mechanisms of central sensitization. Also, NSAID medications have not been found helpful in fibromyalgia. Thus, the role of anti-inflammatory herbs is up for debate. Nonetheless, they can be considered for their role in decreasing inflammation and pain in muscles.

Examples of anti-inflammatory herbs for fibromyalgia include: Ginger, Turmeric, Willow, Meadowsweet, Chamomile, Rue, Arnica

### ANTISPASMODIC

Antispasmodic herbs relieve or prevent spasms in muscles. Some are specific to skeletal muscles, others to smooth muscles, and several act on both. These can be helpful to relieve tension that can occur as a result of guarding or stress in response to the chronic pain of fibromyalgia. They can also easy spasms in the smooth muscles of the digestive tract, uterus, and other organs that can cause the somatic symptoms associated with fibromyalgia.

Examples of antispasmodic herbs for fibromyalgia include: Valerian, Skullcap, Jamaican Dogwood, Chamomile, Wild Lettuce, California Poppy, Passionflower, Lavender

### **IMMUNOMODULATOR**

Immunomodulating herbs support and strengthen the immune system. The potential role of infection and autoantibodies as causes of fibromyalgia was discussed above and inform the potential role for immunomodulators in fibromyalgia treatment.

Examples of immunomodulator herbs for fibromyalgia include: Reishi, Ashwaganda

### HERBAL MATERIA MEDICA<sup>d</sup>

The following is a brief material medica listing herbs mentioned above and their herbal actions as relevant to the treatment of fibromyalgia. Side effects are listed when notable. Many are generally regarded as safe (GRAS).

### Alfalfa (Medicago sativa): nutritive

Alfalfa is high in calcium, magnesium, protein, fiber, beta-carotene, vitamins A and C, B vitamins (biotin, folic acid, niacin, pantothenic acid, pyridoxine, riboflavin, and thiamin). Also contains vitamin D, E, and K, as well as amino acids (valine, lysine, arginine, leucine, isoleucine, tryptophan, phenylalanine, methionine, and threonine). Contains trace minerals including calcium, chromium, cobalt, copper, iron, magnesium, manganese, phosphorus, potassium, selenium, silicon, sodium, and zinc.<sup>59</sup> This nutrient dense herb serves to support tissue and cellular health and nourish healthy nervous and musculoskeletal systems.

Arnica (Arnica Montana): anti-inflammatory, topical circulatory stimulant<sup>60</sup>

Arnica contains sesquiterpene lactones that confer anti-inflammatory properties. Use topically for pain and inflammation.<sup>57</sup>

Side effects: can be cardiotoxic if ingested in large amounts

**Ashwaganda** (*Withania somnifera*): adaptogen, moderate sedative nervine, antioxidant, analgesic, alterative, anti-inflammatory, immunomodulator

Ashwaganda is an adaptogen that will support the body's resilience to stress and pain, a potent tonic of the Ayurvedic tradition. It contains alkaloids that act on the central nervous system and withanolides which exert steroid-like effects on the body and thus confer the anti-inflammatory and antioxidant effect. <sup>61</sup> Ashwaganda is known to support restful sleep, promote resilience, and improve fatigue.<sup>62</sup> It also supports thyroid function, and so can be useful if the thyroid is implicated in a patient's fibromyalgia symptoms.

<sup>&</sup>lt;sup>d</sup> Adapted from: Hoffman, D. Materia Medica. In: Medical Herbalism. Rochester, VT: Healing Arts Press; 2003: 522-597 and Natural Medicines Comprehensive Database. (2015)

Side effects: can stimulate the thyroid, so careful in hyperthyroidism; can lower blood pressure and blood sugar

Calendula (Calendula officinalis): lymphatic, antioxidant, analgesic, anti-inflammatory, antispasmodic

Calendula contains calenduloside triterpenes which confer anti-inflammatory properties. Can use topically (especially for anti-inflammatory action) and internally (especially for lymphatic, antispasmodic properties, anti-inflammatory properties specific to the digestive system).<sup>57</sup>

California Poppy (Eschscholzia californica): strong relaxing nervine, moderate hypnotic, analgesic, antispasmodic

California Poppy contains alkaloids that act on the nervous system, conferring relaxing nervine, hypnotic, and antispasmodic effects it is useful for treating the pain, sleep difficulties, and anxiety associated with fibromyalgia.

