



Research Article

To Explore The Efficacy Of Herbal Tea Formulation For Menstrual Pain

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ARTICLE INFO

Received: 19 June 2024
Accepted: 25 June 2024
Published: 12 July 2024

Keywords:

Menstrual pain,
Dysmenorrhea.

DOI:

10.5281/zenodo.12730367

ABSTRACT

Menstrual pain: a burden on women . menstrual pain , also known as dysmenorrhea is characterized by cramping abdominal discomfort and other symptoms. It can significantly impact a womans daily activities and overall well - being. the prevalence of menstrual pain is a common issue among women , leading to significant discomfort and reduced quality of life. this comprehensive research aims to explore the efficacy of herbal formulations in alleviating menstrual pain. conventional treatment for primary dysmenorrhoea has failure rate of 20 % to 25% and may be contraindicated or not tolerated by some women . herbal medicine may be a suitable alternative . to determine the efficacy and safety of iranian herbal medicine for primary dysmenorrhea when compared with placebo , no treatment , and other treatment.

INTRODUCTION

Dysmenorrhea is a Greek term for "painful monthly bleeding." Dysmenorrhea can be classified as primary or secondary. Primary dysmenorrhea is recurrent lower abdominal pain that happens during the menstrual cycle and is not associated with other diseases or underlying pathology. It is a diagnosis of exclusion. In contrast, secondary dysmenorrhea is associated with suspected or clinically identifiable pathology. Dysmenorrhea is a common complaint among menstruating patients during their reproductive years. Dysmenorrhea may be associated with

significant negative emotional, psychological, and functional health impacts.

Primary dysmenorrhea classically begins within about 2 years of menarche or once ovulatory cycles have been established. It is more often a diagnosis made in adolescents and young adults. The cyclic pain starts within a few hours of the onset of menses and usually resolves within 72 hours . The pain is located midline in the pelvis and may radiate to the lumbar area of the back or upper legs. It may be crampy and episodic and is usually similar in each menstrual cycle. Concomitant symptoms may include nausea,

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Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.



vomiting, headaches, dizziness, fatigue, and sleep difficulties.

Dysmenorrhoea is also known as menstrual cramps. It is derived from the Greek words *dys*, meaning difficult/painful/ abnormal; *meno*, month; and *rrhea*, 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. 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. 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. In the adolescent populations, spasmodic rates of

dysmenorrhoea ranging from 16% to 91% were revealed from the published studies. This review emphasizes on dysmenorrhoea management by the therapeutic use of herbs.

SYMPTOMS – Menstrual cramps usually refers to a dull, throbbing, cramping pain in the lower abdomen, just above the pelvic bone.

Other Symptoms May Include:

- Pain in the lower back and thighs
- Nausea and Vomiting
- Sweating
- Faintness and Dizziness
- Diarrhea or loose stools
- Constipation
- Bloating and Headaches.

Prevention

People can also try certain lifestyle measures to reduce cramping. These include; [3]

- ✓ Exercising Regularly
- ✓ Trying to reduce stress – for example, practicing meditation, mindfulness, or Yoga

Home Remedies

Some natural remedies that may provide relief are [3]:

- ✓ Applying a heat pad to the lower abdomen
- ✓ Practicing relaxation and mindfulness techniques
- ✓ Engaging in physical exercise, such as jogging or yoga
- ✓ Taking a warm bath or shower
- ✓ Having a massage



