



E-ISSN: 2278-4136

P-ISSN: 2349-8234

<https://www.phytojournal.com>

JPP 2023; 12(2): 150-159

Received: 12-01-2023

Accepted: 18-02-2023

Puja E Bolkar

Department of Chemistry,
LBYP College of Pharmacy,
Pathri, Aurangabad,
Maharashtra, India

Priyanka A Shelke

Department of Chemistry,
LBYP College of Pharmacy,
Pathri, Aurangabad,
Maharashtra, India

Dr. Gajanana S Sanap

Department of Chemistry,
LBYP College of Pharmacy,
Pathri, Aurangabad,
Maharashtra, India

Review: Effect of medicinal herbs on dysmenorrhoea

Puja E Bolkar, Priyanka A Shelke and Dr. Gajanana S Sanap

Abstract

Dysmenorrhoea is a condition as reflection of painful menstrual cramps of the uterine origin and common gynaecological complaint. The general risk factor cited are; smoking, habitual to alcohol and irregularities in periods. General remedies for Dysmenorrhoea are nonsteroidal anti-inflammatories (NSAIDs) or oral contraceptives which work by lowering the myometrial activity i.e. contractions of the uterus. Presently people are now intent to alternatives for the conventional medicines since conventional treatments for the Dysmenorrhoea has much risk rate with intolerable effects on the women. As an alternative, herbal drugs may be a suitable option. Electronic citations for the available herbal drugs treatment of Dysmenorrhea reflects desire effects on Dysmenorrhea. Dysmenorrhea is a common, disregarded, underdiagnosed, and deficiently treated complaint of Both youthful and adult ladies. It's characterized by painful cramps in the lower tummy, which start shortly before or at the onset of monthlies and which could last for 3 days. In particular, PD negatively impacts the quality of life (QOL) of youthful ladies and is the main reason behind their absenteeism from academy or work. It's suggested that Increased intrauterine stashing of prostaglandins F2 α and E2 are responsible for the pelvic pain associated with This complaint. Its associated symptoms are physical and/ or cerebral. Its physical symptoms include headache, languor, sleep disturbances, tender guts, colorful body pains, disturbed appetite, nausea, puking, constipation Or diarrhea, and increased urination, whereas its cerebral symptoms include mood disturbances, similar as Anxiety, depression, and perversity. While its opinion is grounded on cases ' history, symptoms, and physical test- Ination, its treatment aims to ameliorate the QOL through the administration of nonsteroidal anti-inflammatory medicines, hormonal contraceptives, and/ or the use of non-pharmacological aids (e.g., topical heat operation and ex-cise). Cases must be covered to measure their response to treatment, assess their adherence, observe potential side goods, and perform farther examinations, if demanded. It one of the most common problems for women, especially during their reproductive age. Deficiency of Vitamins like B1, B2, B5, B12, D and E and omega three adipose Acids and folic acid etc. Plays an important part in painful menstrual cramps as some vitamins part in constricting muscles and conducting whim-whams signals. The Muscular system and nervous system are nearly linked in the uterus- the Muscular organ where period cramps be. Deficiency of Vitamins like B1, B2, B5, B12, D and E and omega three adipose Acids and folic acid etc. Plays an important part in painful menstrual cramps as some vitamins part in constricting muscles and conducting whim-whams signals. The Muscular system and nervous system are nearly linked in the uterus- the Muscular organ where period cramps be.

Keywords: Dysmenorrhoea, vitamins, herbal drug, menstrual cramps, prostaglandins

Introduction

Dysmenorrhoea is the medical term for the period pain, it's also known as painful ages or menstrual cramps, it's the pain during period. Its Usual onset occurs around the time that period begins. Symptoms generally last lower than three days. The pain is generally in the pelvis or lower Abdomen. It's a licit gynaecological condition that affects between 45- 95 of women's with ages.

In up to 15 of these cases, dysmenorrhoea is truly enervating, and prevents Menstruates from working, going to academy, or else enjoying their lives. The frequency of this complaint in Iranian women at reproductive periods has been Reported of 38.3 – 100 in different regions of the country. The difference in the rate of the dysmenorrhoeal outbreak in colorful studies is due to different Criteria for the description of this complaint and conceivably also due to the rainfall Conditions in each region.

Dysmenorrhea is divided into primary and secondary types. Primary type is a Painful period in the absence of a verified pelvic complaint. It's a compression pain in the lower tummy that occurs before or during period without any complaint. Menstrual pain begins with the release of Prostaglandins from endometrial cells and following that vascular compression Occurs that leads to pain [1]. Colorful factors are associated with early Dysmenorrhea similar as family history, menarche's age, stress, and depression, too important caffeine consumption, body mass indicator, revocation history, smoking, and polyneuritis.

Corresponding Author:**Puja E Bolkar**

Department of Chemistry,
LBYP College of Pharmacy,
Pathri, Aurangabad,
Maharashtra, India

This condition may be associated with systemic symptoms similar as Headache, dizziness, nausea, puking, diarrhoea, fever and fatigue. It has a negative effect on women's quality of life and in severe cases, their Conditioning will be limited. Colorful remedial strategies, including Non-steroidal Anti-inflammatory medicines, oral contraceptives, herbal excerpts, and supplements have been used to control menstrual pain, but there's still no definitive Treatment strategy [2, 3].

Deficiency of Vitamins like B1, B2, B5, B12, D and E and omega three adipose Acids and folic acid etc. Plays an important part in painful menstrual cramps as some vitamins part in constricting muscles and conducting whim-whams signals. The Muscular system and nervous system are nearly linked in the uterus- the Muscular organ where period cramps be.



Fig 1: Menstrual cramps

Definition

According to WHO

Dysmenorrhea is defined as the presence of painful cramps of uterine origin that occur during menstruation and represents one of the most common causes of pelvic pain and menstrual disorder.

According to medical terms

Dysmenorrhea is characterized by severe and frequent menstrual cramps and pain during your period. Dysmenorrhea may be primary, existing from the beginning of periods, or secondary, due to an underlying

Types of dysmenorrhea

Dysmenorrhea causes severe and frequent cramps and pain during your period. It may be either primary or secondary.

Primary dysmenorrhea: This occurs when you first start your period and continues throughout your life. It is usually life-long. It can cause severe and frequent menstrual cramping from severe and abnormal uterine contractions.

