

# Dysmenorrhea Treatment and its Complications According to Al-Zahrawi

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## ABSTRACT

**Objective:** Dysmenorrhea denotes the pain associated with menstrual cycles, which is often felt in the lower abdomen. It is typically characterized by a cramping nature and is a highly common gynecological problem with negative impacts on various aspects of the life of the patient. The complications of the current treatments encourage inquiry into alternative therapies.

**Methods:** This paper examines dysmenorrhea from the perspective of Al-Zahrawi (Albucasis), a famous physician of the 10<sup>th</sup>-11<sup>th</sup> century AD, based on his eminent book "al-Tasrif" and some reference books of traditional Persian medicine. We also examined dysmenorrhea and some alternative therapies from the perspective of conventional medicine as found on the PubMed database and Google scholar search engine.

**Results:** According to Al-Zahrawi, the causes of dysmenorrhea include vessels narrowing, blood hyperviscosity, and tense swelling of the blood flow path.

The treatment works through exercise, reduced food intake, daily bath, and the use of certain herbal remedies.

**Conclusion:** According to Al-Zahrawi, a modification in some of the Setteh-e-Zarurieah or the six essentials (i.e., six fundamental principles of life, including sleep and consciousness, eating and drinking, movement and rest, retention and evacuation, air and water, and emotional and mental states) and the use of specific medicinal plants can contribute to dysmenorrhea prevention and treatment. Some of these herbs have been examined and tested in recent years. Other treatments, which have not been assessed yet, are suggested to be studied in clinical trials.

**Keywords:** Dysmenorrhea, Traditional Persian medicine, NSAIDs

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## INTRODUCTION

Dysmenorrheas refer to pains associated with menstrual cycles and are often experienced in the lower abdomen. The pains are usually of a cramping nature and grouped into primary and secondary types. Primary dysmenorrhea has associations with ovulation cycles, developing as a result of myometrial contractions in the absence of a certain disease. These intermittent contractions vary in intensity and are usually felt in the suprapubic region. The primary dysmenorrhea pains initiate immediately before or concurrently with the onset of menstruation, and gradually alleviate within 72 hours. Some patients may also experience pain in the thighs and low back. Secondary dysmenorrhea is pain associated with menstrual cycles caused by a pelvic pathology.

Primary dysmenorrhea has a clinical diagnosis and is mainly based on the presence of specific symptoms in the history of the patient and the absence of specific pelvic lesions. There is no need for imaging, laparoscopy, or laboratory tests to detect it (Basson R and Baram DA, 2012; Speroff L and Fritz MA, 2005). This condition is one of the most common gynecological problems in women of childbearing age (Speroff L and Fritz MA, 2005) and is of 70.8% prevalence according to recent reports (Armour M, *et al.*, 2019).

Dysmenorrhea has negative effects on various aspects of the life of the infected individual, including familial and friendly communications, social and recreational activities, and occupational and educational performance (Iacovides S, *et al.*, 2015). Studies indicate that between 10% and 12% of women make absences from work for one to three days due to dysmenorrhea (Nuevo PN, *et al.*, 1998; Zannoni L, *et al.*, 2014).

NSAIDs are the first line of treatment for primary dysmenorrhea. However, in those who try to prevent pregnancy or those who do

not tolerate or not respond adequately to NSAIDs, the first line would be oral contraceptives (Basson R and Baram DA, 2012; Speroff L and Fritz MA, 2005).

Nevertheless, complications such as inflammation of the esophagus, gastrointestinal ulcers in the stomach and intestines (Rodacka RD, *et al.*, 2016) cardiovascular complications (Bhala N, *et al.*, 2013), and transient infertility (Mendonça LLE, *et al.*, 2000; Uhler ML, *et al.*, 2001) have been reported due to the use of NSAIDs. Hormone therapy also entails side-effects such as negative effects on the lipid profile, risks for breast and endometrial cancer, thromboembolism disorders, and heart and liver problems (Basson R and Baram DA, 2012).

On the other hand, studies indicate that the general population is showing increasing interest in using alternative therapies along with conventional treatments (Ayati MH, *et al.*, 2019). For example, the results of a study in Iran showed that 69.8% of female students used medicinal herbs to relieve dysmenorrhea, and 66% of the participants believed that the herbs were effective in relieving their pain (Salehian T, *et al.*, 2011). The broad welcome suggests that one should find alternative therapies in medicinal plants for which Traditional Persian Medicine (TPM) provides a rich ground. Medicine had of a particular position in ancient Iran, which, according to some historians, was the first cradle of Greek medicine (Elgood C, 2010). TPM encompasses a collection of worthwhile works by notable men such as Avicenna, Razi, Jorjani, Ahvazi, and Al-Zahrawi.