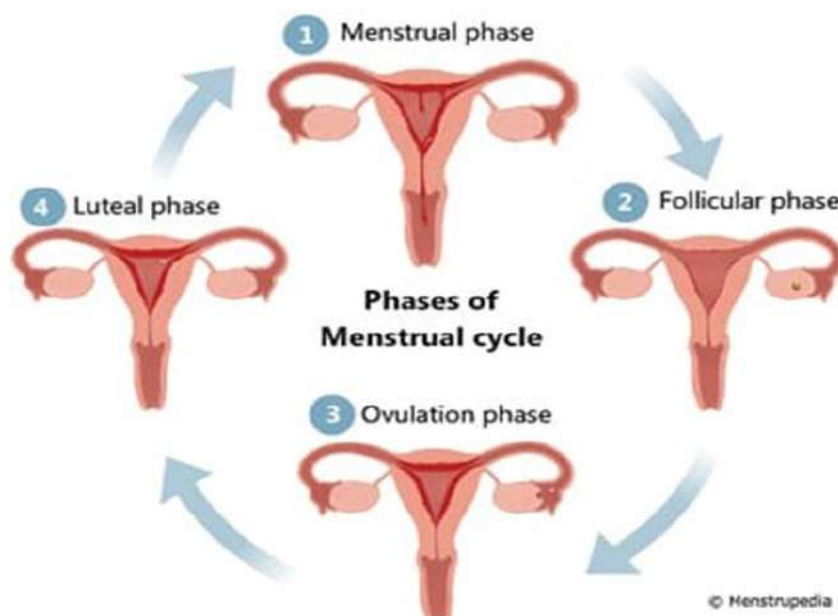


Figure 1. Phases of menstrual cycle

Pathophysiology –

Although the pathophysiology of dysmenorrhea has not been fully elucidated, current evidence suggests that the pathogenesis of dysmenorrhea is due to the increased secretion of prostaglandin $f_{2\alpha}$ ($pgf_{2\alpha}$) and prostaglandin e_2 (pge_2) in the uterus during endometrial sloughing.

These prostaglandins are involved in increasing myometrial contractions and vasoconstriction, leading to uterine ischemia and production of anaerobic metabolites. This results in the hypersensitization of pain fibers, and ultimately pelvic pain.

Prostaglandins are synthesized through the arachidonic acid cascade, mediated by the cyclooxygenase (cox) pathway.

Arachidonic acid synthesis is regulated by the level of progesterone, through the activity of the lysosomal enzyme phospholipase a_2 . The progesterone level peaks during the middle of the luteal phase – the latter phase of the menstrual cycle – that occurs after ovulation. If conception does not occur, this results in degeneration of the corpus luteum and a decline in the circulating progesterone level. This rapid decline in the progesterone level is associated with endometrial sloughing, menstrual bleeding, and the release of lysosomal enzymes, leading to the generation of arachidonic acid and therefore the production of prostaglandin.