Secondary dysmenorrhea: This type is due to some physical cause. It usually starts later in life. It may be caused by another medical condition, such as pelvic inflammatory disease or endometriosis.

Causes of dysmenorrhea

Women with primary dysmenorrhea have abnormal contractions of the uterus due to a chemical imbalance in the body. For example, the chemical prostaglandin control the contractions of the uterus.

Secondary dysmenorrhea is caused by other medical conditions, most often endometriosis. This is a condition in which endometrial tissue implants outside the uterus. Endometriosis often causes internal bleeding, infection, and pelvic pain.

Other causes of secondary dysmenorrhea include the following

- Pelvic inflammatory disease (PID)
- Uterine fibroids
- Abnormal pregnancy (miscarriage, ectopic)
- Infection, tumors, or polyps in the pelvic cavity

Symptoms of dysmenorrhea

The following are the most common symptoms of dysmenorrhea. However, each person may experience symptoms differently. Symptoms may include:

- Cramping in the lower abdomen
- Pain in the lower abdomen
- Low back pain
- Pain radiating down the legs
- Nausea
- Vomiting
- Diarrhea
- Fatigue
- Weakness
- Fainting
- Headaches

The symptoms of dysmenorrhea may look like other conditions or medical problems. Always consult your health care provider for a diagnosis.

Risk factor of dysmenorrhea

While any woman can develop dysmenorrhea, the following women may be at an increased risk for the condition:

- Women who smoke
- Women who drink alcohol during their period (alcohol tends to prolong menstrual pain)
- Women who are overweight
- Women who started their periods before the age of 11
- Women who have never been pregnant

Consult your health care provider for more information

Diagnosis of dysmenorrhea

To diagnose dysmenorrhea, your health care provider will evaluate your medical history and do a complete physical and pelvic exam. Other tests may include:

Ultrasound

This test uses high-frequency sound waves to create an image of the internal organs.

Magnetic resonance imaging (MRI)

This test uses large magnets, radiofrequencies, and a computer to make detailed images of organs and structures within the body.

Laparoscopy

This minor procedure uses a laparoscope. This is a thin tube with a lens and a light. It is inserted into an incision in the abdominal wall. Using the laparoscope to see into the pelvic and abdomen area, the doctor can often detect abnormal growths.

Hysteroscopy

This is the visual exam of the canal of the cervix and the inside of the uterus. It uses a viewing instrument (hysteroscope) inserted through the vagina.

Pathophysiology of dysmenorrhea

Although the pathophysiology of dysmenorrhea has not been completely illustrated, current substantiation suggests that the pathogenesis of dysmenorrhea is due to the increased stashing of prostaglandin F_{2α} (PGF_{2α}) and prostaglandin E₂ (PGE₂) in the uterus during endometrial sloughing. These prostaglandins are involved in adding myometrial condensation and vasoconstriction, leading to uterine ischemia and product of anaerobic metabolites. This results in the hypersensitization of pain filaments, and eventually pelvic pain.

Prostaglandins are synthesized through the arachidonic acid waterfall, intermediated by the cyclooxygenase (COX) pathway. Arachidonic acid conflation is regulated by the position of progesterone, through the exertion of the

lysosomal enzyme phospholipase A₂. The progesterone position peaks during the middle of the luteal phase - the ultimate phase of the menstrual cycle that occurs after ovulation. However, this results in degeneration of the corpus luteum and a decline in the circulating progesterone position, If generality doesn't do. This rapid-fire decline in the progesterone position is associated with endometrial sloughing, menstrual bleeding, and the release of lysosomal enzymes, leading to the generation of arachidonic acid, and thus, the product of prostaglandins.

Ladies with regular menstrual cycles have elevated endometrial prostaglandin situations during the late luteal phase. still, several studies that measured prostaglandin attention in the luteal phase, through endometrial necropsies and menstrual fluids, revealed that dysmenorrheic ladies have advanced situations of prostaglandins than eumenorrheic ladies. Accordingly, menstrual cramps, pain intensity, and associated symptoms are directly identified with advanced attention of PGF_{2α} and PGE₂ in the endometrium^[4].

