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Herbal Formulation for Menstrual Pain

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ABSTRACT

Menstrual cramps are Also known as dysmenorrhea are a frequent gynecological condition that affects women of reproductive age, with major physical, social, and psychological impact. Conventional treatments, such as NSAIDs and hormonal therapy, provide relief but often prove ineffective due to side effects such as gastrointestinal discomfort, hormonal imbalance, and dependence on the medication. Severe cases might result in psychological stress, poor productivity, and missed academic or professional activities. According to the World Health Organization, millions of women suffer from dysmenorrhea on every month, which is frequently accompanied in heavy bleeding, bloating, nausea, and fatigue, lowering their quality of life. The objective of Current Research works it to develop an Herbal Formulation for Period Pain and to improve the women wellbeing in the current research work polyherbal oral powder. Current study Look into a polyherbal formulation for managing dysmenorrhea, composed of White Musli– endocrine support, stress-pain relief, Ginger – anti-inflammatory, prostaglandin inhibition, Chamomile – muscle relaxant, anxiolytic, Fennel – uterine relaxant, anti-bloating, and Walnut – omega-3 and antioxidant for reproductive health). Together, these components provide complementary actions offering a safe and Effective that are Referred from Indian Traditional Knowledge and Traditional Household medicinal system. Formulation F1 -F6 have been prepared out of which formulation F4 is found to be best with their Result. This herbal medicine offers a natural, safe, and comprehensive treatment in contrast to synthetic medication. It prioritizes pain easing, menstrual regularity, improving general reproductive health, and minimizing adverse effects. This study highlights the potential benefits of herbal therapy for women's health and merits extensive clinical validation to ascertain dosage, efficacy, and safety.

Keywords: Keywords: Dysmenorrhea, Menstrual Cramps, Polyherbal Formulation, Herbal Medicine, Phytotherapy Women's Health, Chlorophytum borivilianum (White Musli), Zingiber officinale (Ginger), Matricaria chamomilla (Chamomille), Foeniculum vulgare (Fennel), Juglans regia(walnut).

1. Introduction

Menstrual health is vital for the overall well-being and quality of life for women of reproductive age. However, menstrual disorders, particularly dysmenorrhea, are a significant global health concern that remains largely underreported and undertreated. Dysmenorrhea, or painful menstruation, is the most common gynecological complaint, with a global prevalence ranging from 50% to 90% depending on the study population and diagnostic criteria. In some regions, its prevalence is as high as 95%, with approximately 1–3% of women unable to work or attend school for up to three days each month due to severe pain.[1,2]

Dysmenorrhea is classified into two main types: primary dysmenorrhea, which occurs without any underlying pelvic pathology, and secondary dysmenorrhea, which is associated with conditions like endometriosis, pelvic inflammatory disease, or uterine fibroids. Primary dysmenorrhea typically begins within one to two years of menarche as ovulatory cycles are established, with symptoms lasting 48–72 hours per cycle. The pain is caused by elevated levels of prostaglandins (PGF2α and PGE2) in the endometrium, which trigger strong uterine contractions, leading to vasoconstriction, reduced blood flow, and ischemic pain. Other factors, such as vasopressin, can also enhance uterine contractions, while oxidative stress worsens the inflammatory response.3,4,5

While conventional medicines like non-steroidal anti-inflammatory drugs (NSAIDs) and hormonal contraceptives are standard treatments, they are often associated with adverse effects, including nausea, vomiting, stomach ulcers, hormonal imbalances, and weight gain. Because of these issues, many women worldwide are increasingly turning to herbal products as a more natural, safe, and effective alternative. Herbal remedies are a significant part of traditional medicine due to their high cultural acceptance and a perception of fewer side effects compared to chemical drugs.6

This study explores the potential of a specific polyherbal formulation containing White Musli, Ginger, Chamomile, Fennel, and Walnut to alleviate menstrual discomfort. By leveraging the synergistic action of these herbs, the formulation aims to provide a holistic approach to managing menstrual pain by targeting multiple pathways, including inflammation, muscle spasms, and hormonal fluctuations.[7]

2. Plant Profile

This herbal formulation is a blend of five medicinal plants; each selected for its distinct benefits in managing menstrual health.

