

PHYTOREMEDIES FOR THE TREATMENT OF MENSTRUAL DISORDERS

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Abstract- The motive of this review was to examine the evidence related to the clinical efficaciousness and assurance of herbs. These studies looked at the use of herbs to improve women's health, mainly for menstrual disorders, using plant species such as ashwagandha, Chasteberry, fennel, chamomile, peppermint, shatavari, ginseng, coriander seeds, cinnamon and a combination of herbs.

In spite of fact that plant materials form the basis of drug development and herbal formulations are popular, there are few articles on clinical efficacy and safety. In this article, we will discuss how herbs can be useful in certain areas of clinical and preventive health, and what further analysis is needed to understand whether habitually use can promote healthy lifestyles more commonly.

Keywords: Phyto remedies, Menstrual disorders, Menstruation, Menstrual Cycle.

INTRODUCTION:

Menses is the most important aspect of women's reproductive cycle. In most cases, it's associated with certain diseases called menstrual diseases which negatively affects the quality of life of large of the world's woman population in reproductive age.

Some of common menstrual diseases among the female:

- Menorrhagia or hypermenorrhoea, abnormally heavy and prolonged menstrual period at regular intervals.
- Dysmenorrhea abnormally painful ages generally involving abdominal cramps.
- PMS, hormonal imbalance
- Leucorrhoea, white discharge
- Amenorrhea, absence of menstrual periods.
- PCOS, anovulation and redundant androgen circulation.
- PCOD, hormones are out of balance which leads to growth of ovarian cysts^[14]

Herbal tea was defined as a fluent infusion in hot or cold water for an unidentified quantum of time to withdraw the phytochemical constituents of plants.

The sensitive appeal of tea, like a food product, is an important consideration in new product development. Herbal tea in particular are gaining increasing consumer attention due to growing perception of health benefits acquire from their consumption. Herbal tea is made from herbal plants, fruits, seeds, roots steeped in hot water. There are numerous different herbs that can be set up in herbal tea, each with a different use and purpose.

Some pivotal herbs include Ashwagandha, Chasteberry, Fennel, Chamomile, Spearmint, Shatavari, Ginseng, Coriander seeds, Cinnamon.

Thus, at present lifestyle intervention and diet differences are the major concern for the above- mentioned menstrual diseases. Also, further and further cases are concluding for herbal treatment. This review defines the many natural herbs used for the treatment of complications related to menstrual diseases.

❖ Menstruation:

The term "menstruation" arises from ancient French menstrual, which derives from Latin "menstrualis", meaning "monthly", "particularly" of or having monthly courses.

Naturally occurring biological process in which the sloughing of living of endometrium accompanied by normal bleeding occurs as part of women's monthly cycle and is regulated by luteinizing hormone and FSH that stimulate the ovaries to produce two steroid hormones, progesterone and estrogen. Onset of menstruation is associated with absence of fertilization whereby progesterone and estrogen levels decrease to low levels^[7]

❖ Menstrual cycle:

Menstrual cycle is the term to describe the sequence of events that occur in your body as it prepares for the possibility of pregnancy each month. Menstrual cycle of woman's life starts from the onset of menarche (average 13 years) to menopause (average around 50 years).

Cycle can range in length from 21 days to about 35 days and still be normal. Most people have their period for between 3 to 7 days.

• Four phases of Monthlies:

Rise and fall of hormones trigger the way in your menstrual cycle hormones cause the organs of reproductive tract to respond in certain ways.

Specific events that occur during your Monthlies are :

I.Menses phase : This phase which generally lasts from day one to day five, is the time when Lining of your uterus sheds through vagina is gestation hasn't occurred.

II.Follicular phase : Phase typically takes place from days six to 14. During this time, the level of the hormone estrogen rises, which causes the lining of uterus (endometrium) to grow and thicken. In addition, another hormone - follicle stimulating hormone (FSH) Causes follicles in your ovaries to grow. During days 10 to 14 one of the developing follicles will form completely mature ovum

III.Ovulation: Phase occurs roughly at about day 14 in 28-day menstrual cycle. Sudden increase in another hormone-- Luteinizing hormone (LH) Causes your ovary to release its egg. This event is ovulation.

IV.Luteal phase: Phase lasts from about day 15 to day 28 egg leaves ovary and begins to travels through fallopian tubes to uterus. level of hormone progesterone rises to help prepare uterine lining for pregnancy .