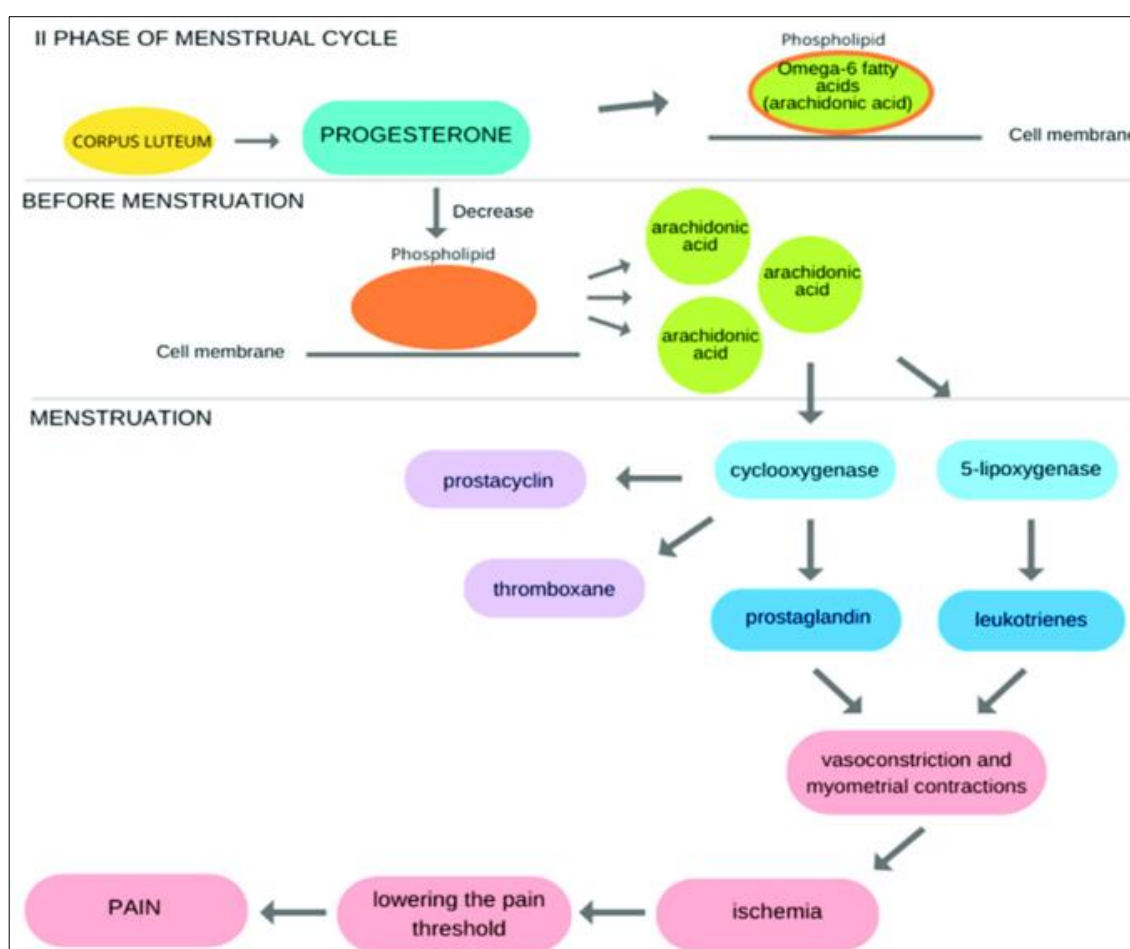


Fig 2: Pathophysiology of dysmenorrhea

Treatment of dysmenorrhea

Specific treatment for dysmenorrhea will be determined by your health care provider based on:

- Your age, overall health, and medical history
- Extent of the condition
- Cause of the condition (primary or secondary)
- Your tolerance for specific medications, procedures, or therapies
- Expectations for the course of the condition
- Your opinion or preference

Treatment to manage dysmenorrhea symptoms may include

- Prostaglandin inhibitors, such as nonsteroidal anti-inflammatory medications, or NSAIDs, such as aspirin and ibuprofen (to reduce pain)
- Acetaminophen
- Oral contraceptives (ovulation inhibitors)
- Progesterone (hormone treatment)
- Diet changes (to increase protein and decrease sugar and caffeine intake)
- Vitamin supplements

- Regular exercise
 - Heating pad across the abdomen
 - Hot bath or shower
 - Abdominal massage
1. Endometrial ablation (a procedure to destroy the lining of the uterus)
 2. Endometrial resection (a procedure to remove the lining of the uterus).
 - Hysterectomy (The surgical removal of the uterus)

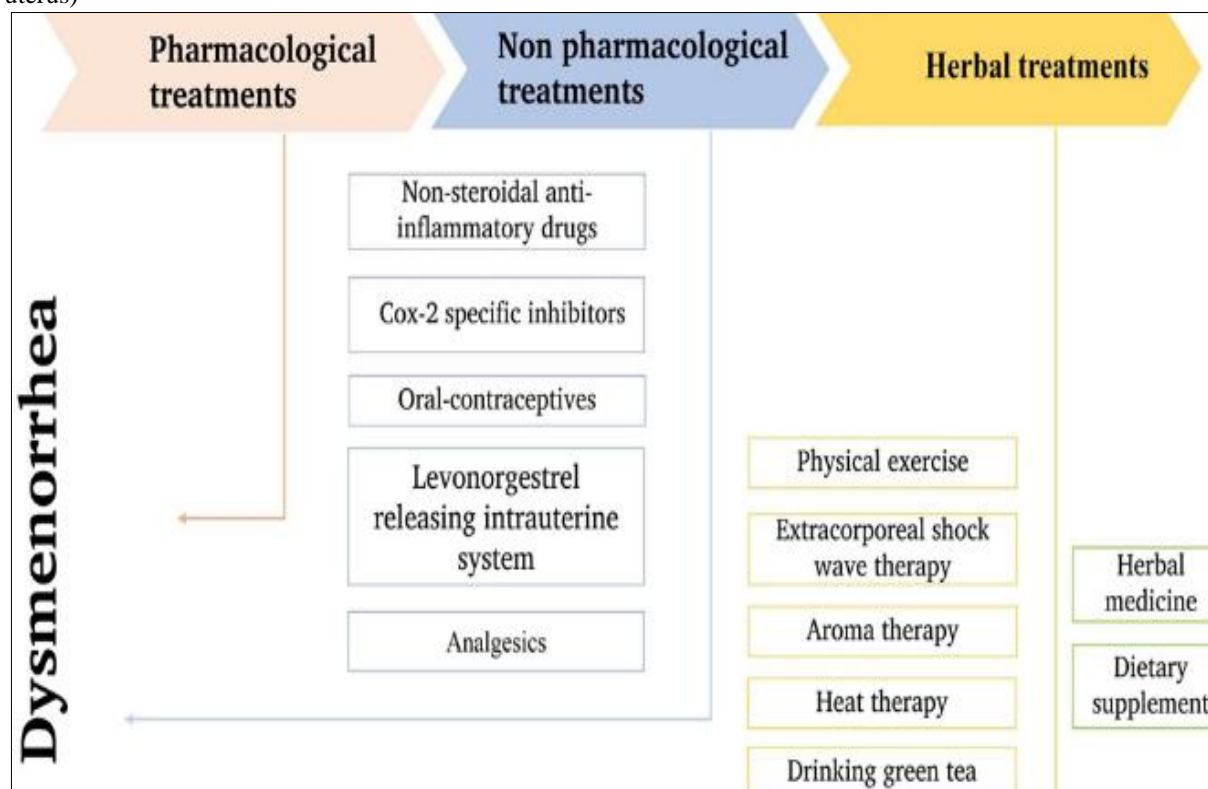


Fig 3: Possible treatment for dysmenorrhea pharmacological treatment and non-pharmacological treatment

Physical exercise

Physical exercise reduces the frequency and strictness of premenstrual pattern and primary dysmenorrhea. It has been seen in multitudinous women that moderate physical exercise may help with relieving pain. Generally, stretching exercise claims a high rate of symptom relief [5]. In 2015, investigational disquisition was conducted on seventy ladies with primary dysmenorrhea in Mashhad University of Medical lores domrs, within which aerobic exercise was conducted on the study actors for eight weeks, three times a week, for 30 beats each time. The impact of primary dysmenorrhea did not show any significant changes in the control group at four weeks just after the intervention ($P = 0.423$), but at the end of eight weeks after the study, the intervention group showed outstanding changes compared to the control group ($P = 0.041$), indicating that aerobic exercise could be used to cure primary dysmenorrhea [6].

