Herbal Medicine for Dysmenorrhea

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Abstract

Herbal medicines can be used alone to prevent and treat primary dysmenorrhea or used to augment other therapies (nutritional, hydrotherapy, and/or pharmaceutical). The major categories of herbs reviewed in this article include uterine spasmolytics, inflammation modulators, and astringent tonics. Herbs a covered include *Viburnum opulus* (cramp bark) and *V. prunifolium* (black haw), *Foeniculum vulgare* (fennel), *Atropa belladonna* (belladonna), the Chinese formula *Dāng guī sháo yào sǎn* (dong quai and peony powder), *Zingiber officinale* (ginger), *Trillium* spp. (bethroot), *Rosa* spp. (rose), and *Psidium guajava* (guava). Details of dosing and safety are discussed with each herb. γ-Linolenic acid, a component of several plants, is also discussed.

Introduction

Dysmenorrhea is a condition involving menstrual cramps so severe they interfere with normal activities of daily life. Some degree of cramping without interfering with usual activities may be normal for many women during menses. Prolonged dysmenorrhea, severe dysmenorrhea, or dysmenorrhea accompanied by other symptoms (such as menorrhagia) should be investigated more carefully to rule out more serious underlying conditions, such as uterine fibroids or endometriosis. However, many women with mild-to-moderate dysmenorrhea have what is essentially a functional problem that is quite amenable to herbal and lifestyle therapies.

Prostaglandins (Pgs) are key mediators that trigger shedding of the endometrial lining during menses as well as inducing uterine muscle contractions to help remove the lining.[1] Such contractions also cause ischemia in the endometrium, contributing to the death and shedding of these cells. Magnetic resonance imaging has confirmed that, in women with dysmenorrhea, compared to those without the condition, more-severe myometrial contractions and resulting ischemia correlate well to pain levels experienced by these patients.[2]

Simple but often effective home measures, such as hot water bottles or heating pads, over the pelvic area are not discussed in this article but should not be overlooked, as these remedies are harmless and effective ways to help relieve some dysmenorrhea-related symptoms. However, in some patients, these measures are not effective, or are only very temporary, thus necessitating some kind of oral therapy.

Uterine Spasmolytics

Reducing excessive myometrial activity is a cornerstone of herbal treatment for women with dysmenorrhea. Most herbs that do this, referred to as spasmolytics, have unknown mechanisms of action. The traditional use of these herbs—and in some cases preliminary clinical trials—for this indication is strong, and empirically they are effective.

Viburnum opulus (cramp bark) and *V. prunifolium* (black haw) bark and leaf are two particularly classic American herbs used for dysmenorrhea.[3] Both of these shrubs, from the Caprifoliaceae family, are native to the deciduous woodlands in the eastern part of North America. The herbs are of mild potency when used as teas or tinctures. Black haw has a particularly strong affinity for the uterus, compared to cramp bark. Although the more-recent preclinical literature uniformly reports black haw to be a uterine relaxant, some older studies did not report this, possibly because of adulteration of black haw with *Acer spicatum* (mountain maple).[2,4]

Usual doses of undiluted (1:2–1:3 weight:volume [w:v] ratio) fresh-plant tinctures of both plants are 3–5 mL (0.5–1 tsp) every 2 hours for acute dysmenorrhea for up to 3 days. The herbs should ideally be started 1–2 days ahead of the onset of menses to prevent dysmenorrhea, and then continued at the doses stated above 3 times per day until menses are over.

Foeniculum vulgare (fennel) fruit (often mischaracterized as a seed) is an Apiaceae family plant from the Mediterranean. This herb is famous as a carminative, meaning that it relaxes gastrointestinal smooth muscle, generally mildly. Fennel also relaxes uterine smooth muscle. In a clinical trial assessing this traditional use, 30 Iranian women with moderate-to-severe

primary dysmenorrhea took no medication for one menstrual cycle, the non-steroidal anti-inflammatory drug (NSAID) mefenamic acid for one menstrual cycle, and then fennel, in the form of 2% steam-distilled volatile oil, every 4 hours for the third menstrual cycle.[5] Fennel oil and mefenamic acid were both significantly superior to no treatment for relieving menstrual symptoms. Mefenamic acid was significantly superior to fennel oil for relieving pain on menstrual days 2 and 3, but the two remedies were equal on all other days. Five patients stopped taking fennel because they disliked its odor and taste, and 1 patient stopped because she perceived an increased menstrual flow.