If egg becomes fertilized by sperm and attaches itself to your uterine wall (implantation) one becomes pregnant. If gestation doesn't occur, estrogen and progesterone levels drop and thick living of uterus sheds during your period.^[15]

• Symptoms of menstruation :

- Painful breasts
- Cramps
- Mood swings and irritability
- Muscle stiffness
- Headache

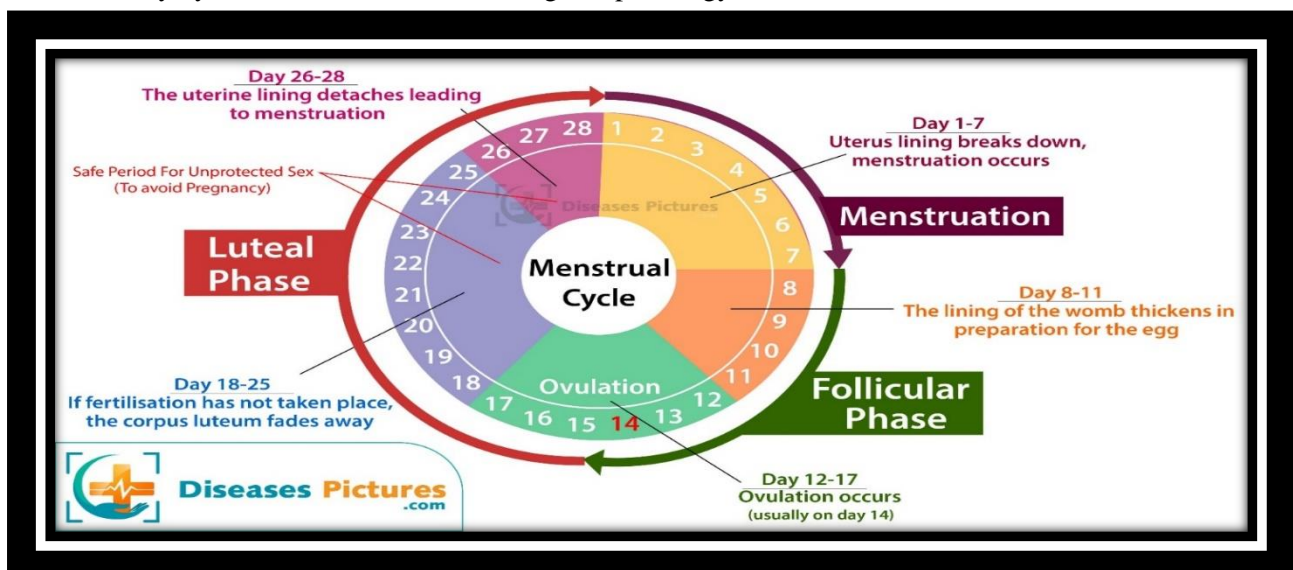
MENSTRUAL DISEASES:

➤ **DYSMENORRHEA:**

Greek word Dys means "painful" Meno means Month and rhea means "inflow"

Dysmenorrhea is classified as:

- a. Primary Dysmenorrhea: No pathological condition.
- b. Secondary dysmenorrhea: Results from organic pathology



Dysmenorrhoea is defined as cyclic pain of Uterine origin, without pelvic pathology. It affects up to 81% of menstruating women in reproductive years, Produces negative impact on quality of life. Use of medicinal herb as a complementary treatment for Dysmenorrhoea is a growing Interest amongst numerous women.

Dysmenorrhoea is described as cramping pain in lower abdomen during menstruation ^[1] Dysmenorrhea is characterised by cramps and colicky spasms of pain in lower abdomen that interfere with daily activity. Imbalanced or inordinate levels of prostanoids and conceivably eicosanoids released from endometrium during menses are associated with circumstance of dysmenorrhea. Uterus is convinced to contract irregularly and repeatedly leading to increased rudimental tone and active pressure, and pain is brought by uterine hypercontractility, increased peripheral nerve hypersensitivity^[3] Lower level of progesterone avail to produce prostaglandins in uterus prostaglandin E2 and prostaglandin F2x Lead to Menstrual Dysmenorrhea and bleeding ^[2].

•**Types:**

a. Primary dysmenorrhea: Pain in the absence of pelvic disease. Characterised by overproduction of prostaglandins by endometrium, triggering uterine hypercontractility that consequences in uterine Muscle ischemia, hypoxia and pain.

b. Secondary dysmenorrhea: Endometriosis is the main cause of Secondary Dysmenorrhea.

