

Overview on: Herbs Use in Treatment of Primary Dysmenorrhea (Menstrual Cramps)

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Abstract Sexual Maturation and pubertal development is the period of adolescence from childhood to adult life. Adolescence is a transition from girl to motherhood that is accompanied by various changes in Cognition, Pubertal development, changes in Hormones, Physical development, Psychological and physiological changes occur simultaneously. Hence, "menarche is the onset of puberty in adolescent girl characterized by excessive bleeding, irregular menstruation, face problems such as acne and dysmenorrhoea". So, to identify Relevant Randomized Controlled Trials (RCTs), Cochrane Menstrual Disorders, Scopus, Dysmenorrhoea Group Register of controlled trials, PubMed, Google Scholar and Medline were some of the electronic searches. Therefore, to treat primary dysmenorrhoea or to prevent herbal medicine can be used alone or with other therapies (pharmaceutical, nutritional, and hydrotherapy).

Keywords Herb, Dysmenorrhoea, Menstrual Cramps, Black Cohosh, St. John's Wort, *Ananas Comosus*

1. Introduction

Dysmenorrhoea is also known as menstrual cramps [1]. it is derived from the Greek words dys, meaning difficult/painful/ abnormal; meno, month; and rhea, to flow. In women's reproductive years, dysmenorrhoea is one of the most common gynaecological conditions that affect the quality of life. In India, 40.7%, United States of America 85% and Italy 84.1% were estimated prevalence rates [2]. During menstruation and few days before menstruation as well as normally subsides as menstruation finishes occurring dysmenorrhoea. Primary dysmenorrhoea is occurring in the absence of uterine condition while secondary is due to pathology condition of pelvic. Symptoms caused by dysmenorrhoea caused by

high levels of prostaglandins (pain and inflammation hormone), nausea or dizziness, loose stools (diarrhoea), irritability, headaches and Menstrual cramps without an endometriosis, uterine fibroids, pelvic inflammatory disease (underlying health condition) that mainly occurs during the first few days and just before a woman's menstrual period. But if persist for severe cramping, one must consult to doctor [1, 3, 4]. There are various risk factors which are associated with the period of primary dysmenorrhoea are poor sleep, hygiene, alcohol, cigarette smoking, caffeine consumption, a family history of dysmenorrhoea, lack of exercise, obesity, stressful lifestyle, dietary habits, and long menstrual cycles [5]. In the adolescent populations, spasmodic rates of dysmenorrhoea ranging from 16% to 91% were revealed from the published studies [6]. This review emphasis on dysmenorrhoea management by the therapeutics use of herbs.

2. Searching Methods

The reference lists of included trials, AMI, AMED, Health Source Nursing/Academic Edition, BioMed Central gateway, AARP Angeline, MEDLINE, International Pharmaceutical Abstracts, PsycINFO, CINAHL, Natural medicines comprehensive database, EMBASE, TRIP database, CAM on PubMed, CENTRAL, and clinical trial registers Herbs in the Treatment of dysmenorrhoea are as follows:

- Zingiber Officinale

Ginger herb helps to soothe troubles in menstrual and ease cramps by decrease the levels of pain-causing prostaglandins (premenstrual syndrome). Ginger capsule 250mg taken four times a day for three days were got relief in menstrual cramps with ibuprofen [7]. Another study in 2012 published in BMC Complementary and Alternative

Medicine examined that moderate or severe primary dysmenorrhoea with the use of ginger root powder or a placebo in 120 women were seen significant differences in the severity of pain between both the groups [8]. Thus, it can be an inference that uses of ginger root powder in the form of tea before onset and first three days of menstrual periods provides a soothing effect and can short the duration of periods of menstrual pain and to relieve cramps [9].

- Fennel (*Foeniculum vulgare*)

Fennel contains anethole (a compound with anti-spasm effects) with a crunchy texture like celery and taste like liquorice that helps to ease menstrual cramps [10]. In 2015, one study revealed that both fennel and vitagnus had a greater effect as compared with the mefenamic acid after the two days of intervention on 105 women suffering from primary dysmenorrhoea in the Iranian Journal of Nursing and Midwifery Research.[11]

- Pycnogenol (Extract French Maritime Pine Bark)

This supplement Pycnogenol is Extracted from the pine trees bark (*Pinus maritima*) that helps to reduce pain [12]. In 2014 a small study conducted with pycnogenol revealed also same to reduce pain with an intake of oral contraceptive for three months and no significant evidence was found by the herb Cochrane supplement on other chronic conditions [13, 14].

- Black Cohosh (*Actaea racemose*)

Black cohosh is a plant named from its black roots grows in Canada and the United States from June to September which is used in various medical conditions. It has various healing properties like rheumatoid arthritis, kidney, sore throat, joint inflammation, malaria, menstrual cramps, labour pain that can be taken in form of tea, capsule (Remifemin 20 mg of black cohosh extract) and the herbal mixture is also recommended as 20 to 40 mg in menopause [15]. Black cohosh can be used as herbs as treatment for six months or less in menopause by the American College of Obstetrics and Gynaecology guidelines [16]. Agrimony (*Agrimonia pilosula*) and shepherd's purse (*Capsella bursa-pastoris*) are best-known herbs in China, Europe and Germany to reduce bleeding and to treat profuse menstruation by coagulating blood up to 50% [17]. Whereas Shepherd's purse act as urinary antiseptic and anti-haemorrhagic that contains vitamin C, potassium salts, flavonoids, and rutin in mild menorrhagia and metrorrhagia [18].