In another trial involving 110 Iranian girls with primary dysmenorrhea, the patients were randomly assigned to take fennel oil or mefenamic acid for two menstrual cycles. Pain relief was equally good between the two groups.[6]

In a follow-up trial, 80 Iranian women with primary dysmenorrhea were randomly assigned, for three cycles, to (1) take 30 mg of fennel oil in a capsule every 4 hours 3 days before menses until the fifth day of menses or (2) to have no treatment.[7] Nausea and weakness were significantly reduced by fennel oil, compared to no treatment. Duration of menses and associated symptoms were also significantly lower in the fennel-oil group, compared to controls. There were minimal adverse effects.

There are many ways for patients to take fennel. It can be made into a tea by simmering 1 tbsp (5 g) of the fruits in a cup of water for 15 minutes, covered, then straining and drinking the resulting liquid. One such cup should be drunk every 4 hours during menses. A tincture of the fruits (1:3 w:v) can be taken at a dose of 3 mL (0.5 tsp) every 2–3 hours during menses. The volatile oil, at a dose of 3–5 drops, can be administered in a capsule every 2–4 hours during menses. Fennel in any form can aggravate heartburn, but, otherwise, is very safe.

Atropa belladonna (belladonna) is a Solanaceae family plant native to Eurasia. This plant contains tropane alkaloids, such as atropine, that are potent antimuscarinics. When milder herbs have not worked, belladonna should be considered, as it can relax the uterus in some of the more serious cases of dysmenorrhea.[8] Belladonna should not be used without guidance by a practitioner who is skilled in its use.

Dosing of the fresh-plant leaf tincture (1:3 w:v ratio) is typically 10 drops to start with. The dose is raised by 1–2 drops per dose every 2–3 hours thereafter until either symptoms are alleviated or the patient starts to develop a dry mouth and dry eyes. The eminent Eclectic physician Harvey Wickes Felter, MD, also recommended a vaginal or rectal suppository of belladonna for spasmodic dysmenorrhea,[9] but these are not readily available and are not generally needed. Belladona is contraindicated in patients with glaucoma and tachycardia, as well as those taking other antimuscarinic medications. Common signs of overdose include blurry vision, confusion, tachycardia, enlarged pupils, or stupor.

Dāng guī sháo yào sǎn (dong quai and peony powder; *toki-shakuyaku-san* in Japanese) is a traditional Chinese formula that originated in the *Jīn Guì Yào Lüè* (*Essentials from the Golden Cabinet*) by Zhāng Jī (published circa 220 CE). Components of this formula are listed in Table 1. The formula is commonly used to treat Stagnant Blood, Cold, and Yin Deficient conditions, which often equate symptomatically to dysmenorrhea. In a double-blinded trial, Japanese women (25 women in each group, 50 total) with dysmenorrhea of the type applicable to this formula were randomly assigned to 2.5 g of dong quai and peony powder t.i.d. or placebo for two menstrual cycles.[10] The herbal formula was significantly superior to placebo for relieving symptoms. The herb *Paeonia lactiflora* (red peony; white peony is this same herb with the root bark removed) in this formula is particularly notable as a uterine spasmolytic.

There are many other spasmolytic options for patients, some of the most notable of which are listed in Table 2. When choosing among them, flavor, potency, bioregionalism, and patient preference should all be considered.

Inflammation Modulators

As noted, Pgs (particularly series 2) play a key role in causing dysmenorrhea. NSAIDs are frequently used to treat dysmenorrhea successfully as a result. However, given the potential risks with these drugs, including increased leaky gut,[11] safer alternatives are needed. Herbal inflammation modulators are one option. Surprisingly, there has been almost no research on these promising herbs.

Table 1. *Dāng Guī Sháo Yào Sǎn* (Dong Quai and Peony Powder)

Latin & common name	Part used	Amount in formula
Angelica sinensis (dong quai, *dāng guī*)	Prepared root	9 g
Paeonia lactiflora (red peony, *sháo yào*)	Root with bark	48 g
Wolfiporia cocos (hoelen, *fú ling*)	Sclerotium	12 g
Atractylodes macrocephala (white atractylodes, *bái zhú*)	Root	12 g
Alisma orientalis (water plantain, *zé xiè*)	Rhizome	24 g
Ligusticum chuanxiong (Szechuan lovage, *chuān xiōng*)	Root	24 g

Source: Scheid V, Ellis A, Bensky D, Barolet R. Chinese Herbal Medicine Formulas and Strategies, 2nd ed. Seattle: Eastland Press, 2009.