•**Symptoms of Dysmenorrhea:**

1. Change in appetite
2. Nausea
3. Vomiting^[21]

➤ **PMS:**

PMS categorized by recurring moderate-to-severe, affective, physical and behavioural symptoms that develop during the Luteal phase of menstrual cycle and resolve by end of menses^[9]. Most women of reproductive age have one or more emotional or physical symptom in premenstrual phase of MC Symptoms are mild, but 5-8% have moderate to severe symptoms, that are associated with considerable distress or functional impairment. PMS arises during the luteal phase of menses; however, it fades with menstrual flow (follicular phase). It is the common health problem in women in reproductive age and defined as assortment of emotional of symptoms, with or without physical symptoms related to woman's Menstruation cycle.^[30] Women with PMS have a differential response to normal hormonal fluxes. This susceptibility may involve serotonin system, altered sensitivity of GABA A receptor to the neurosteroid remains unknown, however most common theories revolve around prostaglandins, endorphins or progesterone deficiency. Proposed etiologies for the syndrome involve hormonal imbalance between estrogen and progesterone, excess prostaglandin production and increased aldosterone concentration in luteal phase of MC.^[28]

➤ **PCOS:**

PCOS is one of the utmost important gynaecological disorders among reproductive age women in patients with pcos the secretion rate and metabolism of androgen and estrogen are interrupted. PCOS is categorized by endocrine, metabolic and genetic disorders, chronic absence of ovulation of polycystic Ovary and clinical and biochemical presentations of hyperandrogenism. In vivo and in vitro studies on theca cells recommended that ovarian theca Cells are greatly active to Convert androgenic precursors into testosterone in women with PCOS than in healthy women. Raised levels of androgens specially testosterone in PCOS their role in Deficiency of ovulation and interrupted synthesis of Sex hormones which causes symptoms and dysfunction of genital tract in patients and main reasons of infertility.

Medicinal plants effective on PCOS:

1. Spearmint (*Mentha spicata*)
2. Cinnamon (*Cinnamomum zeylanicum*)
3. Fenugreek (*Trigonella foenum graceum* L)^[10]

PCOS is multifaceted condition characterised by higher androgen levels, menstrual anomalies or small cysts on one or both ovaries. Disorder may, or can be morphological (polycystic ovaries) or predominantly biochemical (hyperandrogenaemia). Common factors associated with PCOS includes ovulation irregularities increased androgen levels and cystic ovaries. Hyperandrogenism is proved by high levels of free unbound testosterone in the blood stream, a key hormone causative to pathophysiology of PCOS.

PCOS is influenced by alterations in steroidogenesis, ovarian folliculogenesis neuroendocrine function, Metabolism insulin production, insulin sensitivity, adipose cell activity, inflammatory factors and sympathetic nerve function.

• **Symptoms of PCOS :**

- Enlarged ovaries with numerous small cysts
- Irregular MCs
- Acne, Alopecia
- Pelvic pain
- Hirsutism.

➤ **PCOD:**

PCOD was first described as single disease by Stein and Leventhal in 1935

Symptoms of PCOD are obesity, hirsutism, amenorrhea or anovulation, dysfunctional uterine bleeding, irregular menses and infertility. Common finding of hirsutism in PCOD patients is reflection of hyperandrogenism resulting from elevation of all androgens, including testosterone, androstenedione, dehydroepiandrosterone sulphate (DHEA-S) and androstenedione. Patho-physiology involves altered functions of hypothalamus, pituitary, ovary and adrenal glands in failure of folliculogenesis to regularly proceed to ovulation^[33]

➤ **MENORRHAGIA:**

Associated with the abnormal production of steroid hormone resulting in an imbalanced secretion and other causes can be cysts, and fibroids. The aromatase enzyme, a product of CYP 19 is responsible for catalysing the conversion of androgens to estrogens and is associated with Menorrhagia or dysfunctional uterine bleeding.

Abnormal uterine bleeding (AUB) is the name given to describe any deviation from normal menstrual cycle. Pathophysiology of abnormal uterine bleeding (AUB) is as diverse as the classification of disease. AUB can be caused by pelvic pathology like a distortion of endometrial cavity due to fibroids or endometrial protrusion tissue. Endometrial tissue is likely caused by unrestricted estrogen which causes the endometrium to develop friable, vascular and lacking sufficient stromal support which associates to heavy, continuous uterine bleeding. Menorrhagia is well-defined as menstruation periods at regular cycle but with extreme flow which may last more than 7 days. Menorrhagia can cause menstrual bleeding of more than 80ml in each cycle^{[36][37]}

• Common causes of Menorrhagia include following :

1. Fibroids
2. Endometriosis
3. Abortion or threatened miscarriage
4. Use of some intrauterine devices.

➤ **AMENORRHEA:**

Amenorrhea is absence of menses or absence of periods.