Aromatherapy

Aromatherapy is a safe and effective natural cure for premenstrual pattern. Saucers similar as lavender oil painting, clary savant oil painting, peppermint oil painting, cypress oil painting, and others work by lowering prostaglandin situations and perfecting rotation. Due to the presence of rich, ambrosial factors in them, they also give relief from uncomfortable cramps. Aromatherapy is the most generally used reciprocal treatment in nursing, and it entails using essential canvases uprooted from ambrosial shops to address physical problems and enhance the overall standard of living. Essential canvases can be used in a number of ways, including massage, because they can get into the skin [7, 8].

Dietary supplements

Vitamins

Vitamin deficiency is the main contributor towards the cause of menstrual cramps in women and pain during periods. It is also found that a variety of dietary supplement along with Vitamin intake during and after cycles has been found affective in ameliorating the pain. Vitamin B1, B2, B5, B6, B12, D and E are the major contributors in the pain.

Machanism of action of vitamin D

The vitamin D receptor is wide and the mitochondrial cytochrome P450 Enzyme 25- hydroxyvitamin D3- 1 α -hydroxylase (1 α - OHase), which catalyzes The conflation of D3 from its precursor 25 (OH) D, is expressed in the mortal Uterus and in vulnerable system cells, and due to the fact vitamin D decreases The conflation of PGs, a salutary impact of vitamin D in the uterus Pathophysiology is doable [9, 11].

Prostaglandins are crucial controllers of reproductive processes, including Ovulation, implantation and period. Prostaglandins have been linked to have a part in colourful pathological changes of the reproductive tract Including menorrhagia, dysmenorrhea, endometriosis and cancer [12].

Although the medium by which prostaglandins modulate these changes. Remains unclear, important substantiation suggests that prostaglandins and their receptors and downstream signaling pathways are involved in angiogenesis and in amelioration in cell adhesion, morphology, motility, irruption and metastases. The implicit part of prosta- glandin receptors in pathological changes of the endometrium has significance for the unborn development of remedial

interventions. The calcitriol receptor, further generally known as the vitamin D receptor (VDR) and also known as NR1H1 (Nuclear receptor subfamily 1, group I, member 1), presents in numerous apkins, it's expressed in the uterine endometrial cells as well as in the vulnerable cells abiding within the uterine endometrium, on the other hand the mitochondrial cytochrome P450 enzyme 25-hydroxyvitamin D3(25(OH)D)-1 α -hydroxylase (1 α -OHase), which catalyzes the conflation of 25-dihydroxyvitamin D3(25(OH)2D) from its precursor 25(OH)D, is expressed in the mortal uterus and in vulnerable system cells, and due to the fact vitamin D abates the conflation of PGs, so vitamin D can have salutary impact on the uterus pathophysiology [13].

To overcome with these insufficiency we try to give supply it through the diurnal use cosmetics product by preparing treated herbal camo and assessing it by colorful parameters similar as colour, melting point, breaking point, force of operation, face anomalies, pH, skin vexation test and growing stability were determined and reported then with and most important the release profile study of added vitamins and a combined supplementation of omega-3 adipose acids and micronutrients that are folic acid and Vitamin B12. Necessity is the mama of inventions and this has led to the elaboration of Herbal powders. The need of a safer camo which had been made by formulating natural constituents like notions wax, adulation, coconut oil painting, castor oil painting, vanilla having substance of natural canvases and incorporating cocoa, turmeric and cinnamon dinghy greasepaint for stoner compliance had gained because they're safe to use and easy to handle by women. As this product is acquainted for women, we've tried to develop a safer and effective alternative for the treatment of dysmenorrhea in youthful women due to the insufficiency of vitamins generally caused in women. The introductory testament behind this is the objectification of vitamins like vitamin D and Vitamin B12 to treat menstrual cramps and pain in women.

Dysmenorrhea is known to be caused by a prostaglandin intermediated response and pain occurs substantially when body responds to the prostaglandin synthetase inhibitors like NSAIDs (aspirin, indomethacin) that are most generally used to treat the pain sensation [14, 15]. A study suggested that NSAIDs may worsen. The formerly patient pain. PG analogues like PGE2 and PGF2a, are metabolic Products of n-6 PUFA and are set up to be present in urine and blood of Women facing dysmenorrhea during the ages. The metabolic products Formed with n-3 PUFA have lower prevalence of aggravating pain in ages and Have low natural exertion [16]. A safer approach states the use of n-3 PUFA and PG analogues over n-6 intermediated PUFA and PG analogues like salutary Supplements rich in marine sources, fish oil painting or tuna fish, but it would be in a veritably larger quantum.

As cited in an composition published by Elsevier publications on Menstrual Discomfort in Danish women reduced by salutary supplements of omega-3 PUFA and Vitamin B, was set up to have attestations stating the use of vitamins Like B12 that have perfected the menstrual pain in women over that of the Placebo controlled targets. A double eyeless placebo controlled clinical trial was conducted, in which the actors were divided into 4 groups depending upon the salutary source for 3 months. doubter was prepared in which the Responses of women grounded on the physical symptoms they suffered like pelvic Pain, fatigue and headache, dizziness, nausea, etc. The women were asked to

report their symptoms over a period of three months and each month during their ages.

Machanism of action of vitamin B12

Heavy Ages, vitamin B12 is essential to replace what's lost in menstrual inflow, and it helps to reduce heavy ages by stabilizing hormones situations. Vitamin B12 is demanded for red blood cell conformation and development, normal functioning of the brain and nervous system, and it restores critical DNA conflation and exertion in every cell. In addition, vitamin B12 is necessary for myelin jacket and whim-whams conduction, for neurotransmitters and brain metabolism, and for maintaining mood. It's also involved in energy product, via places in adipose acid and amino acid metabolism. The body needs iron, vitamin B12 and folic acid (Another bone Of the B group of vitamins) to produce further red blood cells; if one or further of these nutrients is lacking, anemia can develop. Heavy menstrual bleeding or menorrhagia levies the body's demand for this important vitamin [17].