Table 2. Other Spasmolytics Traditionally Used to Alleviate Dysmenorrhea

Latin & common names	Part used	Typical dose[a]	Notes
Ammi visnaga (khella)	Fruit	Tincture (1:2 w:v), 1–2 mL q2–4h	Very safe, moderate potency
Dioscorea villosa (wild yam)	Root	Tincture (1:2 w:v), 3–5 mL q2–4h	Mild potency, very safe
Lobelia inflata (lobelia)	Leaf, flower, fruit	Tincture (1:3 w:v), 5–10 gtt q2–4h	Very potent, easily causes nausea, dose carefully, mix with ginger
Piscidia piscipula (Jamaica dogwood)	Bark	Tincture (1:3 w:v), 0.5–2 mL q2–4h	Moderate potency, very safe, sustainability in question

[a]Starting 1–2 days before menses and continuing through menses.

Zingiber officinale (ginger) rhizome has been used historically and studied in modern times for dysmenorrhea. This Asian native plant from the Zingiberaceae family is a digestive carminative/spasmolytic (along the lines of fennel mentioned above) while also being an inflammation modulator. It likely acts in patients with dysmenorrhea in many ways.

In one study, 75 Indian nursing students were assigned to one of three treatment groups.[12] One group was given 1 g of ginger b.i.d. with warm water for the first 3 days of menses. Another group performed progressive muscle relaxation, and the third group (control group) was not treated. Ginger was clearly superior to either the progressive muscle relaxation or the control group for relieving dysmenorrhea symptoms.

Another trial randomized 118 Iranian women to take either 500 mg of ginger t.i.d. or placebo for one of two protocols.[13] In the first protocol, ginger or placebo were started 2 days before menses and continued until the third day of menses. In the second protocol, ginger or placebo were started at the onset of menses and continued for 3 days. The patients' pain was significantly decreased with ginger compared to placebo in both dosing protocols. Duration of pain was reduced only when ginger was started prior to the onset of menses. A similar randomized trial with 70 Pakistani women showed that ginger (dose unknown) was superior to placebo for reducing dysmenorrhea-related pain.[14]

A typical dose of ginger in capsules is 500–1000 mg b.i.d.–t.i.d. A typical dose of fresh ginger rhizome tincture (1:3 w:v) is 5–10 drops t.i.d. This can be too spicy and cause digestive upset, heartburn, or rectal burning.

γ-Linolenic acid (GLA) is an omega-6 fatty acid found in several plants including *Oenothera biennis* (evening primrose), *Borago officinalis* (borage), and *Ribes* spp. (currant). GLA can be converted to beneficial series 1 Pgs that are anti-inflammatory but can also ultimately be converted to arachidonic acid (AA) and problematic series 2 Pgs. Most clinical studies seem to suggest that GLA is either inflammation-modulating or neutral, while dietary intake of its precursor linoleic acid is fairly consistently proinflammatory. This so-called GLA paradox has been explained several ways.

First, linoleic acid competes with the beneficial omega 3 fatty acid precursor α-linolenic acid (ALA) for δ-6-desaturase (D6D). This means that the ALA may not get converted and form into inflammation-modulating forms such as eicosapentaenoic acid. GLA does not compete with D6D, which means that ALA can convert to longer-chain fatty acids. Second, as noted, GLA supplementation can lead to increased series 1 Pg formation. Third, GLA supplementation increases levels of dihomo-γ-linolenic acid, which is then converted into a form that blocks transformation of AA into the more-problematic series-2 Pgs and series-4 leukotrienes.[15] Finally, at least one human clinical trial in women with dysmenorrhea showed that most GLA administered orally is simply not converted to AA.[16]

A pall lies over much of the human research on GLA-rich evening primrose oil, because one of the most prolific researchers in the field, David Horrobin, PhD (1939–2003), also profited from the sale of this product (he was chief executive of Scotia, a now-defunct company that sold the evening primrose oil he studied) and marketed it heavily.[17] Dr. Goran Jamal, MB, ChB, PhD, was employed by Scotia and was found to have falsified several clinical trials on evening primrose oil for the company in exchange for a percentage of royalties from sale of the supplement.[18] This makes it difficult to be certain which if any of the clinical trials on evening primrose GLA are authentic and which are fraudulent; other GLA trials do not have this problem.

What little independent research exists has not shown GLA to be effective for women with dysmenorrhea.[19] However, it is notable that fish-oil supplements have shown some benefits for women with mild-to-moderate dysmenorrhea in double-blinded trials, including reducing the need to use ibuprofen, in adolescent females.[20,21] At least one trial showed that fish oil was superior to ibuprofen.[22]

Uterine Astringents/Tonics

A category of herb that is completely outside of conventional medicine is uterine tonics. These herbs inevitably contain significant amounts of tannins and are astringent. The herbs mentioned here have strong histories of use for uterine problems, including dysmenorrhea. The mechanisms of action for these herbs are completely unexplored and unknown.