Types of amenorrhea: Primary amenorrhea and
Secondary amenorrhea

Primary amenorrhea can be detected if patient has normal Secondary sexual characteristics but no menarche by 16 years of age. Secondary amenorrhea is absence of menses for 3 months in women with previously normal menses and for 9 months in women with Oligomenorrhea.

Ordinary Menstrual cycle involves a complex interface between the hypothalamic-pituitary - Ovarian axis, any disruption in this interface can cause amenorrhea. Primary amenorrhea is absence of instigation of menses, and secondary amenorrhea is an absence of menses in a previously usual menstruating female.^[7]

Causes of primary amenorrhea: 1. Pregnancy 2. Endocrine lesions

Causes of Secondary amenorrhea: 1. Weight loss 2. Chronic ovulation.

Absenteeism of menses in female of reproductive age is related to disturbance of normal hormonal, physiological mechanism or female anatomic anomalies.

During normal female cycle, GnRH is released from hypothalamus and it works on pituitary to release FSH and LH and these 2 hormones from pituitary act on ovaries and ovaries finally make estrogen and progesterone to work on uterus to carry out the follicular and secretory phase of MC. Any imperfection at any level of this normal functioning of females can cause amenorrhea^[35]

➤ **LEUKORRHEA:**

Leukorrhea also known as fluor albus is body discharge that is secreted from the genital organs excessively. In females it may be physical or pathological." Physical leukorrhea occurs rendering to menstruum process usually translucent to white coloured, and odourless. On the other hand, pathological leukorrhea is usually yellowish / greenish, smells fishy, usually huge amount and causes complaints such as itching, redness, pain during sexual intercourse, urination.^[38] Vaginal discharge occurs due to encouragement of estrogen hormone.

It has 3 types :

- Physiological leukorrhea which is normal.
- Pathological leukorrhea due to presence of bacteria
- Inflammatory leukorrhea, may result from inflammation of vaginal mucosa.

Causes :

- Unprotected sexual contact
- Lack of nutrients
- Poor hygiene.
- Injuries to cervix during pregnancy^[39].

Etiology of leucorrhoea is intricate. It is well-thought-out that changes in vaginal epithelium, changes in normal bacterial flora and pH of vaginal secretion predispose to leucorrhoea. Chronic illness, malnutrition, emotional disturbances, chronic retroverted uterus, gonococcal and monilial infections of vaginal and uterine cervix have all been allied with leucorrhoea.^[40]

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❖ CHAMOMILE:

Chamomile is an annual or perennial plant belonging to family Asteraceae.

Chamomile extract terminates the production of prostaglandins and leukotrienes.

Chamomile has been used for treatment of stomach problems, cramps, and other infections. Chamomile flower heads are generally used for Medicinal purposes. Chamomile can strengthen the brain and muscle can be diuretic and improve menstrual flow, nourishes the stomach. Primarily treats the symptoms of muscle relaxation, Joint swelling and pain, stomach deficiency and anorexia, amenorrhea and urine infection. Chamomile comprises flavonoids, coumarins, volatile oils, terpenes, sterols, organic acids and polysaccharides amongst supplementary compounds. Chamomile is capable gastroprotective herb to deal with stomach spasm, flatulence, stomach ache and decreased gastric secretion.

Chamomile extract improves reproductive function in PCOS. It reduced the uterine resistance Index, regulated sex hormones and decreased inflammatory cells. Interface of chamomile with GABA system can normalise luteinizing hormones secretion and increases dominant follicles for improving reproductive functions.^[23]



Flavonoids one of the most important compounds in chamomile increase levels through their direct effect on pituitary gland, can be effective in modulating PMS^[24] Chamomile tea possesses antispasmodic properties which relieve painful cramps associated with menstrual periods. Also regulates the actions of dopamine and serotonin, helping to reduce the Impact of depressive symptoms.^[25]

❖ FENNEL(Foeniculum vulgare):

Foeniculum vulgare as the member Apiaceae family with common name fennel is well known medicinal plants in traditional and modern Medicines.^[4]

Fennel is proposed to improve menstrual pain by lowering prostaglandin levels in blood. Fennel inhibits the response of uterine to oxytocin and prostaglandin E2 by reducing its contraction frequency and intensity. Spasmolytic action of fennel is facilitated by inhibition of Ach and histamine induced contractile.^[5] Fennel extract reduced the serum estrogen



level and thickness of uterine epithelial cells and increase Serum progesterone level. Fennel due to phytoestrogen compounds and according to traditional believes has potential for management of (PCO).^[6]

