Effects of hot temperament herbs on primary Dysmenorrhea: a systematic review

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Abstract

Context: Dysmenorrhea refers to the symptom associated with painful menstruation which affects the quality of life of a large number of females who suffer from this disorder. Dysmenorrhea has two categories: primary, which occurs in the lack of pelvic pathology and secondary, from identifiable organic causes. Current treatment for primary dysmenorrhoea has a failure rate of 20% to 25% and may be contraindicated or not tolerated by some patients. Herbal medicine may be an appropriate alternative. In this article we focus on herbal medicine to identify the efficacy and safety of herbs with 'hot temperament' for primary dysmenorrhea compared with placebo and other treatments.

Evidence Acquisition: This systematic review study was designed and executed in 2017. In this review, 128 studies were evaluated, only 18 of which were randomized clinical trials of herbal medicines in Iran. These trials included hot temperament herbs. Required data was gathered using electronic databases, such as Scopus, Pub med, Web of science, EMBASE and Chinese scientific journal database, also articles were evaluated according to the JADAD scale.

Result: There is no negative result in the studies. Most of studies showed that the effects of Ginger are higher than other herbs in the treatment of primary dysmenorrhea. All of the mentioned studies showed the higher effect of herbal medicines than Ibuprofen on the treatment of dysmenorrhea.

Conclusions: The present study discusses the use of hot temperament herbs for primary dysmenorrhea. Effective herbal medicines can be used as a good alternative to treat women who do not respond well to conventional therapies or have contraindications to use of these drugs.

Key words: herbal medicine, dysmenorrhea, randomized clinical trial

Introduction

Dysmenorrhea is defined as symptoms associated with painful menstruation which can be divided into primary and secondary dysmenorrhea (1). The latter is a type of menstrual pain not a primary gynecologic disorder (2). More than 50% of women have primary dysmenorrhea. (3). For most women, menstrual pain tends to occur after pregnancy. Primary dysmenorrhea is affected by unnecessary levels of prostaglandins, hormones which make uterus indenture during menstruation and childbirth. The pain seems to result from uterus contractions, due to reduced blood supply in the inner uterine lining (endometrium) (4). Other factors which can cause the pain of primary dysmenorrhea, include a retroverted uterus (5). Non-steroidal anti-inflammatory drugs (NSAIDs) are operative in dismissing the pain of primary dysmenorrhea but which has side effects of nausea, dyspepsia, peptic ulcer, and diarrhea. (6). Hormonal birth control may progress signs of primary dysmenorrhea (7). Recent studies have shown that the birth control pill, comprising low doses of estrogen, reduces pain related with dysmenorrhea. (6,8). Norplant and Depo-Provera are also effective, since these methods often induce amenorrhea (9). Because of side effects and contraindication of these medicines, some peoples cannot use chemical or hormonal drugs. That is what makes us think of new treatments (10). Traditional medicine has enjoyed a special status among people throughout the past, most of which is related to medicinal herbs (11).

In the past, a verity of studies have been conducted for treatment of dysmenorrhea (12). There are inadequate data to commend the use of herbal supplements for the treatment of dysmenorrhea such as melatonin, vitamin E, and fennel (13). Supplementary research is recommended to follow up strong evidence of advantage of ginger, valerian, zinc sulphate, fish oil, and vitamin B1(14). Traditional Chinese herbal medicines are a method for the treatment of dysmenorrhea, some of which were not accepted in Iranian Culture (15). Traditional Iranian books are a rich source of medicinal herbs for dysmenorrhea. Some of these herbs have undergone clinical trials and have had effective results (16).

The functional mechanism of herbal medicines is still not understood but some of them have anti-inflammatory and anti-spasmodic effects (17). However, a variety of studies have focused on herbal medicines. In addition, a lot of studies have shown the effect of herbal medicines on dysmenorrhea in Iran. Because of dysmenorrheal etiology which is prostaglandin F 2 α (PG-F2α) effects stimulate the uterine muscles and cause severe vascular contraction (18). For this reason, one of the effective treatments for primary dysmenorrhea is the administration of prostaglandin-medications. Some women cannot use herbal medicines with 'cold temperament', so the present study focused on hot temperament herbs to find the efficacy of 'hot temperament' herbs on primary dysmenorrhea.