Side effects: excessive intake can cause hangover effect

Cayenne (*Capsicum minimum*): circulatory stimulant, analgesic, antioxidant, anti-inflammatory, antispasmodic
 Cayenne contains capsaicin which interferes with substance P signaling on nerves, thus reducing pain. It
 is especially effective in this way when used topically. It also increases circulation through vasodilation.
 Cayenne can be used both topically and internally to improve blood flow and relieve pain in muscles and
 joints, as well as decrease inflammation and antioxidant in the circulation overall.<sup>63</sup>

Chamomile (Matricaria recutita): moderate relaxing nervine, mild hypnotic, anti-inflammatory, antispasmodic

Chamomile contains sesquiterpene lactones that confer anti-inflammatory properties and flavonoid glycosides that confer antioxidant properties. Chamomile also has nervine properties, with relaxing properties in hot infusions (water extractions) and stimulating properties in cold infusions. In addition, chamomile serves as a muscle relaxing antispasmodic. It has a long history of use as a night time tea to aid with sleep and relaxation.

**Cinnamon** (*Cinnamomum verum*): antioxidant, circulatory stimulant

Cinnamon is known to contain a good source of antioxidants.<sup>42</sup> Cinnamaldehyde is a volatile oil in cinnamon that increases peripheral circulation. Cinnamon also regulates blood sugar, <sup>64</sup> which can be helpful in supporting energy levels and mitigating fatigue in the context of fibromyalgia.

Cleavers (Galium aparine): lymphatic, alterative, anti-inflammatory

Clove (Syzygium aromaticum): antioxidant

**Comfrey** (Symphytum officinale): anti-inflammatory

Comfrey used topical has been found to decrease muscle pain.<sup>64</sup> Use primarily topically as prolonged internal use has been associated with hepatotoxicity.

Side effects: hepatotoxic if used internally chronically, especially the root; do not use topically on deep wounds

**Ginger** (*Zingiber officinale*): circulatory stimulant, anti-inflammatory (PO and topical compress), analgesic, antioxidant, antispasmodic, immunomodulator

Ginger has constituents, including gingerols, which have been shown to inhibit cyclooxygenase, lipoxygenase, and prostaglandins, conferring its anti-inflammatory properties and other constituents, such as shogaols, that function similar to capsaicin in blocking pain. Gingerols and shogaols have also been found to exert effects on circulation. With this combination it's not surprising that ginger has been found to be helpful for decreasing muscle pain. Ginger essential oil has immunomodulator effects. Ginger is also effective against nausea and IBS symptoms, and so can be helpful if a patient with fibromyalgia is impacted by such. Ginger can be taken internally for the above noted effects, but can also be applied externally as a compress to mobilize circulation and ease pain at specific sites, and has been used specifically for fibrositis in the past for this purpose.

Side effects: can prolong bleeding time, should be stopped at least 2 weeks before procedure or operation

Ginkgo (Ginkgo biloba): circulatory stimulant, analgesic, antioxidant, anti-inflammatory

Ginkgo's primary action is to increase blood supply to the brain and peripheral circulation through vasodilation and decreasing viscosity of blood. Gikgolides and bilobalide support energy metabolism and provide protection to the brain. Its function in supporting a healthy central nervous system is useful in fibromyalgia. Furthermore, gingko is known for its enhancement of cognitive functioning and so can be useful in treating "fibrofog." Ginkgo also contains sesquiterpene lactones that confer anti-inflammatory

and antioxidant properties as well as flavonoids that also function as antioxidants. Gingko has been shown to be helpful in inhibiting hyperalgesia, making it particularly relevant in fibromyalgia. A small pilot study of ginkgo in combination with CoQ10 showed improvement in pain, as well as physical, emotional, and social functioning in patients with fibromyalgia.<sup>65</sup>

Side effects: can prolong bleeding time, should be stopped at least 2 weeks before procedure or operation; some people experience headaches if neck and shoulder musculature are tight due to increased circulation; this can be mitigated with relaxation of those muscles (through massage, stretching, etc.)