A phenolic compound in *F. vulgare* can improve human health. *F. vulgare* contains flavonoids, glycosides and other constituents that are used for Medicinal ailments. Trans anethole, fenchone and estragole ingredients essential oils are the main ingredients in *F. vulgare* seeds. To Manage PCOS, *Foeniculum vulgare* seeds are useful complement and Source of abundant phytoestrogens. Due to Structural similarity to synthetic oestrogen diethylstilbesterol the molecule anole also known as anethole which constitutes the majority of fennel oil's active ingredient is thought to be active estrogenic agent. Fennel's phytoestrogen concentration aids in Lowering inflammation in PCOS and improving resistance. Fennel has the ability to manage PCO- treatment due to its phytoestrogen components. In PCOS, fennel extract enhanced serum progesterone levels and endometrial thickness while decreasing serum oestrogen Levels and uterine epithelial cell thickness.^[17]

Anethole have estrogen like activity and inhibit spasms in smooth muscles. Fennel can increase production of bile used in treatment of infant colic, to promote menstruation in women.

❖ CHASTE BERRY:

Chasteberry (*Vitex agnus-castus*) is the fruit (Berries) from the chaste tree belongs to Verbenaceae family.

Berries contain essential oils. (Ex. Limonene, sabinene, 1.8-cineole [eucalyptol]), iridoid glycosides (ex. agnoside, aucubin), diterpenes (ex. vitex lactone, rotund furan) and flavonoids (ex. apigenin, castican)

Chasteberry is often used for irregularities of menstrual cycle, infertility premenstrual complaints and cyclical breast pain. Low levels of chasteberry extract results in decrease estrogen levels and increases progesterone and prolactin levels possibly caused by inhibition of release of FSH and stimulation of LH levels.^[44]

Chasteberry functions by decreasing inflammation and balancing hormones.^[45]



Vitex agnus castus (Chaste tree berry) is a hypothalamic-pituitary ovarian (HPC) regulator and because HPO imbalance is related with PCOS it is likely to be of profit in managing the condition. Hyperprolactinemia and altered response progesterone are also associated with PCOS. therefore, the progestogenic activity of *V. agnus Castus* and its capability to regulate prolactin will further support in the management of PCOS symptoms.^{[46][47]}

❖ ASHWAGANDHA:

Ashwagandha or *Withania Somnifera* or indian Ginseng is an ayurvedic herb. Small shrub with yellow flowers that's native to india and southeast asia, and it is often the roots that is used in complements. An evergreen woody shrub of Solanaceae family. Species name has been ascribed as "Somnifera" which means "Sleep inducer" in latin owing to its prodigious anti-Stress activity.^[11]

Ashwagandha normalizes the level of Cortisol (stress hormone) in the body which helps to regulate moods and decreases the overall state of Stress, anxiety and irritability.

Ashwagandha is adaptogen, which is a substance that helps the body to adapt various kinds of Stress.^[13]

Ashwagandha contains compounds that are steroids, these reduces inflammation.

Ashwagandha shows significant reduction in hot flashes and urinary symptoms.



Withania somnifera (WS) includes alkaloid. (isopelletierine, anaferine, cusechygrine, anahygrine etc), Steroidal lactones and saponins. Siitoinosides and acylsterylglucosides in ashwagandha are anti- stress agents. Sitoindoside VII and sitoindoside VIII shows anti-stress actions^[12]High level cortisol production in body which interferes with production of progesterone and thyroid hormones. Progesterone and thyroid hormone distraction interferes with menstrual cycle. Regulating cortisol also has of positive effect on regulation of hormone.

❖ GINSENG:

Ginseng is any one of perennial plant which are included in genus *Panax* and family Aralliaceae. Ginsenoside is believed to be the active compounds of ginseng herb. Herb Contain phytoestrogens which can reduce the severity of PMS symptoms. Ginseng includes ginsenosides, polysaccharides, peptides, polyacetylene and fatty acids. Phytoestrogens and compounds ginseng origin that can exert estrogenic properties through either directly binding to ER or in directly activating ERS. Phytoestrogens such as genistein and daidzein, have shown protective effects on Conditions related to decreased estrogen including Menopause, osteoporosis and cognitive dysfunctions^[51] Ginseng include major ginsenosides namely Rb1,Rb2,Rc,Rd,Re,Ro,and Ra and major ginsenosides. P. Ginseng can stimulate the growth of estrogen receptor ER positive beta cells^[52]



❖ SHATAVARI:

Shatavari is medicinal herb belonging to the family Asparagaceae in traditional Ayurvedic medicine. *Asparagus racemosus* (Shatavari) is suggested in ayurveda for prevention and treatment of reproductive disorders of women such as sexual debility, amenorrhea, dysmenorrhea, dysfunctional uterine bleeding.