Abulqasim Khalaf ibn Al-Abbas Al-Zahrawi (936-1013 AD) is one of the scholars of the TPM. In the West, he is better known as Albucasis, Abulcasis, Bucasis, or Zahravius. He grew up in Alzharra near Cordova in Andalusia, Spain (Elgohary MA, 2006). In this article, we review the views of this scientist about dysmenorrhea based on his valuable book al-Tasrif.

**MATERIALS AND METHODS**

In this study, a search was initially performed concerning dysmenorrhea in modern medicine on PubMed and Google Scholar. Subsequently, the valuable book al-Tasrif, compiled by Al-Zahrawi, was studied. We have referred to other references in ambiguous, such as "Al-Qanun fi Al-Tib" (The Canon of Medicine) and the "Exir-e-Azam." The latest findings from studies available in these databases were searched and reviewed in line with the recommendations made in al-Tasrif.

Al-Tasrif is the outcome of Al-Zahrawi's 50 years of learning, teaching, and experience in medicine. This book is compiled with 30 articles. The first article is concerned with medicine fundamentals. The second article discusses types of diseases and fevers. Articles 3 to 29 cover pharmacology. The last article, which is the most prominent part of the book, is about surgery. As regards gynecological diseases, the book discusses various issues such as uterus infections and masses and menstrual disorders as well as pregnancy and childbirth issues, including management of difficult deliveries (Ibn-e-sina AH, 2005). The book was taught for centuries as one of the primary textbooks of medical education in Europe (Chashti MA, 2008). In this article, we examined dysmenorrhea from the perspective of the author of this book.

**Description of dysmenorrhea in al-Tasrif**

TPM scientists have examined dysmenorrhea under the topics of uterine pain and menstrual cramps (Ibn-e-sina AH, 2005; Chashti MA, 2008; Khorasani AM, 2008). However, Al-Zahrawi seems to be the first physician, who describes the pathophysiology and treatment of dysmenorrhea as a separate issue (Khorasani AM, 2008). Al-Zahrawi referred to dysmenorrhea in Al-Tasrif under the subject of a pain occurring in some women, two to three days before the onset of menstruation, pain in the umbilical region that is accompanied by feelings of boredom and heaviness in the body. The severity of these pains is comparable to the labor pain in some cases.

**Etiology**

In some references, the cause of dysmenorrhea is attributed to the reduced blood flow of the uterus (Khorasani AM, 2008; Behmanesh E and Mozafarpur SA, 2017). However, Al-Zahrawi grouped the cause of dysmenorrhea into three categories-

- Vessels narrowing, that may lead to reduced uterine blood flow
- Blood hyperviscosity, due to viscous phlegm (Balgham) or black bile (Sauda)
- Tense swelling on the blood flow path (Zahravi A, 2008; Rezaeizadeh H, et al., 2009).

**Treatment**

In traditional medicine, treatment consists of three aspects: Tadābir (treatment by establishing changes in lifestyle including nutrition), use of drugs, and manual interventions. Tadābir includes modifying/observing the six essential principles of life, i.e., sleep and consciousness, eating and drinking, movement and rest, retention and evacuation, air and water, and emotional and mental states (Chashti MA, 2008) (Table 1).

**Table 1: Treatment of dysmenorrhea in Al-Zahrawi's view**

Treatment type	Intervention
Tadābir	<ul style="list-style-type: none"> <li>• Daily baths from a few days before menstruation                             <ul style="list-style-type: none"> <li>• Moderate exercise</li> </ul> </li> <li>• Reduced intake of food both in terms of quantity and quality (taltif)</li> </ul>

Medicine	Oral-A combination drug with ingredients including- <i>Anethum graveolens, Matricaria chamomilla, Cymbopogon citratus, Origanum vulgare, Cinnamomum verum, Apium graveolens, Foeniculum vulgare, Nigella sativa</i>
	Topical-Application of the same ingredients as bakhūr (incense)

**RESULTS AND DISCUSSION**

As one of the most common gynecological problems, dysmenorrhea usually interferes with the daily activities of women. The complications of the current treatments, including NSAIDs and OCP, demand for alternative therapies for which TPM can be a good source. According to TPM, the correct treatment of any disease initiates with the diagnosis of the cause of the disease and its subsequent elimination, which is possible in three ways-

- Tadābir
- Treatment with medication
- Manual interventions

**Tadābir**

The first phase of treatment is to modify the six essentials, Setteh-e-Zarurieah, which involve six factors that are essential for maintaining health and restoring it in the event of a disease outbreak. The observance of these six principles is known as tadābir in traditional medicine books. They include-

- Eating and drinking
- Sleep and wakefulness
- Body movement and repose
- Retention and evacuation
- Air and water
- Mental movement and repose (Chashti MA, 2008; Babaeian M, et al., 2015).