Methods

Study design and search strategy

In this systematic review which was performed in 2017, the required data was gathered using electronic databases, such as Scopus, Pubmed, Web of Science, EMBASE and Chinese scientific journal database. The key words used in the present study were dysmenorrhea, primary dysmenorrhea, herbal medicines, medicinal plants, hot temperament. All randomized controlled trails (RTCs) had to be included in this study. Observational, cohort, qualitative, and laboratory studies were excluded. Women of reproductive age with primary dysmenorrhea and no identifiable pelvic pathology, ultrasound scan and laparoscopy examination and self reporting women were included in this study. Exclusion criteria consisted of dysmenorrhea resulting from use of intra uterine contraceptive devices and patients with a diagnosis of pregnancy, stroke, and organic disease; in addition, cold temperament herbs were excluded from the study.

Article evaluation

The selected papers extracted from the databases were assessed by two investigators using Jadad scale. Discrepancies between the two raters were referred to the third investigator. In this balance, the maximum mark is 5 and the papers with marks of 3 were examined in this study.

Results

In this review, 128 studies were identified, only 18 of which were clinical trials of herbal medicines in Iran. These trials include hot temperament herbs (Figure 1 & Table 1).

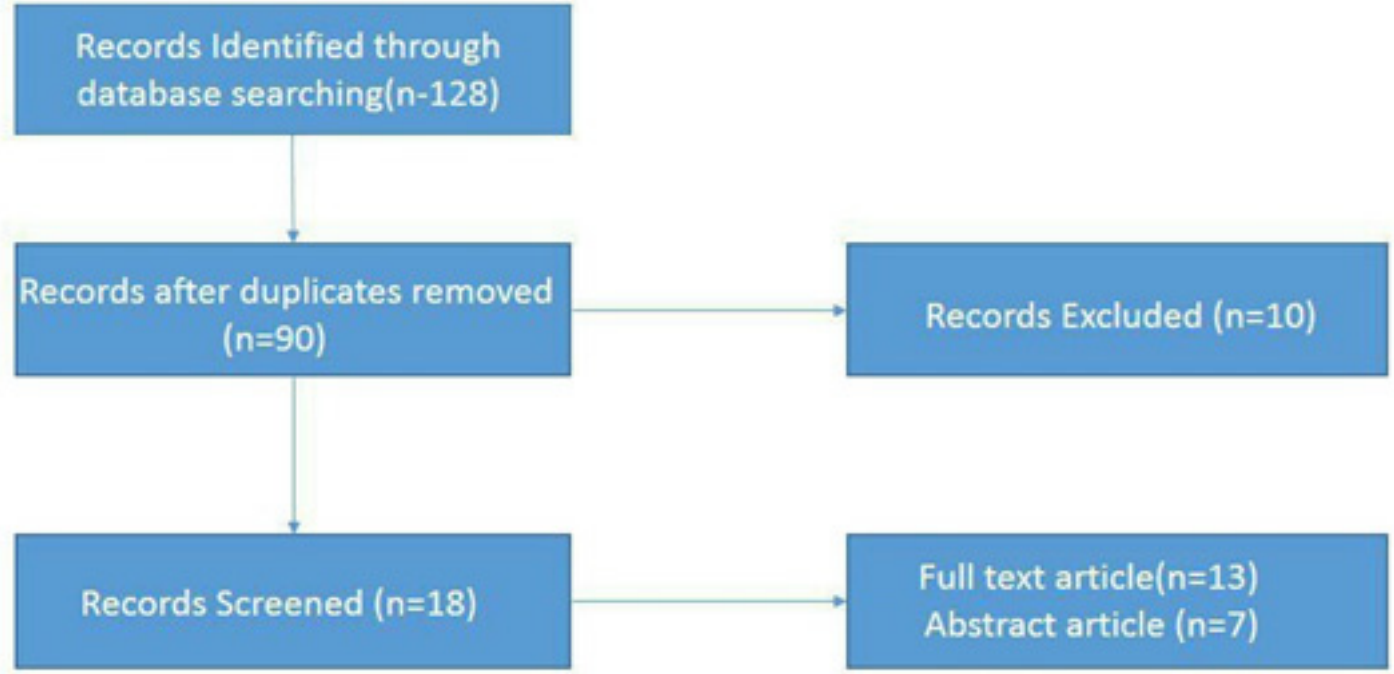
Ginger (Zingiber officinale Rosc)