Jamaican Dogwood (Piscidia erythrina): strong relaxing nervine, strong hypnotic, analgesic, antispasmodic

Contains isoflavones that provide antispasmodic action and is a sedative nervine and hypnotic used for pain, sleep, and anxiety.

Lavender (Lavandula): mild relaxing nervine, antioxidant, analgesic, anti-inflammatory, antispasmodic

Lavender contains triterpenoids confer anti-inflammatory; rosmarinic acid which is antioxidant, antiinflammatory, and anxiolytic; linalyl acetate which is anti-inflammatory and sedative; and linalool which is anti-inflammatory, sedative, anxiolytic, and analgesic. Lavender has been found to be effective for anxiety, sleep,<sup>66</sup> depression,<sup>67,68</sup> stress, decreasing cortisol, and lavender essential oil effective for pain.<sup>69,70,71</sup>

Licorice (Glycyrrhiza glabra): adaptogen, anti-inflammatory, antispasmodic

Licorice is considered an adaptogen because it contains triterpenes which are metabolized in the body to have structures similar to adrenal cortex hormones, and so have been found to impact cortisol and other hormone levels, thus impact the body's response to stress. Constituents such as glycyrrhetinic acid and glycyrrhizin inhibit complement and prostaglandins to exert anti-inflammatory effects. It is also demulcent and so is soothing to the stomach and intestinal lining and can additionally help with IBS and digestive symptoms in fibromyalgia.

Side effects: prolonged or excessive use can cause hypertension, high sodium, and low potassium; avoid taking with diuretics, glycosides, spironolactone, steroids

#### Meadowsweet (Filipendula ulmaria): antioxidant, anti-inflammatory

Meadowsweet contains salicin, a plant salicylate, which is anti-inflammatory.

Side effects: high doses can cause stomach irritation

Nettle (Urtica diocia): nutritive, alterative

Nettle contains iron, potassium, phosphorus, silica, magnesium, manganese, cobalt, selenium, chromium, and sodium. It is also high in Vitamins A, C, D, K, protein, chlorophyll, and possibly B-Complex. The high content of calcium, magnesium, and silica specifically support skeletal muscle and connective tissue repair, making it a particularly useful nutritive for optimizing muscle and fascia health in fibromyalgia.<sup>59</sup>

#### Oregano: antioxidant

Oregano contains flavonoids which are antioxidant.

Side effects: Can inhibit platelets at therapeutic doses, so should be stopped at least 2 weeks before procedure or operation; can increase lithium levels

Passionflower (Passiflora incarnata): strong relaxing nervine, strong hypnotic, antispasmodic

Passionflower contains alkaloids and flavonoids which have a strong sedative effect. Apigenin is a flavonoid that has antispasmodic and anti-inflammatory effects. Some studies have even found that passionflower helps increase the pain threshold. Thus, passionflower is helpful for treating pain, easing anxiety, and supporting restful sleep in fibromyalgia.

#### Peppermint (Mentha piperita): antioxidant

Peppermint has antioxidants and exhibits anti-inflammatory and antispasmodic effects on the digestive system, making it helpful for IBS symptoms in fibromyalgia.

#### Red Clover (Trifolium pratense): mild relaxing nervine, alterative, antioxidant, antispasmodic

Red clover contains calcium, magnesium, chromium, phosphorus, potassium, thiamin, vitamin C, betacarotene, vitamin E, niacin as well as the antioxidant isoflavone genistein. Isoflavones also make red clover useful for menopause symptoms, so it can be used in this was to help balance in treating fibromyalgia as well.