Trillium spp. (bethroot, almost certainly a corruption of the name birthroot) in the Melanthiaceae family (formerly Liliaceae) is perhaps the quintessential astringent uterine tonic and is one of the most powerful based on clinical experience. The roots are used as medicine; however, those growing in the Eastern part of North America are threatened, primarily by habitat loss. Western trilliums (such as *T. ovatum*) are far more abundant and secure, but could easily go the way of their eastern cousins (such as *T. erectum* and *T. grandiflorum*). However, it should be noted that the Nature Conservancy's NatureServe system considers all three of these species to be secure in the lowest risk category and provides some evidence supporting these listings.[23] This directly contradicts the United Plant Savers characterization of the genus as "at risk," which, based on the organization's website (as of June 24, 2015) does not give any basis for this listing.[24]

Some states and provinces—such as New York, Michigan, Minnesota, and Ontario—have made it illegal to injure or harvest trilliums. Until the situation is clarified, only western trilliums (and only those harvested under known sustainable conditions) and cultivated or wild-simulated eastern trilliums should be used (provided local laws allow trillium harvesting).

There is no research on bethroot for dysmenorrhea. Nevertheless, the herb is indicated for preventing dysmenorrhea. Bethroot should be started after ovulation and continued through menses for optimal efficacy. This herb is most indicated when dysmenorrhea is accompanied by menorrhagia, prolonged menstrual bleeding, or spotting during the luteal phase. Fortunately, only small doses are needed. The usual dose of fresh root tincture (1:2–1:3 w:v) is 1–2 mL t.i.d.

Another less-common uterine astringent in the West is *Rosa* spp. (rose), although it is apparently more commonly used this way in Taiwan. All parts of this well-known namesake of the Rosaceae family are used. In a clinical trial, 130 Chinese adolescent nursing students were randomized to either drink rose hip tea or to receive no treatment for 6 months.[25] The tea was made from 6 rose hips simmered for 10 minutes in 300 mL of water and then strained. Two cups were drunk per day, starting 1 week before menses and ending on the fifth day of menses. Multiple symptom questionnaires showed that the rose-tea drinkers had significantly less pain and anxiety than the untreated controls.

Psidium guajava (guava) of the Myrtaceae family is native to the Caribbean, and Central and South America. The fruits of this short tree are a common delicious food, but the leaves are used as an astringent medicine. Though it is better-known as an antiparasitic and antidiarrheal, it also apparently has astringent tonifying effects on the uterus.

In a double-blinded trial, 197 Mexican women with primary dysmenorrhea were randomized to receive either 300 or 600 mg t.i.d. of guava leaf extract (standardized to contain 1 mg of flavonoids/300 mg), 400 mg of ibuprofen t.i.d., or placebo for three menstrual cycles.[26] Treatment was started the day before menses and continued for 5 days. The 600-mg dose of the guava leaf and ibuprofen were significantly superior to placebo for reducing menstrual-related pain. Guava leaf at the higher dose was actually significantly superior to ibuprofen for relieving pain. Treatment was very safe, except for 1–2 reports of digestive upset (also seen in the ibuprofen and placebo groups). This is an intriguing medicine and may represent a sustainable local resource for women in the southern Americas.

Conclusion

Numerous herbs can be recommended for patients with primary dysmenorrhea on the basis of these herbs' long historical uses, and high degree of safety and/or efficacy. Herbal spasmolytics have the most evidence of efficacy and are almost always important to include in a formula or natural-treatment plan. Patients who have not tolerated NSAIDs or wish to avoid them can certainly attempt to substitute an herbal spasmolytic and inflammation modulator at the very least. Inflammation-modulating herbs are the least studied but have much promise. Uterine astringents should be added, particularly when there is a history of menorrhagia or for particularly chronic or stubborn problems.

Other herbs that may be necessary to help patients with dysmenorrhea that does not respond to other treatments—but are beyond the scope of this article to discuss in detail—include pelvic lymphagogues, such as *Fouquieria splendens* (ocotillo) bark, and hormone-modulating herbs, such as *Vitex agnus-castus* (chaste tree) or *Cimicifuga racemosa* (black cohosh) root. The totality of the patient should be treated and not just her symptoms. This often requires a more constitutionally focused herbal formula to achieve a cure.

Herbal medicine has much to offer women with primary dysmenorrhea. More clinical research is definitely warranted on the herbs included in this article and on other herbs. They can readily be combined with conventional and nutritional/supplemental approaches as desired. These herbs should be viewed as useful multifaceted tools with real potential to help patients and not feared or discarded because of supposedly insufficient evidence, as their long historical uses may not be as well-documented but are still important for directing clinical practice. ■

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