Ginger is one of the main hot temperament herbal inhibitors of prostaglandins, which has been traditionally used for the treatment of dysmenorrhea, arthritis, and colic (19). Ginger is grown in more countries such as India, China, Nigeria, and Thailand (20). The main effects of Ginger are anti-nausea, blood clotting, antibacterial, antioxidants, anti cough, anti-liver poisons, anti-inflammatory, urinating, reduced spasm, anti-flatulence. In Iranian traditional medicine ginger was used with a mix of candy and buckthorn to prevent flatulence of premature fruit (21). Also Ginger can secrete cortisol and manage kidney transplantation (22). Blood cholesterol lowering Oleoresin and essential oil are also produced from ginger (23). Ginger can be boiled in water and drinking the solution can reduce the pain. Ozgoli et al., in a double-blinded clinical trial study, showed that ginger has the same effect of mefenamic acid or ibuprofen in pain reduction. Their study had 3 groups, including Ginger (64%), ibuprofen (66%) and mefenamic acid (58%). The mechanism of Ginger is to inhibit cyclooxygenase and lipooxygenase pathways in prostaglandin, which is the main effect of ginger on menstrual pain (24).

Chamomile (Matricaria Chamomilla)

This flower is a traditional herbal medicine whose extract shows both anti-inflammatory and anti-spasmodic effects. It is also helpful for women with constipation, leading to

Figure 1: Flowchart showing the trial selection process for the study investigating hot temperament plants on primary dysmenorrhea



pain reduction with sedative and anti-anxiety effects (25-27). Chamomile is used for a sore stomach, bowel syndrome, and gentle sleep aid. It is also affected as a mild laxative and is anti-inflammatory and bactericidal (28). Chamomile is a little bitter herb that effects to soothe nerves, increase mental awareness, settle the stomach and promote digestion (29). Its formal use is tea to calm hyperactive children, menstrual cramps, and asthma. Chamomile is useful for the liver and lungs and helps reduce jaundice, relieve chest pain, eliminate infection, swelling, and ease withdrawal from drugs (30-34, 35). For treating the sore stomach can take a cup not accompanied by food for three months. Chamomile assists healing of wounds in animals. It also showed some benefit in an animal model of diabetes (36). Essential oil of chamomile is an important antiviral agent against herpes simplex virus type 2 (HSV-2) in vitro (37). The methanol extract of M. recutita showed effective anti allergic activity by reserve of histamine release from mast cells in cell-mediated allergic models (38). A variety of studies have examined the effect of Chamomile on primary dysmenorrhea. A study carried out by Bani et.al. showed that prescription of Chamomile tea to a study group was significantly different from control groups after one month's drinking (39). Another study showed that the Chamomile was more effective than mefenamic acid in pain reduction.

Mint (Mentha Longifolia):

This medicine is another hot temperament herb which has been used to treat stomach disorders, nausea, vomiting, and dysmenorrhea (40). Mint has a common use for alleviation of stomach pain, as a blood diluent and is effective in strengthening the stomach. Mint contains phenolic compounds such as Rosmarin Acid and Flavonoids and has antimicrobial, antiviral, antioxidant and analgesic properties. It has been shown in laboratory studies that the menthol content of mint oil acts as an antagonist of calcium channels and has the property of muscle relaxation (41). This herbal medicine can be used as a tea. In a study conducted by Xu Huaxi et al., no significant difference was found between Mint and nonsteroidal anti-inflammatory drugs (NSAIDs)(42). Zataria Multiflora is a member of the mint family and its oil is thymol and carvacrol. Some studies showed that Zataria is useful to treat respiratory diseases and dysmenorrhea(43). Antispasmodic effects of smooth muscles are a common property of Multiflora. This herb can inhibit contractions caused by cell depolarization and block calcium channels. Amoueeroknabad. divided these herbs randomly into 3 groups, including placebo, 1% of the multiflora oil and 2% of the multiflora oil. The study showed that multiflora leads to pain reduction in a third group (44).