Red Root (Ceanothus): lymphatic, alterative

Red Root supports transport of fluid across vessels and movement of lymph. In this way it is useful for clearing up a resolving infection or clearing out an old one, and can be useful if this is relevant for a patient with fibromyalgia.

Side effects: might increase bleeding so careful in blood disorders

Reishi (Ganoderma lucidum): adaptogen, alterative, mild relaxing nervine, antioxidant, immunomodulator

Reishi is revered for its adaptogenic and immunomodulating actions, making it a potent system supporting herb. Mycopolysaccharides provide immunomodulating, antioxidant, and anti-inflammatory properties. In TCM, Reishi is used to tonify qi and support vitality. Reishi continues to be studied for its neuroprotective effects in calming an overexcited nervous system. For these reasons, Reishi can play an important role in stabilizing and supporting resilience in the face of fibromyalgia.

Rosemary (Rosmarinus officinalis): antioxidant, circulatory stimulant, mild relaxing nervine, antispasmodic

Key constituents in rosemary include antioxidant flavonoids and rosmarinic acid which is antioxidant, anti-inflammatory, and anxiolytic. Externally it helps to increase circulation through vasodilation and is helpful for muscle and nerve pain.

Rue (Ruta graveolens): circulatory stimulant, anti-inflammatory, antispasmodic

Rue increases peripheral circulation. Alkaloids, furocoumarins, and rutin glycoside in rue have antispasmodic and anti-inflammatory actions. Rue can be used to relieve pain and improve blood flow to muscles and joints.

Side effects: can cause stomach irritation; fresh leaf can cause kidney and liver damage at high doses and skin rash when used topically

Saffron (Crocus sativus): antioxidant

Sage (Salvia officinalis): antioxidant

In addition to being antioxidant rich, sage has also proven useful in enhancing cognitive functioning, alertness and memory,<sup>72, 73, 74</sup> and so could be useful in treating the cognitive symptoms of "fibrofog." Fibromyalgia Adachi Siberian Ginseng (Eleutherococcus senticosus): adaptogen, immunomodulator

Siberian Ginseng can help improve cognitive function, mitigate fatigue and stress. Its impact on the HPA axis confers its adaptogenic properties. It also supports the immune system, protects the nervous system, and can improve sleep. In TCM, Siberian Ginseng builds qi. This combination of actions is why Siberian Ginseng is a vitality and nervous system supporting herb useful for mitigating the fatigue and stress of fibromyalgia.

**St. John's Wort** (*Hypericum perforatum*): moderate nervine, nervous system tonic, analgesic, antioxidant, antiinflammatory

Hypericin and other constituents in St. John's Wort act on serotonin, norepinephrine, and dopamine pathways in the nervous system, and inhibit monoamine oxidase, providing nervine antidepressant, sedative and pain-relieving properties. Topically, St. John's Wort relieves pain in nerves and muscles and has been used for fibrositis for this reason. St. John's Wort also contains melatonin, which, as discussed above, is helpful for supporting restorative sleep. Thus, in treating fibromyalgia, St. John's Wort can be helpful for managing pain, depression, anxiety, stress, and supporting sleep.

Side effects: can cause photosensitivity; risk for serotonin syndrome when taking SSRIs, 5-HTP; increases CYP450 activity and can interact with medications including digoxin, warfarin, oral contraceptives, antihistamines, calcium channel blockers, some antibiotic and HIV medications, H2 blockers, omeprazole, and antiepileptic drugs

Skullcap (Scutellaria lateriflora): moderate relaxing nervine, moderate hypnotic, vasodilator, antispasmodic

Skullcap is used to calm nervous tension and support the central nervous system. It has been used to balance hyperactivity in the nervous system such as with seizures. Skullcap is also useful for anxiety and stress, likely through the action of flavonoids that act on the GABA receptors to have a calming effect. Thus, skullcap may be useful to decrease excitability related to hyperalgesia and central sensitization and decrease pain, anxiety, and tension in fibromyalgia.