Shatavari has its chief constituent saponin which helps to maintain uterine mobility hence, Useful in painful bleeding during premenopause. Helpful in treatment of fertility problems as it elevates the process of folliculogenesis. Main constituent of shatavari are steroidal saponins that propose its use as estrogen regulator. Shatavari has various constituents. including Shatavarins I-IV and they are glycosides of Sars sapogenin. racemosides, racemosol, etc. Shatavari derived phytoestrogen can change the levels of estrogen in body -Saponins in the form of shatavarins and flavonoids in the form of isoflavonoids and Phytoestrogens. Phytoestrogenic compounds that one capable of binding to the estradiol E2 receptors Used by women in case of infertility regulation of menstrual cycle, ovarian follicle development. Plant contains phytoestrogen which restores the reproductive system in women. Shatavari effects was seen in young women with PCOS. Believed to enhance FSH and thus increase folliculogenesis. Hormonal balances can also be modified using shatavari because of the existence of phytoestrogen. Phytoestrogen help in regulation of ovarian cycle in women. Heavy bleeding and pre- menstrual symptoms are also corrected by herb. Shatavari levels are also relieved.

❖ CINNAMON:

Cinnamon (*Cinnamomum Zeylanicum*) is commonly used spice belongs to family Lauraceae Cinnamon contains eugenol which helps to balance the hormones that causes problems during periods.

Cinnamon rises high density Lipoprotein and insulin sensitivity while low density Lipoprotein, triglyceride and blood glucose were decreased in patients with PCOS Reduces menstrual cramps and other PMS Symptoms ,Cinnamon has two active constituents name cinnamaldehyde and Eugenol.

Cinnamaldehyde works as anti- Spasmodic and eugenol prevents synthesis of prostaglandins and reduces inflammation.^[41]

Cinnamon and its active ingredients (ex. eugenol, cinnamic acid, cinnamate and cinnamaldehyde have Several therapeutic effects on the metabolic syndrome factors such as high blood glucose and insulin resistance. Cinnamon has strong history of decreases insulin resistance and treatment of PCOS^{[42][43]}.



❖ CORIANDER SEEDS:

Coriander (*Coriandrum sativum* L) a member of Apiaceae family is among most extensively used medicinal plant. Coriander contains essential oil, monoterpenes, limonene, alpha- pinene, gamma- terpinene, p. cymene, citronellol, Borneol, camphor, coriandrin, geraniol, dihydrocoriandrum, coriandrons A-E and flavonoids^[51] Coriander is most useful herb because it has antioxidant properties that remove toxins out from the body. It kills microbes which are main cause of Leucorrhoea Coriander seeds are loaded with nutrients such as high content of antioxidants dietary fibre, Vitamin C,B copper. Effectiveness of coriander seeds, by soaking water on Leucorrhoea and women with complaints of itching, burring and soreness^[52]



REFERENCES:

1. Janice Pellow, Chantelle Nienhuis: Medicinal plants for primary dysmenorrhea. PubMed 2018 Apr; 37:13-26
2. Parvesh Mirabi, Seideh Hanieh alamolhoda, Seddigheh esmaeilzadeh and faraz mojab: Effects of medicinal herbs on primary dysmenorrhea PMID: PMC 4177637/ PMID 25276177 PubMed 2014 Summer;13(3):757-67
3. Xincong Xu, Qinglin yang and Xiaoping wang: Efficacy of herbal medicine (cinnamon/ fennel/ ginger) for primary dysmenorrhea PubMed 2020 Jun;48(6):300060520936179
4. Hye Won Lee, Lin Ang Myeong soo plee and eunseop kim: Fennel for reducing pain in primary sew and Meta Dysmenorrhea : A Review and Meta analysis of Randomized controlled trials Pubmed 2020 Nov;12(11):3438 doi: 10.3390/nu 12113438 PMID: PMC 7697 926.
5. Mohaddese Mahboubi:Foeniculum vulgare as Valuable plant in Management of Women's health. PubMed 2019 Apr;25(1):1-14
6. D. Divya: Effect of Fennel seed : On women health International journal of advances in nursing managementISSN: 2454-2652 Vol-10, issue-2, year 2022 DOI: 10.52711/2454-2652.2022.000 24
7. Majing Jiao, Xinquiao Liu, yougshen ren and Zhinan Mei: Comparison of Herbal Medicines used for Women's Menstruation diseases in different areas of world. PubMed 2021; 12: 751207 PMID: PMC 8854 499 doi: 10.3389/fphar. 2021. 751207
8. Chowdhury Alfi Afroze, Md Nasir Ahmed, Rownak Jahan and Mohammed Rahmatullah:Evaluation of herbal ingredients used in ethano- polyherbal formulation for treating menorrhagia and dysmenorrhea. Phytomedicine Plus Vol 2, Issue 4, Nov 2022, 100366 <https://doi.org/10.1016/j.phyplu.2022.100366>
9. Aeli Ryu, Tae-Hee kim : Premenstrual syndrome : A mini review.Pubmed 2015 Dec;82(4):436-40 <https://doi.org/10.1016/ f.maturitas. 2015.08.010>
10. Zahra Abasian, Ayoob Rostamzadeh Mohsen Mohammadi and Masin Hosseini: A review on role of medical plants in polycystic Ovarian syndrome Middle East fertility society journal Vol 23, Issue 4, Dec 2018, 255-262
11. Debra rose wilson, PhD, MSN, RN, IBCLC, AHN-BC, CHT - By Zawon Villines Ashwagandha for menopause : Does it help
12. Narendra Singh, Mohit blalla and Marilena Gilca: An Overview on ashwagandha : A rasayana (Rejuvenator) of Ayurveda doi: 10.4314/ ajtcam. v8i 5S.9 PMID: 22754076 Pubmed 2011;8(5 Suppl):208-13