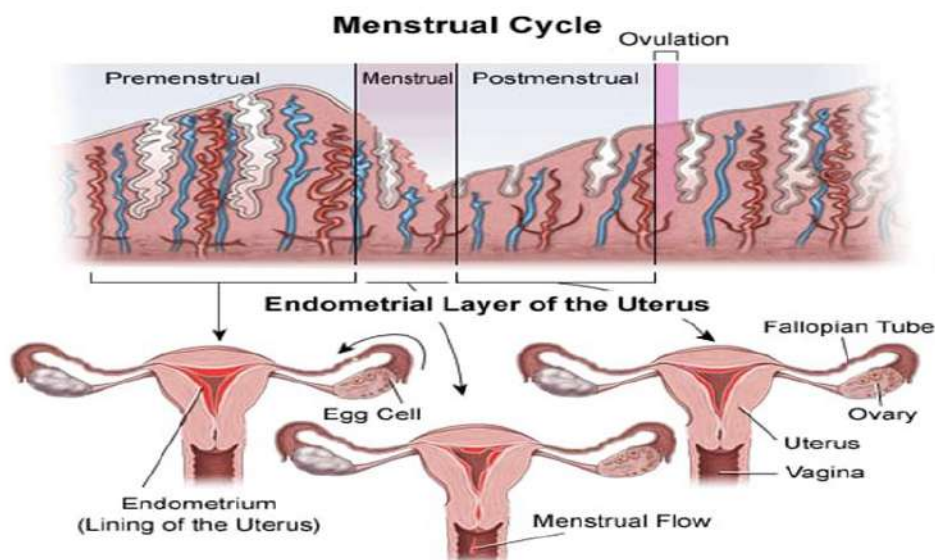


Figure 2 Menstrual cycle

Females with regular menstrual cycles have elevated endometrial prostaglandin levels during the late luteal phase. However, several studies that measured prostaglandin concentration in the luteal phase, through endometrial biopsies and menstrual fluids, revealed that dysmenorrheic females have higher levels of prostaglandins than eumenorrheic females. Consequently, menstrual cramps Pain intensity, and associated symptoms are directly correlated with higher concentration of $\text{PGF}_2\alpha$ and PGE_2 in the endometrium.

Mechanism Of Action –

In the majority of the in vitro studies (11 out of 13 studies), the inhibitory effects of herbal medicines on uterine contractions were investigated. The mechanisms of herbal medicines for primary dysmenorrhea are associated with prostaglandins level reduction, suppression of cyclooxygenase- (cox-) 2 expression, superoxide dismutase (sod) activation and malondialdehyde (mda) reduction, nitric oxide (no), inducible nitric oxide synthase (inos), and nuclear factor-kappa b (nf- κ b) reduction, stimulation of somatostatin receptor, intracellular ca^{2+} reduction, and recovery of phospholipid metabolism.

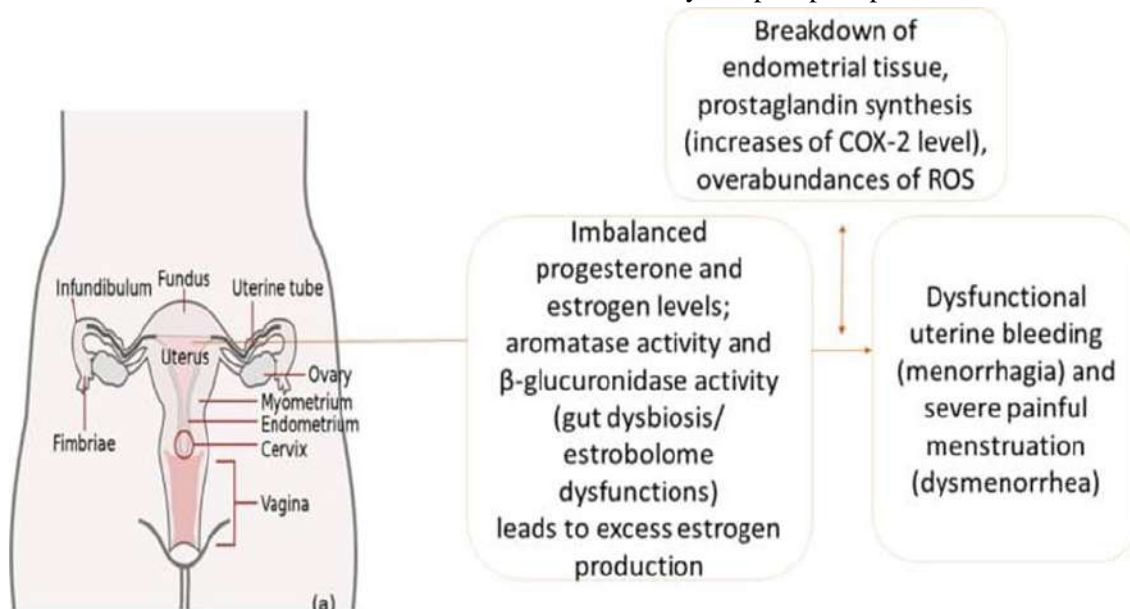


Figure 3 Abnormal levels of progesterone and estrogen leads to dysfunctional uterine bleeding and pain.