**Thyme** (*Thymus vulgaris*): antioxidant, anti-inflammatory

Thyme contains carvacrol which is anti-inflammatory, analgesic, antispasmodic; rosmarinic acid which is antioxidant, anti-inflammatory, and anxiolytic; and antioxidant flavonoids. It can be helpful for IBS symptoms.

Side effects: Can inhibit platelets at therapeutic doses, so should be stopped at least 2 weeks before procedure or operation

Tulsi/Holy Basil (Ocimum sanctum): adaptogen, mild relaxing nervine, antioxidant, immunomodulator

Tulsi has multiple antioxidants including ascorbic acid (vitamin C), beta-carotene, and eugenol. Betasitosterol, carvabrol, saponins, and ursolic acid are anti-inflammatory. Tulsi contains estragole which is psychoactive. Tulsi has historically been used to enhance meditation and for holy purposes. More recently, Tulsi has been found to stabilize cerebral blood flow and reduce symptoms of stress.<sup>75</sup> It has been shown to effect immune system functioning.<sup>76</sup> Thus, Tulsi can be a useful supportive treatment for improving cognitive and immune functioning and managing stress in fibromyalgia.

Side effects: Can inhibit platelets at therapeutic doses, so should be stopped at least 2 weeks before procedure or operation

Turmeric (Curcuma longa): circulatory stimulant, analgesic, antioxidant, anti-inflammatory, immunomodulator

Turmeric is renowned for its potent anti-inflammatory, antioxidant, and general system supporting properties. Curcumin is a key constituent providing these actions. It has also been found to have anti-hyperalgesic effects, supports the circulatory system, protects the nervous system, influences the immune system, protects muscles, and decreases fatigue. With all of these actions, its relevance to fibromyalgia is clear. The constituents of turmeric, including curcumin, are most active in the body when combined with piperine, a constituent of black pepper. Heat and fat also make turmeric most active and available in the body. It is common to combine turmeric with black pepper and a fat like coconut milk in something like a curry, for traditional recipes in indigenous diets tend to inherently optimize the medicine contained in food. Alcohol extracts fat-soluble compounds, and so a tincture can be a reasonable alternative.

Side effects: Can inhibit platelets at therapeutic doses, so should be stopped at least 2 weeks before procedure or operation

Valerian (Valeriana officinalis): moderate relaxing nervine, strong hypnotic, analgesic, antispasmodic

Valerian contains flavonoid glycosides which act on the GABA receptors to have a calming effect. Valerian is used for anxiety, nervous and muscular tension. It is helpful in promoting sleep by decreasing the time it takes to fall asleep and increasing the time spent asleep and the quality of sleep.<sup>77</sup> A small study found that patients with fibromyalgia who took baths in valerian had decreased tenderness, and improved well being and sleep.<sup>78</sup>

Wild Lettuce (Lactuca virosa): strong relaxing nervine, strong hypnotic, analgesic, antispasmodic

Lactucin, lactupicrin, and hyoscyamine are believed to be the constituents that give Wild Lettuce its sedative properties. Wild lettuce also has trace amounts of morphine, but not even at the level to be considered a true opiate. Nonetheless, Wild Lettuce is useful for calming agitation, sleep, and pain.

Side effects: Excess amounts can cause sweating, tachycardia, dizziness; can cause contact dermatitis

#### Wild Oats (Avena sativa): nervous system tonic, nutritive

Wild oats is considered one of the best herbs for nourishing a tired and stressed nervous system, due to its nutritive properties as a nervous system tonic. Wild oats is high in vitamin A and C, as well as many B vitamins including B 6, folic acid, niacin, riboflavin, and thiamine. It contains low amounts of vitamins E and K. Oat straw is rich in minerals such as calcium, chromium, iron, magnesium, phosphorus, selenium, silicon, and sodium. Wild oats also contain some cobalt, manganese, potassium, and zinc. Oat straw also contains protein and some amino acids such as arginine, histadine, leucine, lysine, phenylalanine, and tryptophan.<sup>59</sup> Thus, Wild Oats is fundamental to supporting the nervous system to strengthen and recover in a patient with fibromyalgia.