Vitamin B12, or cobalamin, is a water-answerable vitamin that's involved in the metabolism of every cell of the mortal body. Neither fungi, shops, nor creatures can make vitamin B12. Numerous people have a salutary B12 insufficiency, as it's only current in red flesh, organ flesh like liver, and eggs. Vegan and submissive women admit little or no vitamin B12 in their diets. The immersion of vitamin B12 is fraught with hurdles in the stomach, vitamin B12 needs to bind with a protein called natural Factor to absorb, plus sufficient acid to release it from protein foods. Also it must travel all the way through the small intestine to the far end, the terminal ileum, where it can pass into the blood sluice. Any stomach diseases, or conditions like nocuous anemia where natural Factor is lacking, can help B12 immersion, as can intestinal inflammation similar as Crohn's complaint if a damaged terminal ileum cannot take up vitamin B12.

Beforehand as the 1940s, experimenters connected the substantiation of B vitamin insufficiency with gynaecological diseases [18]. With the development of birth control capsules in the 1950s, the FDA approved use of the 'lozenge' with its synthetic hormone-mimicking chemicals to suppress heavy menstrual bleeding. It took 20 times for the oral contraceptive lozenge's side-goods to be brought to public mindfulness. Experimenters in the 1940s were supposedly following a precious lead by showing that estrogen isn't completely inactivated by the liver if there's a vitamin B insufficiency. This would affect in fairly advanced estrogen situations in proportion to progesterone. Since the liver is critical in manufacture and detoxification of hormones, this could explain a link between women suffering heavy ages and vitamin B12 insufficiency and hormone imbalance [19]. therefore vitamin B12 may have a defensive part to help inordinate menstrual inflow by enhancing a healthy progesterone to estrogen rate. Since poor immersion can be a problem with vitamin B12 – which is the largest and most structurally complicated of the B vitamins – cases need a formula that that can circumvent the stomach so that the B12 can efficiently reach the blood sluice. Studies as early as 1998 validate the use of correct oral treatment as being inversely effective as injections, with a conclusion that stated In cobalamin insufficiency, 000 mcg of cyanocobalamin administered orally on a diurnal base was as effective and may be superior for raising blood B12 situations as, 000 mcg administered intramuscularly on a yearly base [20].

Table 1: Various dietary supplements with description, that aid in the alleviation of dysmenorrhea

Sr. No	Dietary supplement	Description	Reference
1	Magnesium	It was found in a random controlled trial study that magnesium treatment reduced the amount of prostaglandin during mensuration while in placebo probability is less than 0.05. Magnesium inhibits biosynthesis of prostaglandin and it also aids in muscle calm. Similarly, one trial is performed in which after four months of daily therapy, there was no significant change between the two groups and found probability equals to 0.07.	[21, 22]
2	Vitamin B6	It has a significant impact on metabolism. It is also used to treat fatigue, muscle cramps and to reduce pain. One of the large trials (n = 556) is conducted between vitamin B6 and placebo which follows two months of daily therapy, there was a substantial change (14.74, 95 percent confidence interval 10.07, 21.58).	[23]
3	Vitamin E	It contains anti-inflammatory and analgesic effects. It has been used in the reduction of pain during Rheumatoid arthritis that is why it was supposed to be used for dysmenorrhea. There is one research comparing the synergistic effect of one group given vitamin E and ibuprofen combination and other group given only ibuprofen during menstruation and it showed there is no significant difference in pain alleviation after one month of therapy.	[24, 25]
4	Omega-3 fatty acids	High levels of omega-3 fatty acids have been linked to milder menstruation symptoms. Research on omega-3 fatty acid (fish oil) against placebo (number of females are 42) found that the placebo groups were substantially different after two months of therapy and had probability equals to 0.004. It also causes side effects such as nausea, vomiting, and headache	[26, 27]

Different types of herbal drugs use in the dysmenorrhea

1. *Foeniculum vulgare*
2. *Zingiber officinale*
3. *Mentha piperita*

Foeniculum vulgare

Common Name: Fennel, Variyali, Sweet Fennel, Florence Fennel, Saunf

Synonyms: *Foeniculum officinale* All.

Botanical Name: *Foeniculum vulgare* Mill.

Plant Family: Apiaceae (Umbelliferae)

Plant Form: Herb



Fig 4: *Foeniculum vulgare*

The *Foeniculum vulgare* as the member of Apiaceae family with common name of fennel is well-known flowering medicinal shops in traditional and modern medicines. In Iranian Traditional Medicine, fennel was known as “Razaianeh”, “Razianaj”, “Badian”, and “Marsoun”. According to Iranian traditional believes, fennel with hot and dry nature is used as galactagogue, diuretic, emmenagogue, mucolytic and lithontriptic agents. Fennel is effective remedy for visual perceptivity, cataract, catarrh, stomachache, habitual diarrhea, nausea, puking, habitual fever, order monuments, internal obstructions, and urinary conditions. Topical operation of fennel fruit cream on breadbasket

Is good treatment for immature stomachache. Constipation is caused after oral administration of fennel fruits and roots.

Although, there are some review papers on fennel in literatures that epitomized its natural or pharmacological goods, but there is no review composition, which estimated the use of fennel in operation of women's affections. The subject of this review composition was to give a concise conclusion on effectiveness of fennel in women health⁵ medicine was started at the morning of the pain. The Study group entered 25 drops of Fennelin 2 every 6h. Each 1 ml drop contains 15.5 mg Antole (Barjessence Herbal Drug Company, Kashan, Iran). Still, the subject entered mefenamic acid cap 250 mg every 6 h, if necessary, If pain was not Reduced until 2h. Control group entered Mefenamic acid cap 250 mg every 6 h, if necessary. Inclusion criteria were 18- 25 times of age, living in a Dormitory, nonsmoker, no systemic complaint, not taking OCP And other hormonal and herbal drugs former to and during Menstrual cycle, a regular period condition, and Suffering from moderate to severe primary dysmenorrhea [28, 29].

Zingiber officinale

Common Name: Ginger, Aadu, Adrak

Synonyms: *Amomum zingiber* L.