Formulation –

Herbal Tea –

Herbal tea, according to many, look like tea and is brewed as the same way as tea, but in reality it is not considered a tea at all. This is due to the fact that they do not originate from the *Camellia Sinensis* bush, the plant from which all teas are made. Herbal teas are actually mixtures of several ingredients, and are more accurately known as ‘tisanes.’ Tisanes are made from combinations of dried leaves, seeds, grasses, nuts, barks, fruits, flowers, or other botanical elements that give them their taste and provide the benefits of herbal teas.

Unlike most other forms of tea, herbal teas do not contain caffeine. They also taste great and are easy to drink. Most herbal teas may consist of one main herbal ingredient or a blend of herbal ingredients, intended to bring about a specific purpose, such as relaxation, rejuvenation, relief from a specific condition, amongst other things.

It is also important to understand that there are a huge variety of herbal teas available in the market, each of which is designed to have a specific therapeutic or medicinal benefit. However, there are some general benefits that can be obtained from most herbal teas, and these are as follows:

- ✓ achieving a more calm and relaxed state of mind
- ✓ supporting heart health
- ✓ aiding with stomach and digestive problems
- ✓ providing cleansing properties for the body
- ✓ promoting energy and wellness
- ✓ nourishing the nervous system
- ✓ strengthening the immune system
- ✓ providing antioxidants to the body
- ✓ boosting energy levels and invigorating the body
- ✓ relieving stress
- ✓ helping to avoid colds
- ✓ stimulating the internal organs
- ✓ promoting a good night’s sleep
- ✓ caffeine free

Advantages:

Herbal Teas are commonly consumed for its therapeutic and energizing properties, since it can help to induce relaxation. Being able to aid with stomach or digestive problems, herbal teas can help provide cleansing properties to the body, and strengthens the immune system as well. It is important to note that different herbs might have different medicinal properties, which thus allows us to make our own herbal infusions according to how we want the cup of tea to benefit us.

Disadvantages:

Some of the disadvantages of consuming certain herbal teas are as follows: Some of these teas are prone to contain potential toxic chemicals like dyes, adhesive, flavour enhancers, either from their area of growth or during manufacture



Figure 4. Herbal Tea

Aim And Objective

AIM: To formulate and explore the efficacy of herbal tea for menstrual pain relief.

Objective:

The main objective and aim of this research is to treat or to overcome the menstruation pain by using natural Ingredient.

Other objectives of this formulation are:

- ✓ To provide therapeutic benefits to treat pain other than drug.
- ✓ To provide anti-inflammatory properties that can reduce bloating and inflammation.

- ✓ To provide antispasmodic compounds that can reduce the muscle spasms in the uterus that cause cramping.
- ✓ Drinking cinnamon, ginger, ajwain, fennel teas can help with bloating and pain relief.

Selection Of Herb

Herbal Formulations:

Traditional Wisdom For centuries, various cultures have utilized These formulations often contain natural ingredients with potential analgesic and anti-inflammatory properties.

Common Herbal Ingredient

Herbal formulations for menstrual pain may include ingredients such as ginger, Caraway, fennel, turmeric, chamomile, and valerian root. These natural compounds are believed to possess pain-relieving and soothing properties.



Figure 5 Common herbal ingredient

Plant Profile:

1.Caraway –



Figure 6. Caraway

Synonym - Caraway fruits, Fructus carvi, Carum, Caraway Seed.

Biological source -Caraway consists Biological of the dried ripe fruits of Carum carvi Linn.

Family - Umbelliferae.

Geographical Source - It is cultivated widely in northern and central parts of Europe, Turkey in Asia, India, and North Africa. It is also available in Canada, the United States, Morocco, Germany, Russia, Norway, and Sweden.

Chemical Constituents -

Ajowan contains an essential oil (2–3.5%), protein (17.1%), and fat (21.8%). Ajowan oil is a colourless or brownish yellow liquid possessing a characteristic odour of thymol and a sharp taste.

Uses – Improve digestive health.

Provide relief from cough and congestion.

Fight bacteria and infection.

Have anti-inflammatory effects.