#### Willow (Salix alba): analgesic, anti-inflammatory (contains salicylate)

Willow is the original source of natural aspirin, salicylate. It has anti-inflammatory and analgesic effects and is useful for pain in fibromyalgia.

Side effects: can cause stomach discomfort; may inhibit platelets, so should be stopped at least 2 weeks before procedure or operation; do not take with anticoagulants

Wood Betony (Stachys betonica): mild relaxing nervine, nervous system tonic, mild hypnotic

Wood Betony contains alkaloids that act on the nervous system to soothe nervous tension and anxiety, calm muscular tension, and strengthen the nervous system. It helps an overburdened nervous system. Thus, Wood Betony can be helpful for the pain, tension, stress, and anxiety of fibromyalgia and support the nervous system to return to a more balanced state.

### **EXAMPLE HERBAL REGIMEN**

### TINCTURE LONG-TERM FORMULA

Reishi, Ashwaganda alternate with St. John's Wort, Ginkgo, Turmeric, Cayenne (individualized further based on constitution and other symptoms)

### MORNING AND DAYTIME TEA

Wild Oats, Nettles, Calendula, Ginger

#### NIGHTIME TEA

Chamomile, Lavender, Wild Oats, Valerian OR

Turmeric golden milk with black pepper, ginger

**RESCUE REMEDY** 

For acute pain, insomnia, stress

Skullcap, Jamaican Dogwood, Wild Lettuce

#### MASSAGE OIL

Arnica, Rosemary, Comfrey, Rue, Cayenne (or some combination thereof)

### RECIPES

The following are sample recipes provided as ideas for incorporating the above herbs into use.

### NUTRITIVE TEA RECIPE<sup>58</sup>

### Ingredients

- 2 parts of Peppermint (for flavor),
- 1 part Nettles
- 1 part Oat straw
- 1 part Alfalfa

### Instructions

Boil 1 cup water per 2 tablespoons tea. Pour over tea and steep for 10-15minutes, covered.

### Use

Drink up to one quart of tea a day for optimum results.

From: http://www.starwest-botanicals.com/content/nutrient\_herbs.html

### **GOLDEN MILK**<sup>79</sup>

### Ingredients

2 cups light unsweetened coconut milk (or almond or soymilk)

- 1 tablespoon peeled, grated fresh ginger
- 1 tablespoon peeled, grated fresh turmeric

3-4 black peppercorns.

### Instructions

Mix ingredients together in pot. Bring to a simmer and simmer covered for 10 minutes. Strain and sweeten to taste (if desired).

From: http://www.drweil.com/drw/u/ART03511/Dr-Weil-Anti-Inflammatory-Golden-Milk.html

### SPICY SARSAPARILLA AND ROOTS TEA<sup>80</sup>

Ingredients Equal parts: Sarsaparilla Spikenard White Willow 1 tsp of cinnamon Flavor with a bit of raw honey to bring out the flavor of the roots

### Instructions

Decoction: Bring to a boil over a low heat, simmer for 10 minutes. Let steep until cool enough to drink.

This pleasant tasting root tea is used as a blood purifier and cooling drink. Nice in the morning for joint pain,backache and sore muscles.From <a href="http://www.anniesremedy.com/chart\_remedy.php?rem\_ID=565">http://www.anniesremedy.com/chart\_remedy.php?rem\_ID=565</a>

### GINGER OIL<sup>81</sup>

### Ingredients

1 cup of fresh or dry ginger root finely chopped

2 cups olive oil

### Instructions

Herbal Oil Infusions: Grate or chop the fresh ginger root. Infuse in olive oil using a low, steady heat for 2 to 3 days.