13. Subhabrata Paul, Shreya Chakraborty, Utpal anand ,Swarnali Dey:Withania somnifera (L). Dunal (Ashwagandha): A comprehensive review on ethnopharmacology, and pharmacotherapeutics aspects. Pubmed 2021Nov;143:112175 <https://doi.org/10.1016/j.biopha.2021.112175>
14. Vandana Singh Malid, Dor. Krishan kumar and Dr. Rakesh kumar Behmani: A Literature review on Menstruation and Mental Health.
15. Harpreet Bhatia, yash pal Sharma Traditional phyto remedies for the treatment of menstrual disorders. Journal of Ethnopharmacology Vol 160, 3Feb 2015, 202-210
16. Alicia M. Allen, Aimee L. Mc Rac – Clark Samantha Carlson and Sharon S. AllenDetermining menstrual phase in human biobehavioural research: A review Pubmed 20160 Feb;24(1):1-11 PMID: PMC 4821777 NIHMS: 739548
17. Javesh Patil, Devyani Patil and Ravindra Mali: Medicinal traits of the phenolic compounds from *Foeniculum vulgare* for Oligomenorrhea MDPI, Vol 12, Issue 1 <https://doi.org/10.3390/ecsoc-26-13724>
18. Ines Guimaraes, Ana Margarida Povo Primary Dysmenorrhea assessment and treatment. Pubmed 2020 Aug;42(8):501-507 Doi: 10.1055/s-0040-1712131 PMID: 32559803
19. Amimis Osayande, Suarma Meholic Diagnosis and initial Management of dysmenorrhea Pubmed 2014 Mar 1;89(5):341-6 PMID: 24695505
20. Hassan Nagy, Moein AB Ichan: Dysmenorrhea StatPearls 2023 Nov 12 PMC: 5049024
21. Mohammed Abadi Alsaleem Dysmenorrhea, associated, Symptoms and Management among student at king khalid University, Saudi Arabia: A exploratory study: Pubmed 2018 Jul-Aug;7(4):769-774 PMID: PMC 6131986
22. Azin Niazi, Maryam Moradi: Effect of Chamomile on pain and Menstrual Bleeding in primary Dysmenorrhea International journal of community based nursing midwifery 20210Jul; 9(3):174-186 Doi: 10.30476/ijcbnm.2021.87219.1417.
23. Yun- le Dai, Ying li , Qi wand and Lina Gao Chamomile : A review of its traditional uses, chemical constituents, Pharmacological activities and Quality control studies Pubmed 2023;28(1): PMCID: PMC 9822300
24. Elham Najafi Mollabashi, Tahereh Ziaie, Zahra Bostani khalesi Effect of Matricaria Chamomile on menstrual related mood disorders. Pubmed 2021 Oct;12:100134 <https://doi.org/10.1016/j.eurox.2021100134>
25. Zahra Bostani khalesi, Soheila Pirdadeh Beiravand and Mahsbid Bokaie Efficacy of Chamomile in treatment of PMS: A review Pubmed 2019 dec; 22(4):204-209 PMID: PMC 6970572
26. Maria valeria Catani, Federica rinaldi and Isabella savini :Comparative analysis of phenolic compound of six commercially available Chamomile (*Matricaria chamomilla* L) <https://doi.org/10.3390/ijms221910601>
27. Amit Sah, Punnoth Poonkuzki naseof and Geeta aggarwal: A comprehensive study of therapeutic applications of Chamomile Pharmaceuticals 2022 Oct;15(10):1284 PMID: PMC 9611340
28. Kimberly ann yonkers and Prof. Elias Eriksson: Premenstrual Syndrome Pubmed 2008 Apr 5;371(9619):1200-10 PMID: 18395582
29. Ashraf Direkevand Moghadam, kourosh sayehmiri: Epidemiology of PMS : A systematic review Journal of clinical and diagnostic research 2014 feb;8(2): 106- 109 DOI: 10. 7860 /JCDR/2014/8024.4021
30. Teresa Lanza di Scalea Premenstrual Dysphoric disorder Doi: 10.1016/j.psc.2017.01.002 Pubmed 2017 Jun;40(2):201-216 PMID: 28477648
31. SL wickes, Premenstrual Syndrome Pubmed 1988 Sep;15(3):473-87 PMID: 3054959
32. Unche Anadu Ndefo PCOS Pubmed 2013 Jun;38(6):336-55 PMID: PMC 3737989
33. Samradhi singh, Narmarata Pal PCOS : Etiology current management and future therapeutics Pubmed 2023 Feb 11;12(4):145<https://doi.org/10.3390/jcm12041454>
34. Smith : Managing the PMS PMID: 3536266 1986 Oct;5(10):788-97
35. SG Raj :PCOD PMID: 6232474 1984:13:261-73
36. Gul Nawaz Amenorrhea PMID: 29489290 Starpearls Jan 2023
37. Matthew H. Walker, Willian Coffey Menorrhagia PMID: 30725595 Pubmed 2023 Jan Bookshelf ID:NBK536910
38. Damai Trilisanawati, Mutia Devi. Etiology, Diagnosis and of treatment Leucorrhoea. Bioscientia medicina: Journal of biomedicine and translational research ISSN 2598-0580
39. Sule Gokyildiz, Ergul aslan: The effects of menorrhagia on women's quality of life : A case - Control study ISRN Obstetrics and Gynecology 2013;2013:918179 DOI: 10.1155/2013/918179
40. Heena Parveen, kajal Chauhan Review on Leucorrhoea <https://doi.org/10.61096/ijamsr.2022.V10.Issue2.ISSN2.202224>
41. Mohammad Abid, Kapil Kumar Assessment Leucorrhoea diseases in female students. Journal of scientific and innovative research 2016;5(4):116-118 ISSN 2320-4818
42. B. R. Rajeswari Rao Chemical constituents and Uses of Cinnamon zeylanicm
43. Pasupuleti Visweswara Rao. Cinnamon & A multifaceted medicinal Plants Hindawi 2014;642942 PMID: PMC 4003790.