Zingiber Officinale

Synonym – Rhizoma zingiberis, Zingibere.

Family – Zingiberaceae

Biological Source – Ginger consists of the dried rhizomes of the Zingiber officinale Roscoe.

Geographical Source: The ginger are mostly cultivates in India, Japan, Nigeria, Jamaica, West Indies and Africa.

Chemical Constituents –

Ginger contains 1 to 2% volatile oil, 5 to 8% pungent resinous mass and starch. Ginger is abundant in active constituents, such as phenolic and terpene compounds . The phenolic compounds in ginger are mainly gingerols, shogaols, and paradols.

Use-Used to help prevent or treat nausea and vomiting from motion sickness, pregnancy and cancer chemotherapy. it is also used to treat mild stomach upset, to reduce pain of osteoarthritis and may even be used in heart disease,



Figure 7. Ginger

Fennel (Foeniculum Vulgare)

Synonym – Fructus foeniculli, Fennel fruit, Fenkel, Florence fennel, Sweet fennel, Wild fennel, Large fennel.

Family – Umbelliferae

Biological Source – Umbelliferae Fennel consists of the dried ripe fruits of *Foeniculum vulgare* Miller.

Geographical Source -

Fennel is indigenous to Mediterranean countries and Asia; it is largely cultivated in France, Saxony, Japan, Galicia, Russia, India, and Persia.

Chemical Constituents –

The major components of *F. vulgare* seed essential oil have been reported to be trans-anethole, fenchone, estragol (methyl chavicol), and α -phellandrene.

Use-It provide antioxidant, anti-inflammatory and antibacterial effect.

It is used for various digestive problems including heartburn, intestinal gas, bloating, loss of appetite and colic in infants.



Figure 8. Fennel

Cinnamon –

Synonym – cinnamon bark , kalmi – dalchini , ceylon cinnamon .

Family – lauraceae .

Biological Source –it is an dried inner bark of the shoots of coppiced trees of *cinnamomum zeylanicum* .(*cinnamomum verum*).

Geographical Sources -

Cinnamomum zeylanicum is widely cultivated in Ceylon, Java, Sumatra, West Indies, Brazil, Mauritius, Jamaica, and India.

Chemical Constituents –

Cinnamon contains about 10% of volatile oil, tannin, mucilage, calcium oxalate and sugar. Volatile oil contains 50 to 65% cinnamic aldehyde, along with 5 to 10% eugenol, terpene hydrocarbons and small quantities of ketones and alcohols.

Use-It is used as an antioxidant, anti-inflammatory, antidiabetic, antimicrobial, anticancer, lipid- lowering and cardiovascular disease lowering compound.



Figure 9. cinnamon

Methods And Material:

Ingredients –

Dried ginger pieces or ginger root

Cinnamon bark

Dried fennel

Ajwain powder

Liquirice

Equipments –

Mortal and pestle or a grinder (for crushing or grinding ingredients)