Valeriana officinalis:

This has been a sedative drug since the 11th century (45). The main effects of valeriana are strengthening the brain, reducing infections and strengthening the liver and stomach to treat icterus (jaundice). It is also useful for uterine inflammation and kidney pain (46). It can reduce chest pain (47). Valerian has a function similar to benzodiazepines; however, as a substitute of binding to the gamma subunit like a benzodiazepine, it seems to bind to the beta subunit on the GABA-A receptor instead (48). Valerian can decrease the removal or metabolism of GABA, thereby allowing GABA to stay around longer (49). Valeriana roots and rhizomes have essential oil which contain valepotriates. Three studies have been conducted on Valeriana which associated the consequence of its root with placebo, mefnamic acid and other NSAIDs, respectively. The first study showed that Valeriana was most effective in pain reduction, as compared with placebo (50). In the second and third studies, it was found that valeriana has the same effect as mefnamic acid and other NSAIDs. Recent studies have shown that systematic symptoms of dysmenorrhea were reduced after taking Valeriana (51).

Table 1.summary of included trials

References	Participants	Experiment Group	Control Group	Results	Treatment Duration	Side Effects	Jadad Score
25	60 students	Chamomile	Mefnamic A	No significant Difference	3MCs	No	Not Calculated
26	50 single F	Chamomile	placebo	Chamomile is effective in Dysmenorrhea	3MCs	No	4
27	90 students	Chamomile	placebo	Chamomile is effective in Dysmenorrhea	3MCs	No	4
30	50 students	Chamomile	placebo	Chamomile is effective in Dysmenorrhea	6MCs	No	3
31	104 single F	Chamomile	Mefnamic A	No significant Difference	3MCs	No	5
52	110 single F	Cramp Bark	placebo	Cramp is effective in Dysmenorrhea	6MCs	No	4
53	65 single F	Cramp Bark	Ibuprofen	No significant Difference	3MCs	No	5
55	105 single F	Cramp Bark	placebo	Cramp is effective in Dysmenorrhea	3MCs	No	5
56	60 single F	Cramp Bark	placebo	Cramp is effective in Dysmenorrhea	3MCs	No	3
20	150 students	Ginger	Mefnamic A	Ginger is effective in Dysmenorrhea	3MCs	No	5
22	122 students	Ginger	Mefnamic A	Ginger is effective in Dysmenorrhea	3MCs	No	Not Calculated
23	150 single F	Ginger	Mefnamic A	Cramp is effective in Dysmenorrhea	3MCs	No	Not Calculated
24	120 single F	Ginger	Mefnamic A	Ginger is effective in Dysmenorrhea	3MCs	No	5
25	47 single F	Ginger	placebo	Ginger is effective in Dysmenorrhea	3MCs	No	4
49	100 students	Valerian	placebo	valerin is effective in Dysmenorrhea	6MCs	No	3
42	102 students	Mint	Ibuprofen	No significant Difference	3MCs	No	5
43	210 single F	Mint	Ibuprofen	No significant Difference	6MCs	No	Not Calculated
44	100 single F	Mint	placebo	Mint is effective in Dysmenorrhea	3MCs	No	4

Cramp Bark and Black Haw:
Cramp Bark and Black Haw are most effective herbs to reduce uterine cramps and relieve pains and uterine muscle contractions (36, 52). The suitable dose of cramp bark depends on user's age, health, and several other conditions. There is no study to regulate a suitable range of doses for cramp bark. (32, 53-55). A study carried out by Su Zhaoilaiang et al. showed that these herbs are safe for use for several days to prevent painful cramps. In that study, the herbs were compared with ibuprofen, and their results showed that there is no significant difference between the herbs and chemical effects. However, ibuprofen exhibits more side effects as compared with Cramp (28, 33, 56-58).