Similar to other traditional medicine scholars, Al-Zahrawi believed in these six principles. For the treatment of dysmenorrhea, Hakim Al-Zahrawi suggested exercise, reduced intake of food, and daily bath. Al-Zahrawi discusses the advantages and disadvantages of bathing in a separate chapter of his book. From the perspective of this scientist, bathing is conducive to the prevention and treatment of dysmenorrhea by removing "Reeh", modifying blood density (a contributor to dysmenorrhea), and relieving pain.

As one of the treatments mentioned by Al-Zahrawi, exercise has a special place in TPM and is referred to as riyāḍah in the references. Al-Zahrawi also lists exercise among the principles of health maintenance and disease prevention. Exercise intensity and duration depends on the habit and ability of individuals. In fact, an exercise that is initiated with warm-up can modify blood density. The importance of nutrition in TPM is to the extent that its modification has consistently been at the top of all treatments (Burnett M and Lemyre M, 2017). Traditional medicine reference books have repeatedly emphasized the importance of nutrition and, the recommendation is that wherever treatment with nutritional modification would suffice, the physician should not prescribe drugs (Chashti MA, 2008; Gamit KS, et al., 2014).

On the other hand, conventional medicine recommends exercise and the use of certain food supplements to treat dysmenorrhea (Shirvani MA, et al., 2017). Various studies have also been conducted on the efficacy of exercise, and accordingly, tensile and aerobic exercises have shown a positive

impact on the relief of dysmenorrhea (Kannan P, *et al.*, 2019; Heidarifar R, *et al.*, 2014; Mohammadinia N, *et al.*, 2013; Gharenaz SM and Ozgoli G, 2015).

The second step of treatment is *via* medicine. Some of the medicines, which Al-Zahrawi used to treat dysmenorrhea, have been tested in clinical trials and their efficacy has been proved. Some of these medicines are as follows-

*Anethum graveolens*, holds anti-inflammatory, analgesic, and anti-spasmodic effects. The plant has been administered in the form of capsules and extract in several trials to assess its efficacy in reducing dysmenorrhea, showing that the herb exerts effects similar to those of mefenamic acid (Jenabi E, Ebrahimzadeh S, 2010; Modarres M, *et al.*, 2011, Yazdani M, *et al.*, 2004).

*Matricaria chamomilla* has anti-inflammatory, anti-spasmodic, sudorific, and antiseptic properties. The efficacy of its various drug forms, including drops, herbal tea, and capsule, on dysmenorrhea has been investigated in several studies, showing that it is effective in all studies (Singh O, *et al.*, 2011; Amjadi AM, *et al.*, 2009).

*Cinnamomum verum* has anti-inflammatory, antibacterial, and anti-fungal properties and enhances intestinal movements. It also has mild estrogenic effects. In studies where the effects of cinnamon capsule and placebo on dysmenorrhea have been compared, the capsule has proved significantly more effective than the placebo (Jaafarpour M, *et al.*, 2015; Khodakarami N, Moatar F, 2008).

*Foeniculum vulgare*, has anti-inflammatory, anti-flatulence, antimicrobial, diuretic, and estrogenic properties and can increase milk in breastfeeding mothers. Several clinical trials have evaluated its effect on dysmenorrhea at various doses, all of which have confirmed the efficacy of this herb (Yazdani M, *et al.*, 2004).

*Apium graveolens*, has anti-inflammatory, palliative, and anticonvulsant effects as well as inhibitory properties against the growth of fungi and germs. It has been studied in combination with other herbs to prove effective in reducing dysmenorrhea (Shafieian SH, 1983). Despite the presence of these clinical trials, the knowledge of TPM physicians should be more widely and scientifically examined.

## CONCLUSION

The high prevalence of dysmenorrhea and the complications associated with the current drugs necessitate research for alternative therapies. According to Al-Zahrawi, the modification of some of the six essentials is the first step to treat dysmenorrhea. A second contributory step is to use medicinal plants. Among the plants introduced by Al-Zahrawi, some have been experimented *via* clinical trials, and their efficacy has been demonstrated. It will be helpful to study the other plants with the priority of inexpensive, accessible, and safety as alternative therapies for dysmenorrhea. Also, a study on the modification of other dimensions of lifestyle, as a cheap and uncomplicated treatment, can be beneficial.

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