Botanical Name: *Zingiber officinale* Roscoe

Plant Family: Zingiberaceae

Plant Form: Herb



Fig 5: *Zingiber officinale*

Ginger root (*Zingiber officinale* Roscoe.) is used worldwide as a spice and seasoning as well as a traditional medicine. Ginger contains abundant nonvolatile pungent constituents analogous as various types of gingerols, shogaols, zingerone, and paradol. Ginger and ginger's factors have pleiotropic

pharmacological exertion, analogous as gastrointestinal, antioxidant, cardiovascular, analgesic, and anti-inflammatory exertion. Several studies have reported ginger to play anti-inflammatory goods by the inhibition of inducible cyclooxygenase (COX)-2, NF- κ B, and 5-lipoxygenase (5-LOX). Also, ginger and its constituents, especially shogaols, work as agonists of flash receptor eventually cation channel subfamily V member 1 (TRPV1) that is associated with the transmission of physical and chemical instigations. TRPV1 has been a high target for the development of new pain relievers (anesthetics). Both antagonists and agonists of the receptor are used for pain treatment. Under the prolonged exposure of its agonists analogous as capsaicins and shogaols TRPV1 is desensitized, which leads to the relief of pain. There is growing validation that ginger has anti-inflammatory and analgesic effectiveness in humans with osteoarthritis, primary dysmenorrhea and other acute pains. Terry *et al.* Conducted a systematic review of disquisition on ginger for the treatment of pains forming from different conditions, using 6 RCTs including 2 osteoarthritis trials, 1 dysmenorrhea trial and 3 acute muscle pain trials.

The authors concluded that ginger may reduce private experience of pain in some conditions. In addition, in a recent meta-analysis of randomized placebo-controlled trials ginger was reported to have effectiveness for pain relief in osteoarthritis. Therefore, ginger has scientific support to justify its history of use for pain treatment as age, especially in Chinese and Asian-Indian traditional medicine. Several studies have also demonstrated that ginger may have salutary goods for cancer prevention, gravidity-related nausea and vomiting, chemotherapy nausea, and gagging after surgery and osteoarthritis. Still, despite the validation supporting the use of ginger for multitudinous conditions involving inflammation, nausea and pain, the effectiveness of ginger for treating or managing primary dysmenorrhea has not recently been systemically reviewed. As the former review on ginger for pain, several randomized clinical trials of ginger supplementation have been conducted in immature women. The purpose of the current review was to systemically estimate all randomized clinical trials of ginger for treating primary dysmenorrhea and to interpret the effectiveness of ginger for easing the symptoms of primary dysmenorrhea. To the swish of our knowledge this is the first regular review and meta-analysis of RCTs on the effectiveness of ginger for primary dysmenorrhea [30].

Mentha piperita

Synonyms: Menthapiperata, Menthapiperita

Botanical name: Mentha x piperita

Family: Lamiaceae (Mint family)



Fig 6: Mentha piperita

Herbal medicines have a long history of use for the treatment of several Women's conditions, analogous as premenstrual pattern, irregular period and Menstrual cramps (Jing *et al.*, 2009). One of the gravies traditionally used in the Treatment of menstrual conditions is peppermint. With the scientific name of "Mentha Piperita", peppermint is from the Lamiaceae or Labiatae family and is Indigenous to Europe, Asia and North America. Peppermint is a first-rate Medicinal seasoning with extensive uses in the medicinal, food and health industries. Peppermint flake extract contains a number of chemical mixes including 15-20 Menthone, 2-7 Menthyl acetate and 35-45 Menthol to which its medicinal parcels are constantly attributed (Van Wyk and Wink, 2004, Pizzorno and Murray, 2012). It also contains mixes analogous as caffeic, chlorogenic and rosmarinic acid as well as several flavonoids analogous as rutin, hesperidin and luteolin, and related tannins which along with menthol contribute to its antibacterial and antiviral parcels and antioxidant exertion (Sparks *et al.*, 1995). A quotidian cure of 3-6 g extract (Mean of 5g) is recommended (Fleming, 2009) [31].

Table 2: Medicative plants used to treat dysmenorrhea, as well as the dosage to be taken during menstruation

Sr. no	Plant name	Biological source	Active constituent	Description	Dosages	Ref.
1.	<i>Matricaria chamomilla</i> L. (chamomile)	Asteraceae	Sesquiterpenes, flavonoids, coumarins, polyacetylenes	This plant has a various medicinal property that is why it is also known as doctor plant. It was found that chamomile tea help in the treatment of dysmenorrhea. It has a role in mainly treating symptoms like bloating, acne, menstrual cramps, back pain, arthritis, anxiety etc.	Chamomilla (comes in homeopathy medicine), Recommended doses are not clear yet.	[32, 33]
2.	<i>Curcuma longa</i> L. (Turmeric)	Zingiberaceae	Curcumin	Turmeric is used to cure arthritis, lower cholesterol, and heal wounds and it is used as an alternative medicine for inflammation, cut, pain, healing wounds and for many diseases. Turmeric's curcumin inhibits the formation of prostaglandins, nuclear factor (tumor necrosis factor), and Cyclooxygenase, which reduce inflammation.	1 teaspoon turmeric mis with one glass of hot water. Initial dose: once a day or 1 gm turmeric powder once a day. Maximum dose: thrice a day.	[34, 35]
3.	<i>Thea sinensis</i> L. (green tea)	Theaceae	Catechins	Cyclooxygenase-2 activity is inhibited by green tea catechin. It was assumed that it decreases prostaglandin levels and provides relieve from the severity of dysmenorrhea but there is no clinical evidence on it yet. A large population-based study is conducted and it was found that green tea consumption was linked to a reduced	Initial dose: drinking 3-5 cup in a day.	[36]