Mixing bowls and spoons
Airtight containers for storage

Tea bags or loose leaf tea filters

Steps –

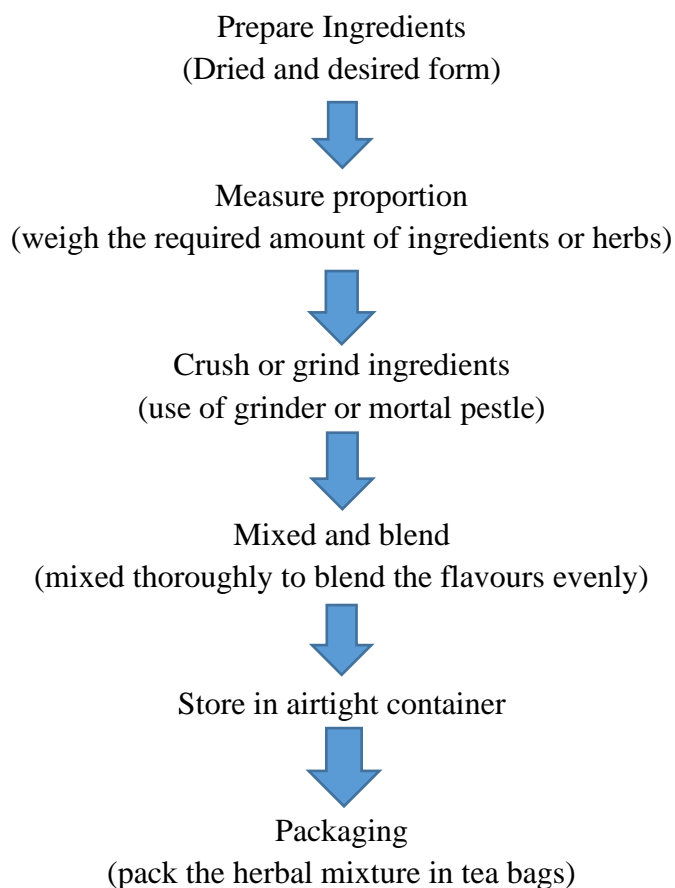


Figure 10.herbal tea ingredients



Figure 11. mixing of ingredients

Procedure –

1. Firstly collect the herbs or ingredient as per requirement.
2. Now, dry the collected ingredient under the sunlight to remove moisture from the crude drug.
3. After drying , crush or grind the crude drugs by using grinder to have desire particle size.
4. Weigh the amount of each drugs which is required for the formulation .

5. After weighing mix all the ingredients in proper manner .
6. Now pass the mix ingredient through sieve for achieving desire particle size .
7. After passing through sieve, weigh the ingredients.
8. Now, pack the herbal formulation in tea bags.



Figure 11. mixture passing through sieve

Formulation Table: -

Sr. No.	Ingredients	F1	F2
1.	Ajawain	10gm	10gm
2.	Cinnamon	4gm	0.5gm
3.	Zinger	5gm	0.8gm
4.	Fennel	6gm	0.5gm

Evaluation Of Herbal Tea

PHYSICAL EVALUATION

Formulated herbal tea was prepared by using the following physical parameters:

Sr. No.	Evaluation parameter	Result F1	Result F2
1.	Colour	Brownish yellow	Golden yellow
2.	Odour	Characterized	Characterized
3.	State	Solid	Solid
4.	pH	6-7	6-7
5.	Solubility	Completely soluble	Completely soluble

CONCLUSION:

This herbal tea blend combines several traditional herbs known for their efficacy in reducing menstrual pain and discomfort. Adjusting the quantities and the choice of herbs based on individual preferences and tolerances can further

1. **Colour** – the colour of herbal tea examined by visual examination.
2. **Odour** – the odour of herbal tea was found to be characteristic.
3. **State** - the state of herbal tea was examined visually. It is solid in state once it deep into to hot water it makes a solution i.e. liquid solution.
4. **pH test** – the pH of herbal tea is between 6 – 7 which signifies that the tea will not cause any irritation.
5. **Solubility** – soluble in water



Figure 12 Evaluation of herbal tea

RESULT –

In this research we found that by giving herbal tea prepared from ajwain fennel Ginger Cinnamon and liquorice shows positive effect on relieving menstrual pain by showing para amount side effects.

enhance its effectiveness. The study demonstrates the potential efficacy of herbal tea in alleviating menstrual pain. With its natural ingredients and traditional remedies, herbal tea offers a promising alternative for managing this common discomfort. Further research into specific herbal blends and

their mechanisms of action could provide valuable insights for enhancing menstrual pain relief and improving women's quality of life.

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HOW TO CITE: Akanksha Yadav*, Shital Pande, To Explore The Efficacy Of Herbal Tea Formulation For Menstrual Pain., *Int. J. of Pharm. Sci.*, 2024, Vol 2, Issue 7, 696-705. <https://doi.org/10.5281/zenodo.12730367>