- Buckwheat (*Fagopyrum esculentum*)

Herb like buckwheat (*Fagopyrum esculentum*), rutin is isolated flavonoid that helps to control bleeding and to reduce capillary fragility [19].

- Cramp Bark (*Viburnum opulus*)

In anovulatory disorders, dong quai root (*Angelica*

sinensis), black cohosh root (*Cimicifuga racemosa*), and anise seed (*Pimpinella anisum*) are very useful. cramp bark (*Viburnum opulus*) acts as a uterine sedative for relieving uterine and abdominal cramps [20,21].

- Puff Ball (*Bovista*)

Bovista helps to cure menstrual irregularity, restrict blood circulation, and trauma. It is also used with charcoal fumes inhalation in remedies of asphyxiation mentioned by E. A. Farrington in Lectures on Clinical Materia Medica (1889). *Bovista* also assists in ovarian cysts, diabetes mellitus, stuttering or stammering children, palpitation after a meal, awkwardness in speech and action [22].

The calendula oil obtained marigold flowers. It shortens axons of nerve cells that prevent messages transmission from nerve cells of uterus to the brain which leads to late transfer of pain messages from the brain to the uterus. In one of a clinical trial, Menastil lotions help in reducing the severity of dysmenorrhoea and its symptoms than placebo. Furthermore, the use of sedative consumption of calendula oil helps to decrease menstrual bleeding [23,24].

- Cuminum Cyminum

C. cyminum is very helpful for the treatment of menstrual cramps, gastrointestinal diseases and delayed menstruation [26]. In one of randomized clinical trial, subject was divided into 5 groups, among them, three groups were consumed *C. cyminum* capsules (65 mg) (1 capsule/TID, 2 capsules/TID and, the 3rd group, 1 capsule/BID), one group was on mefenamic acid and the last group consumed a placebo capsule that showed significant difference in decreasing pain intensity in the first and second periods among consumers of *C. Cyminum* who had 2 capsules/ TID equals to mefenamic capsule per 8 h [25].

- Matricaria Chamomilla

M. chamomilla is a herbal drug that acts as antispasmodic, anti-anxiety, sedative and anti-inflammatory effects [26]. In three studies *M. Chamomilla* showed improvement rate in dysmenorrhea than placebo [27,28]. In the first study after one month, *M. Chamomilla* tea was significantly different in the intervention group and control group [23, 29]. In the second study, *M. Chamomilla* helps in reducing pain than mefenamic acid. In the third study effects of *M. chamomilla* with *F. Vulgar* had a significant effect on dysmenorrhea and premenstrual syndrome, abdominal pain, pelvic, and anger. Whereas for reducing fatigue and lethargy, *F. Vulgare* had shown the more effective result [30].

- Valeriana Officinalis

Since 11 century, *V. Officinalis* is traditional medicine that acts as menstruating herb and sedative drug but in a clinical trial had no effect on duration and severity of

bleeding. *V. Officinalis* roots have valerian essential oil which contains valepotriates that used as a sedative, diuretic, muscular antispasmodic and antispasmodic properties in valerianic acid roots [29]. It also inhibits cell depolarization with contraction and blocks channels of calcium [30]. In various studies conducted on the effect of roots of *V. Officinalis* with placebo and also with mefenamic acid. Result of above studies reviewed that pain reduction in *V. officinalis* was effective compared to placebo and the same effect was seen with mefenamic acid. In another research with *V. Officinalis* capsules showed that symptoms of dysmenorrhea were reduced compared to pre-intervention [31,32].

- Cinnamomum Zeylanicum

C. zeylanicum consists of sugar, essential oil, tannin, mucilage, resin, calcium oxalate, and pigment in the Lauraceae family that has an antispasmodic effect attributed to essential oil and tannin [33]. Cinnamaldehyde and eugenol is the main component of cinnamon essential oil. *C. zeylanicum* capsule was compared in a triple-blind study that showed a statistically significant difference in dysmenorrhea severity than placebo (34,35).

- Stachys lavandulifolia

S. lavandulifolia was excessively found in Iran and Alvand Mountain that is mainly famous for spasm treatment (menstruating agent in women), increases sexuality, abortion and pain killer (23). In various studies, *S. Lavandulifolia* inhibits prostaglandins production, stomach pain and painful menstruation [36]. In one study, infused plant powder with *S. Lavandulifolia* prescribed for three times that showed no significant difference in pain duration and severity before and after using *S. lavandulifolia* [23, 37,38].