(Note: Using fresh ginger root can be a bit tricky, due to the high water content. To reduce condensation, leave the lid to your pot ajar, or if using a jar method, cover the top with cheesecloth.)

Massage onto areas to relieve pain and improve blood flow to muscles and joints. Use ginger oil anytime you want to increase circulation and restore energy. Makes a great spicy cooking oil too!

From <a href="http://www.anniesremedy.com/chart\_remedy.php?rem\_ID=397">http://www.anniesremedy.com/chart\_remedy.php?rem\_ID=397</a>

## CAYENNE OIL<sup>82</sup>

### Ingredients

4 tbsp Cayenne pepper powder or chopped cayenne pepper flakes

1 cup Olive oil

Optional additions: Menthol crystals, peppermint or rosemary essential oils

(The ratio of oil to pepper will depend on the hotness of the peppers, and your own preferences, a good ratio is 1 part powder to 4 parts oil)

### Instructions

Herbal Oil Infusions: Use a steady source of low heat for 10 days to 2 weeks, approximately 100 degrees F. Stir every day until the last. Pour off into a clean jar and let settle overnight. Decant the clear oil off the top.

### Variations

To make an "icy/hot" oil add menthol crystals to oil while still warm enough to melt the crystals. Watch out for the fumes! For a less intense menthol experience, add peppermint essential oil when the cayenne oil cools to room temperature.

Cayenne oil makes a great base for balms. Melt in 30g of beeswax per 1 cup of oil to make a balm.

### Use

Massage onto areas to relieve pain and improve blood flow to muscles, nerves, and joints. For quick headache relief, massage the oil or balm across the temples.

CAUTION: Cayenne oil contains capsaicin, which causes a burning sensation. This is normal and should decrease with repeated use; capsaicin only causes the sensation of damage, not real damage to tissues. Test the strength of your oil on a small patch of skin to gauge its effects before applying to wide areas.

From <a href="http://www.anniesremedy.com/chart">http://www.anniesremedy.com/chart</a> remedy.php?rem ID=312

## RUE OIL<sup>83</sup>

### Ingredients

2 cups finely cut and bruised rue flowering tops

4 cups olive oil

2.5 oz vodka

### Instructions

Herbal Oil Infusions: Harvest by cutting 3-4 inches of the newest green top stems, leaves, and flowers. Let wilt on the stems for 24 hours to decrease the amount of water and let any critters depart peaceably.

Combine rue, oil, and vodka a wide mouth jar or pan, covering loosely to allow for water evaporation. Infuse with a low steady heat of approximately100 degrees F. (oil should be hot, but never near smoking). After 10 to 14 days strain well, and store in a clean bottle in a cool cupboard.

Use

Massage onto areas to relieve pain and improve blood flow to muscles and joints.

From <a href="http://www.anniesremedy.com/chart\_remedy.php?rem\_ID=752">http://www.anniesremedy.com/chart\_remedy.php?rem\_ID=752</a>

## DEEP TISSUE OIL<sup>84</sup>

### Ingredients

4 oz of wintergreen oil
4 oz of extra virgin olive oil
½ cup of dried Arnica flowers
½ cup of dried St John's Wort flowers
½ cup of dried Calendula flowers
¼ cup of powdered Cayenne pepper
¼ cup of dried, grated Ginger root
1 oz of peppermint oil or peppermint-based menthol crystal

### Instructions

All of the ingredients are placed in a jar and soaked for at least two weeks. Three to four months is ideal. Shake the jar frequently. Strain out oil using sieve of cheese cloth.

### Use

For localized treatment of pain, this deep tissue formula is useful in alleviating pain, stimulating circulation, and assisting in healing. This oil can be used for any type of trauma or injury near the surface, or where any sort of skin, bone or joint healing is needed.

From: http://www.all4naturalhealth.com/fibromyalgia-herbs.html

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