Foeniculum vulgare
Fennel is a herb that has been used for many years in traditional Iranian medicine as an anti-inflammatory and analgesic pain in cats. The herb has a warm and dry effect and is used to strengthen the stomach and remove its inflammation. In addition, it is a diuretic and leads to an increase in menstrual blood and assists in breastfeeding. According to Iranian medical documents, due to its warm and dry nature, it is useful in removing biliary obstruction (59). This herbal medicine has numbing effects in uterus by constraining reductions induced by oxytocin and prostaglandins. (59). Khorshidi et al. showed that F. vulgare essential oil was beneficial in reducing pain and systemic symptoms of primary dysmenorrhea compared with placebo (60), but the study of Zahrani et al., showed no affect on systemic symptoms (61). Jahromi et al. compared F. vulgare and mefenamic acid in their study. (62). In the study of Zeraati et al F.vulgare and Vitex are more effective than mefenamic acid in reducing dysmenorrhea. (63) F. vulgare has been active in reducing of dysmenorrhea in all studies which compare with placebo.(64,65).

Cumminum cyminum
In a randomized clinical trial, the effect of C. cyminum on primary dysmenorrhea compared to placebo and mefenamic acid, demonstrated that treatment with C. cyminum was equal to treatment with mefenamic acid (66). Cumin has a warm and dry nature and is useful in the treatment of epistaxis and is useful for embroidery, anti-flaking and sweating, it causes weight loss. Due to its nature, it makes it easy to reduce blood pressure and reduce menstrual pain.

Cinnamomum zeylanicum
Cinnamon is warm and dry, it is mentioned in Iranian medical texts and has been used as an antibiotic, for anesthetizing, diuretic and regulating, enhancing the libido, strengthening the stomach and liver. It is also used to treat 'cough Prodotti'. Cinnamon oil has been used to relieve uterine pains. Some studies reported that C. zeylanicum has an antispasmodic effect. Eugenol can also prevent biosynthesis of prostaglandins and affect inflammation (67). A study where C. zeylanicum capsule was compared with placebo showed the effect of C. zeylanicum on severity of dysmenorrhea was more than effect of placebo(68). C. zeylanicum has anti-microbial, anti-parasitic, anti-oxidant and free radical scavenging properties. In addition C. zeylanicum reduced blood glucose, serum cholesterol and blood pressure, so it can be useful in treatment of cardiovascular diseases. (69)

Melissa officinalis (Lemon Balm)
It is warm and dry, and it is a central nervous system augmentator. It is useful in the treatment of neurological diseases. It is used in the treatment of sleep disorders and also has a sedative effect. It is also helpful in relieving pain. Melissa officinalis can be used for pain relief and treatment of some diseases. One study showed that Melissa was more operative than mefenamic acid in release of pain on primary dysmenorrhea (70).

Discussion

This study was conducted to evaluate the effect of medicinal plants on the treatment of primary dysmenorrhea in Iran. The aforementioned articles had a great deal of variation in the type of plant studied, which requires more studies with more stringent methodology to apply to many of these plants. It also examined hot temperament herbal medicine on the intensity of primary dysmenorrhea. Studies conducted on Ginger found it to be more useful than those conducted on other herbs. Eight trials received score 4 from Jadad. (29). There is no negative result in the studies. Most of the studies showed that the effects of Ginger are higher than other herbs in the treatment of primary dysmenorrhea. However, only one study presented that the effect of Mint herbs is higher than Ginger (30). Collectively, all of the above-mentioned studies showed the higher effect of herbal medicines than Ibuprofen on the treatment of dysmenorrhea (41). In addition, some publications discussed 'cold temperament' herbal medicine such as Coriander to reduce dysmenorrhea. Some studies focused on Cramp and multiflora, showing positive results and on their ability to reduce dysmenorrhea. The present study demonstrated the higher effect of herbal medicines as compared with NSAIDs; in addition, Ginger may be a real and safe therapy for pain relief in women with primary dysmenorrhea if administered during the days prior to menstruation. Conclusion of this study is focus on those hot temperament herbs which passed the clinical trials studies and are common in Iranian traditional medicine. Effective herbal medicines can be used as a good alternative to treat patients who do not respond well to conventional therapies or have contraindications to use these drugs.

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