I. White Musli (*Chlorophytum borivilianum*)

An herb native to India, White Musli is highly regarded in Ayurvedic medicine as a "Rasayana" or rejuvenative tonic. It is particularly known for its adaptogenic and antioxidant properties, which help the body resist stress and reduce oxidative

damage. The plant's primary bioactive compounds are saponins, which are responsible for its significant anti-inflammatory and hormonal regulatory effects. Traditionally, it has been used to boost vitality, regulate hormonal balance, and support the immune system. In the context of dysmenorrhea, its adaptogenic properties can help mitigate the stress response, while its anti-inflammatory effects help reduce pelvic pain.[8,9]

II. Ginger (*Zingiber officinale*)

A widely used spice from the ginger family (Zingiberaceae), ginger has a long history of use in traditional medicine for pain and nausea relief. Its potent pharmacological effects come from its bioactive compounds, primarily gingerols and shogaols. These compounds give ginger strong anti-inflammatory and antispasmodic properties and work by inhibiting the synthesis of prostaglandins, similar to the action of NSAIDs, which directly reduces uterine contractions and the associated pain. Clinical studies have shown that ginger powder can significantly reduce the severity of menstrual pain and is as effective as common pain medications like ibuprofen, but with fewer gastrointestinal side effects.[10,11]

III. Chamomile (Matricaria chamomilla)

This widely used medicinal plant is known for its calming, muscle-relaxant, and anti-inflammatory properties. Its active constituents, including flavonoids like apigenin and terpenoids like chamazulene, are responsible for its soothing effects and its ability to reduce muscle spasms. Chamomile acts by reducing prostaglandin synthesis and relaxing the uterine muscles, which helps alleviate cramps. It also has mild anxiolytic properties, which can be beneficial in managing the emotional and psychological symptoms often associated with menstruation. Clinical studies have demonstrated that chamomile significantly reduces the intensity of menstrual pain.[12,13]

IV. Fennel (*Foeniculum vulgare*)

A fragrant plant from the carrot family (Apiaceae), fennel has been used in traditional medicine to relieve painful menstruation for centuries. The main active component, anethole, has potent antispasmodic effects and helps relax uterine muscles, which directly reduces the intensity of menstrual cramps. Clinical and pharmacological studies have shown that fennel is highly effective in relieving menstrual pain, with its efficacy being comparable to that of mefenamic acid. Additionally, fennel's phytoestrogenic properties may help regulate hormonal fluctuations, providing a more holistic and long-term benefit.[14,15]

V. Walnut (Juglans regia)

A tree nut rich in healthy fats, including omega-3 fatty acids, walnuts are known for their potent anti-inflammatory properties. Omega-3 fatty acids help reduce systemic inflammation and decrease the production of inflammatory prostaglandins, which are a primary cause of menstrual pain.

Additionally, walnuts are a good source of magnesium, a mineral known to help relax muscles, reduce uterine contractions, and alleviate mood swings and irritability often associated with menstruation. Walnut-derived peptides and polyphenols also contribute to immunomodulation and overall health.[16,17,18]

3. Materials and Methods

Selection of Medicinal Plants

This formulation was created by combining extracts and powders from five specific plants: White Musli (*Chlorophytum borivilianum*), Ginger (*Zingiber officinale*), Chamomile (*Matricaria chamomilla*), Fennel (*Foeniculum vulgare*), and Walnut (*Juglans regia*).[19,20]