				frequency of dysmenorrhea. Tea intake was linked to a decreased occurrence of dysmenorrhea, for mild dysmenorrhea 95% confidence interval 0.50 to 0.93, and for moderate-to-severe dysmenorrhea 95% confidence interval 0.50 to 0.93		
4.	Fenugreek (methi)	Leguminaceae	Trigonelline, lysine, L-tryptophan	It has role in the reduction of dysmenorrhea symptoms as well as the abdominal cramps.	Initial dose: one teaspoon methi with hot water in morning empty stomach.	[37, 38]
5.	<i>Withania somnifera</i> (Ashwagandha)	Solanaceae	Withaferin, withanolides	Reduces menstrual discomfort by reducing pain and swelling	Initial dose: 180–220 mg per day.	[39]
6.	<i>Ocimum tenuiflorum</i> (Tulsi)	Lamiaceae	Oleanolic acid, eugenol	Helps in reducing menstrual cramping, bloating, nausea and headache.	Used in making herbal tea on the daily basis	[40]
7.	<i>Atropa belladonna</i> L. (belladonna)	Solanaceae	1% alkaloid, Lhyoscyamine	Smooth muscle relaxation is caused by blocking muscarinic receptors. Scopolamine is a stronger antispasmodic than atropine. Atropine is a well-known anticholinergic chemical found in this plant. Atropine's antagonistic activity on muscarinic receptors causes relaxation in the gastrointestinal tract muscle, which relieves spasm and prevents diarrhoea.	-	[41]

Some marketed herbal formulation are



Fig 7: Vitagnus 30ml drops Vitagnus 30FC tablet



Fig 8: Hamdard Safi Natural Blood Purifier 200 ml



Fig 9: Gynoveda Dheera Granules

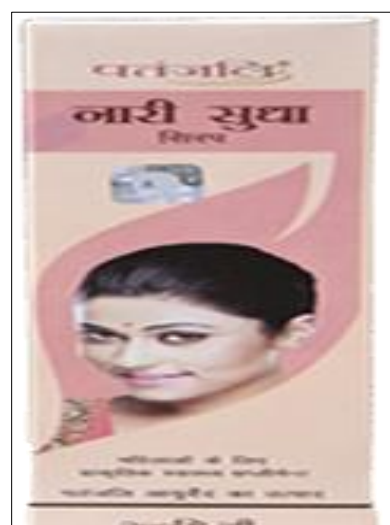


Fig 10: Patanjali nari sudha syrup 200 ml

Summary and conclusion

Dysmenorrhea is a common disorder in females of reproductive age, that may go underdiagnosed or treated inadequately, owing to considerations ranging from secondary to cultural. It negatively affects the QOL, leading to decreased attendance at work and school, due to its wide variety of physical and psychological symptoms. Treatment of this condition is mainly based on pain relief either pharmacologically or by using alternative modalities.

Acknowledgement

I would like to express my genuine thanks Dr. Gajanana Sanap sir, principal of LBYP college of pharmacy, for giving me this opportunity to carry out my study in the LBYP Affiliated University (DBATU) Maharashtra India.

References

1. Weissman AM, Hartz AJ, Hansen MD, Johnson SR. The natural history of primary dysmenorrhea: a longitudinal study. *BJOG Int J ObstetGynaecol.* 2004;111(4):345-52.
2. Malmstrom K, Kotey P, Cichanowitz N, Daniels S, Desjardins PJ. Analgesic efficacy of etoricoxib in primary dysmenorrhea: results of a Randomized, controlled trial. *GynecolObstet Invest.* 2003;56(2):65-9.
3. Ziaei S, Zakeri M, Kazemnejad A. A randomised controlled trial of Vitamin E in the treatment of primary