- Zataria Multiflora

In the family of mint, *Z. Multiflora* has been found whose essential oil is carvacrol and thymol. *Z. Multiflora* has various effects to rectify bloating, respiratory diseases, seizures, smooth muscle spasm and effect on antimicrobial and antispasmodic effect in the study of ancient physicians [39,40] by depolarization of cell and blockage of calcium channel, *Z. multiflora* can inhibit contractions stated by Van den Broken in a study of randomly divided participants in three groups that first on placebo, second, and third on (1%) and (2%) of *Z. multiflora* essential oil. *Z. multiflora* leaves had a similar effect to that of mefenamic acid on pain reduction [25].

- Mentha Piperita

In traditional medicine *M. Piperita* has antispasmodic properties for smooth muscles inhibits induced contractions by cell depolarization and blocks calcium channels (40). *M. Piperita* herb has a pungent taste with a greenish-yellow, pale yellow or colourless obtained from

fresh twigs and flowers distillation. With ibuprofen, the effect of *M. Piperita* extract was compared in one study that resulted in reducing pain [41].

- Vitex Agnus-Castus

Vitex agnuscastus used as herbal medicine in menstrual disorders [42]. Vitagnous® is a herbal drop derived from *V. agnuscastus* plants that have a dopaminergic effect. *V. agnus-castus* combination helps to reduce FSH and LH secretion, increase progesterone, affect hypothalamus-pituitary axis, and thus increase or decrease hormonal balance naturally. In a study reported that Vitagnous® was more effective in pain reduction intensity than placebo [23].

- Echinophora Platyloba

In Apiaceae family, *E. Platyloba* is endemic plants in Iran that is mostly distributed in Mediterranean region as *E. Platyloba* extract have various effect in reducing muscle contraction and antispasmodic effects can inhibit intestinal irritability completely [42]. In this field two studies were reviewed are as follows: *E. platyloba* extract compared with placebo that showed significant difference with placebo in terms of reducing pain intensity and another study with the effect of fennel and *E. platyloba* extract on reducing dysmenorrhoeal severity. Further, *E. platyloba* and *F. Vulgare* effect also helpful in decreasing the severity of dysmenorrhea [43].

- Achillea Willhemsii

In the Asteraceae (Compositae) family, *A. willhemsii* has anti-prostaglandin, the anti-inflammatory effect due to inhibition of arachidonic acid metabolism [44]. In a reviewed study with *A. willhemsii* extracted capsule was prescribed to 70 dysmenorrhoeal college students at every 6 hr in which they can reduce the consumption by half but cannot exceed consumption by 4 capsules. Result of study showed that in the first three days pain reduction was significant with treatment and compared with the cycles without treatment [23].

- St. John's Wort (Hypericum Perforatum)

St. John's wort is also called as Hypericum perforatum. it was very useful in various disease such as nerve pain (neuralgia), insomnia, swelling, confusion, crying, headaches, tension, anxiety, depression (NCCAM 2014), poor coordination, food cravings and improve pain and mood symptoms (Canning 2010). St. John's wort extract is also aid in irritability, insomnia, sciatica, irregular menstruation, rheumatoid arthritis, and also influence the serotonergic system (Ghazanfarpour 2011) [45]. In an open-label trial, 19 PMS women were administered with St. John's wort extract for 2 cycles of menstruation that showed an average decrease in 51% symptom scores by the trial end and 50% in severity symptom reduction in two-third participants (Stevinson 2000) [46].

- Ananas Comosus (Pineapple)

Pineapple fruit (*Ananas comosus* (L.) is also used as a meat tenderizer and remedy for inflammatory reactions pineapple consists a mixture of compound ingredients bromelain that acts as a protease inhibitor and helps in reducing irritation, cramps, bloating in menstruation, increase post-traumatic wound healing, immune modulator with anti-tumour and anti-cancer activity. Hence, bromelain in pineapple considered as potential phytomedicine and also relieves primary dysmenorrhea pain by acting as herbal remedies [47,48].

3. Conclusions

Dysmenorrhoea is a medical condition that affects mainly young women. It can be multifactorial, inflammatory mediators, pain pathways and a centralised response. With an individualised to combine approach, women can get relief from pain by rejecting the multiple underlying mechanisms. Based on a high degree of safety/ efficacy, long historical uses, numerous herbs can be recommended for primary dysmenorrhoea. Patients who have not tolerated NSAIDs or wish to avoid them can certainly attempt to substitute a herbal spasmolytic and inflammation modulator. Uterine astringents can be given in case of menorrhagia history or chronic problems and many herbs or herbal medicine can be recommended in hormone-modulating herbs. many *Vitexagnus-castus* (chaste tree) or *Cimicifuga racemosa* (black cohosh) root and pelvic lymphagogues, such as *Fouquieria splendens* (ocotillo) bark should be treated completely not just symptoms in primary dysmenorrhea. Many herbs can be combined with conventional and nutritional/ supplemental approaches in this review paper to rectify primary dysmenorrhea. These herbs should be viewed as useful multifaceted tools with real potential to help patients as their long historical uses may not be as well-documented but are still important for directing clinical practice.

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