Traditional Uses

A. Each plant was selected based on its traditional use and known medicinal properties: Ginger for pain and nausea relief; Chamomile for muscle spasms, anxiety, and inflammation; White Musli for vitality and immune support; Fennel for relieving painful menstruation and reducing spasms; and Walnut for its anti-inflammatory properties due to high omega-3 fatty acid content.. **Formulation of Polyherbal Powder:**

Table A: Formulation Composition of Polyherbal Powder

S. No	Ingredients	F1 (%)	F2 (%)	F3 (%)	F4 (%)	F5 (%)	F6 (%)
1	White Musli powder	25	30	30	30	35	40
2	Ginger powder	10	10	12	10	12	15
3	Chamomile powder	15	15	13	15	13	15
4	Fennel powder	30	25	25	25	20	20
5	Walnut powder	20	20	20	20	20	20
6	Diluent (if required)	QS	QS	QS	QS	QS	QS

4. Procedure for Preparation of Polyherbal Powder:

The required quantities of all ingredients were accurately weighed. Each ingredient was separately sieved using a **#60** mesh sieve to obtain uniform particle size. The sieved powders were mixed thoroughly using geometric dilution method to ensure homogeneity. The prepared formulation was stored in airtight containers for further evaluation.[21,22]

5. Evaluation:

a) Physio-chemical Evaluation

Physio-chemical evaluation was carried out to determine the quality, purity, and stability of the polyherbal powder formulation. The formulation was found to be free-flowing, non-sticky, and suitable for oral administration.

S. No	Parameters	Observations

1	Bulk density	0.48 g/ml
2	Tapped density	0.56 g/ml
3	Angle of repose	29.6°
4	Carr's index	14.2%
5	pH (1% w/v)	6.4

Table No. 5.a: Physico-chemical Evaluation of Optimized Formulation (F4)

c) Microbial Load Evaluation:

Microbial evaluation of the formulation was performed to ensure safety for oral use.

S. No	Parameters	Observations
1	Total aerobic count	Within limit
2	Yeast and mold count	Within limit
3	*E. coli*	Absent
4	*Salmonella*	Absent

Table No. 6 Microbial Load Evaluation

d) Stability Studies

Stability studies were conducted by storing the optimized formulation at different temperatures for one month. Physical parameters were evaluated periodically.

Test Parameters	Room Temp	40°C
Color	No change	No change
Odor	No change	No change
pH	6.4	6.4
Texture	Fine	Fine
Appearance	Uniform	Uniform

Table No. 7 Stability Studies

e) Uniformity of Weight (Powder Dose Consistency)

Uniformity of powder weight was checked by weighing equal quantities of formulation intended for a single dose. The results showed minimal variation, indicating uniform mixing

4. Results and Discussion

The uniformity of weight test for the polyherbal powder formulation (F4) demonstrated consistent dose distribution. The individual weights of ten samples intended for a single dose were found to be very close to the average weight of 5.00 g, with only minimal variation observed. All measured values were within acceptable limits, indicating effective mixing and homogeneous distribution of ingredients throughout the formulation. This confirms that the polyherbal powder possesses good dose uniformity and is suitable for oral administration.

5. Conclusion

The present study successfully formulated and evaluated a polyherbal powder intended for the management of menstrual pain using selected medicinal plants such as White Musli, Ginger, Chamomile, Fennel, and Walnut. Multiple trial formulations were prepared, and formulation F4 was selected as the optimized formulation based on

physicochemical characteristics and evaluation outcomes.

The optimized formulation (F4) exhibited acceptable organoleptic properties, good flow characteristics, suitable pH, and compliance with microbial limits, indicating its quality and safety for oral administration. The uniformity of weight study showed minimal variation among individual doses, confirming homogeneous mixing and consistent dose delivery of the polyherbal powder. Overall, the results demonstrate that the developed polyherbal powder formulation is stable, safe, and suitable for oral use at the institute level. However, further preclinical and clinical studies are required to establish its therapeutic efficacy and long-term safety in the management of dysmenorrhea.

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