- dysmenorrhoea. *BJOG Int J ObstetGynaecol* 2005;112(4):466-9.
4. Rania Itani, Lama Soubra, Hani MJ Khojah. Primary Dysmenorrhea: Pathophysiology Diagnosis, and Treatment Updates *Korean J Fam Med.* 2022 Mar;43(2):101-108.
 5. Boushel R. Muscle metaboreflex control of the circulation during exercise. *Acta Physiologica (Oxf).* 2010;199(4):367-383.
 6. Machado AFP, Perracini MR, Rampazo ÉP, Driusso P, Liebano RE. Effects of thermotherapy and transcutaneous electrical nerve stimulation on patients with primary dysmenorrhea: a randomized, placebo-controlled, double-blind clinical trial. *Complement Ther Med.* 2019;47:102188.
 7. Kirk-Smith M. Clinical evaluation of aromatherapy. *Int J Aromath.* 2004;14(3):102-109.
 8. Lakhani SE, Sheaffer H, Tepper D. The effectiveness of aromatherapy in reducing pain: a systematic review and meta-analysis. *Pain Res Treat.* 2016;2016:8158693
 9. Bryan J, Osendarp S9, Abdul-Razzak KK, Obeidat BA, Al-Farras MI, Dauod AS. Vitamin D and PTH status among adolescent and young females with severe Dysmenorrhea. *J Pediatr Adolesc Gynecol.* 2014;27(2):78-82.
 10. Lerchbaum E, Obermayer-Pietsch B. Mechanisms in endocrinology: Vitamin D and fertility: a systematic review. *Eur J Endocrinol.* 2012;166(5):765-78
 11. Vigano P, Lattuada D, Mangioni S, Ermellino L, Vignali M, Caporizzo E, *et al.* Cycling and early pregnant endometrium as a site of regulated Expression of the vitamin D system. *J MolEndocrinol.* 2006;36(3):415-24.
 12. Juntti SA, Hilliard AT, Kent KR, Kumar A, Nguyen A, Jimenez MA, *et al.* A neural basis for control of cichlid female reproductive behavior by Prostaglandin F2 α . *CurrBiol.* 2016;26(7):943-9.
 13. Vigano P, Lattuada D, Mangioni S, Ermellino L, Vignali M, Caporizzo E, *Et al.* Cycling and early pregnant endometrium as a site of regulated expression of the vitamin D system. *J Mol Endocrinol.* 2006;36(3):415-24.
 14. Green K, Svanborg K. Endogenous prostaglandins in dysmenorrhea and the effect of prostaglandin synthetase inhibitors (PGSI) on uterine Contractibility. *Acta Obstet Gynecol Scan.* 1979;87:51-6.
 15. Daewood MY. Non-steroidal anti-inflammatory drugs and reproduction. *Am J Obstet Gynecol.* 1993;169(5):1255
 16. Hansen H. Linolic acid- essential fatty acid and eicosanoid precursor. DSc thesis University of Copenhagen; c1989.
 17. Chiara, *et al.* Cobalamin deficiency: clinical picture and radiological findings. *Nutrients* 5.11 (2013): 4521-4539.
 18. Greene RR, Peckham BM. Vitamin B Complex, Menorrhagia, and Cancer: A Critical Review. *American Journal of Obstetrics and Gynecology.* 1947;54(4):611-617.
 19. Biskind MS, Biskind GR, Biskind LH. Nutritional deficiency in the etiology of menorrhagia, metrorrhagia, cystic mastitis, and premenstrual tension. 2. Farther observations on treatment with the vitamin B complex. *Surgery, Gynecology and Obstetrics.* 1944;78:49-57.
 20. Del AM, Giacco EJ, *et al.* Effective treatment of cobalamin deficiency with oral cobalamin. *Blood.* 1998;92:1191-1198.
 21. Bryan J, Osendarp S, Hughes D, Calvaresi E, Baghurst K, Klinken JW. Nutrients for cognitive development in school- aged children. *Nutr Rev.* 2004;62(8):295-306.
 22. Iwamoto J. Vitamin K2 therapy for postmenopausal osteoporosis. *Nutrients.* 2014;6(5):1971-1980.
 23. Pakniat 1, Venus Chegini, 1 Fatemeh Ranjkesh,2 and Mohammad Ali Hosseinicorresponding author3 Comparison of the effect of vitamin E, vitamin D and ginger on the severity of primary dysmenorrhea: a single-blind clinical trial *Obstet Gynecol Sci.* 2019 Nov;62(6):462-468.
 24. Maryam Alikamali, Sakineh Mohammad-Alizadeh-Charandabi, Mahsa Maghalian, Mojgan Mirghafourv. and effects of vitamin E on the intensity of primary dysmenorrhea: A systematic review and meta-analysis clinical nutrition *ESPEN.* 2022 Dec;52:P50-59.
 25. He L, Yang HJ, Chen ZY, Ouyang XY. The effect of streptococcus salivarius K12 on halitosis: a double-blind, randomized, placebo-controlled trial. *Probiotics Antimicrob*
 26. Edmonds SE, Winyard PG, Guo R, *et al.* Putative analgesic activity of repeated oral doses of vitamin E in the treatment of rheumatoid arthritis. Results of a prospective placebo Controlled double blind trial. *Ann Rheum Dis.* 1997;56(11):649-655.
 27. Deutch B, Jørgensen EB, Hansen JC. Menstrual discomfort in Danish women reduced by dietary supplements of omega-3 PUFA and B12 (fish oil or seal oil capsules). *Nutr Res.* 2000;20(5):621-631.
 28. Zuurmond WW. Pain treatment with NSAIDs, primary focus on ibuprofen. *Clin Rheumatol.* 2001;20(S1):6-8.
 29. Woo HL, Ji HR, Kim S, *et al.* Efficacy and safety of herbal medicine (Dangguijagyag-san) for primary dysmenorrhea: study protocol for a randomized, double-blind, placebo-controlled, parallel-group, multi-center trial. *Integr Med Res.* 2020;9(2):100394.
 30. Mohaddese Mahboubi. *Foeniculumvulgare* as Valuable Plant in Management of Women's Health *Journal of Menopausal Medicine.* 2019;25:1-14
 31. Mahshid Bokaie, Tahmineh Farajkhoda, Behnaz Enjezab, Azam Khoshbin, Karimi Zarchi Mojgan1. Oral fennel (*Foeniculum vulgare*) drop effect on primary Dysmenorrhea: Effectiveness of herbal drug Iranian *Journal of Nursing and Midwifery Research;* c2013 Mar-Apr, 2(18).
 32. James W Daily, Xin Zhang, BS, Da Sol Kim, MS, Sunmin Park. Efficacy of Ginger for Alleviating the Symptoms of Primary Dysmenorrhea: A Systematic Review and Meta-analysis of Randomized Clinical Trials *Pain Medicine.* 2015 Dec;16(12):2243-2255.
 33. Akram Heshmati A, Mahrokh Dolatian B, Faraze Mojab C, Nozhatshakerid, Somayeh Nikkhahe. The effect of peppermint (*Mentha piperita*) capsules on the Severity of primary dysmenorrhea. *ournal of Herbal Medicine*
 34. Srivastava A, Gupta RC, Doss RB, Lall R. Trace minerals, vitamins and nutraceuticals in prevention and treatment of COVID-19. *J Diet.* 2021;19(3):395-429.
 35. Khalid SM, Farooq F, Khalid S. Medicinal properties of chamomile against dysmenorrhea. *Biomed J Sci Technol Res.* 2021;34(1):26384-26388.
 36. Cheraghi E, Roshanaei K. The protective effect of curcumin against aluminum chloride-induced oxidative stress and hepatotoxicity in rats. *Pharm Biomed Res;* c2019.

37. Tabari NS, Kheirkhah M, Mojab F, Salehi M. An investigation of the effect of curcumin (turmeric) capsule on the severity and duration of dysmenorrhea in students of Iran University of Medical Sciences. *J Evol Med Dent Sci.* 2020;9(46):3444-3451.
38. Rarassari IE, Idhayanti RI, Chunaeni S. The effectiveness of green tea and moringa tea on the level of dysmenorrhea pain in adolescents. *Midwifery Nurs Res (Manr) J.* 2021;3(2):86-89.
39. Priya L, Reshma S, Sripriya S, *et al.* Assessment of the effectiveness of trigonella foenum-graecum (Fenugreek seeds) on management of dysmenorrhea among late adolescent girls at selected villages, Tamil Nadu, Indi. *Ann Trop Med Public Health.* 2021;24(23):232-383.
40. Dayana BAA, Sabeetha S. Effectiveness of mint and fenugreek paste for reduction of dysmenorrhea among the adolescent girls in selected areas. *Int J Res Pharm Sci.* 2020;11(SPL4):126-129.
41. Joshi VK, Joshi A. Rational use of Ashwagandha in Ayurveda (Traditional Indian Medicine) for health and healing. *J Ethnopharmacol.* 2021;276:114101.
42. Jiao MJ, Liu XQ, Ren YS, *et al.* Comparison of herbal medicines used for women's menstruation diseases in different areas of the world. *Front Pharmacol.* 2022;12:751207.
43. Yarnell E. Herbal medicine for dysmenorrhea. *Altern Complement Ther.* 2015;21(5):224-228.