44. Alireza Valizadeh, Ali Hanafi Therapeutic effects of Cinnamon on PCOS
DOI: [HTTP://DX DOT.ORG/10.18502/JTMCV511.9567](http://dx.doi.org/10.18502/JTMCV511.9567)
45. Chasteberry PMID : 30000866 Pubmed 2022 Jan 18. Bookshelf: NBK501807
46. Chasteberry/Chastetree/Fruit Jean N Bokelmann MD <https://doi.org/10.1016/B978-0-323-84646-9.00036-2>
47. Leah Hechtman Msci: Polycystic ovary syndrome <http://doi.org/10.1016/B978-0-323-43044-9.00209-0>
48. Murat Kartal: Formulation, stability and analytical Method validation of chasteberry (Vitex agnus Castus L) extract in solid oral dosage forms <https://doi.org/10.12991/jrp.2019.177>
49. AnkitaWal,PranayWal A detailed review on herbal treatments of PCOS.CurrentNutracetical Vol 2,Issue3, 2021,192-202 DOI: 10.2174/2665978602666210805092103
50. Joon woo park Heewon song Effects of ginseng on two main sex steroid hormone receptors: estrogen and androgen receptors Pubmed 2017 Apr;41(2):215-221 PMID: 28413327
51. Muhammad Nadeem Nutritional and medicinal aspects of (Coriandrum sativuml) British food journal 115 (5), 743-755, 2013
52. G. Bhuvaneshwari, Guna Priya Effectiveness of Coriander seeds soaking water on Leucorrhoea DOI: 10.7897/2277-4343.1205142