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Effectiveness of Chamomile (*Matricaria chamomilla*) extracts on the reduction of dysmenorrhea and premenstrual syndrome symptoms

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ABSTRACT

Premenstrual syndrome (PMS) is a common problem in reproductive cycle of women. There are different treatment methods on the treatment of PMS including, herbal drugs with the lower side effects. The aim of the present study was to evaluate the efficiency of Chamomile (Matricaria chamomilla) extract on reduction of dysmenorrhea and PMS symptoms. In this clinical trial study, 30 women with PMS symptoms was studied in two monthly menstrual cycles, the first cycle without of the Chamomile extract use and the second cycle with administration of the Chamomile extract before menstruation. Severity of the PMS symptoms was compared in two cycles by using of questionnaire of the Daily Record of Severity of Problems (DRSP). Data were analyzed by pair sample t- test with the significance level of P ≤0.05, using SPSS software. The results showed that use of Chamomile extract was effective in reduction of PMS symptoms. The most effect of Chamomile extract was on the reduction of severity of anxiety and retention symptoms. Therefore Chamomile extract, as a herbal drug, can be used for reducing the severity of mental and physical symptoms of PMS in menstruation cycle.

Key words: premenstrual syndrome, Dysmenorrhea, herbal drugs, Chamomile

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INTRODUCTION

Dysmenorrhea or painful menstruation due to Prostaglandin release, is the one of most common complaints in women [1, 2]. Approximately %50 of women experiences some degree of it [3, 4]. Premenstrual syndrome (PMS) includes physical and psychological symptoms that occur in the luteal phase of the menstrual cycle alternately [5, 6]. This syndrome is a psycho neuroendocrine disorder that causes physical, behavioral, and mental changes [7-9]. Symptoms of PMS are anxiety, depression, confusion, insomnia, irritability, disinterest in daily activities and relationships, physical symptoms (breast pain, headaches, muscle pain, swelling of hand of feet, acne and fatigue) that appear each month at the same time in the menstrual cycle. Symptoms begin about 10 to 14 days before your period and improve within a few days of its start. For most women, these PMS symptoms are uncomfortable but not disabling [10, 11].

Various factors developing of PMS are hormonal imbalance, hypoglycemia, hyperprolactinemia, endorphins, endocrine disorders, ovarian infections, lack of essential fatty acids, prostaglandins imbalance, lack of essential vitamins and minerals, periodic changes in estrogen and progesterone levels [12, 13]. According to the World Health Organization (WHO), %80 of the world population was used herbal compounds in the treatment of various diseases [14], and there are several herbal products that reduce the PMS symptoms [15]. The chamomile, as an herbal drug, was been applied traditionally in the treatment of menstrual disorders including PMS.

The chamomile (*Matricaria chamomilla*) of the Compositae family is one of the native plants in the Mediterranean region, but today it has distributed widely in the world [16]. Chamomile has different effects due to various metabolites [17-19]. Chemical compounds of the Chamomile include terpenoids (chamazulene, Bisabolol), flavonoids (Apigenin, luteolin, quercetin), coumarin (scopoatin - 7 glycoside) and other compounds such as acid esters angelic, anthemic acid, choline, phenol and fatty acids. The most important properties of the Chamomile is anti-inflammatory, antispasmodic, antiseptic, sedative effects of pain and treatment of insomnia [20, 21]. The studies have shown that essential oil of Chamomile is effective in the reduction of spasm in pig ileum, and these anti-spasmodic effects are due to Bisabolol and apigenin compounds [22]. Inhaling of Chamomile oil lead to reduction in stress induced of ACTH plasma in ovarectomized rats [23]. An anti-inflammatory effect of the Chamomile has been documented in animals. Animal studies have found that Bisabolol decreased inflammation, fever and arthritis. Also anti-inflammatory properties of the apigenin has have been shown in the carrageenan-induced edema in rats [24]. With revealing of harmful effects of some chemical drugs and the optimal use of herbal drugs and also due to anti-inflammatory, anti-anxiety and sedative effects of the Chamomile [25], the present study was carried to determination of the effect of the Chamomile extract on the reduction of dysmenorrhea and PMS symptoms.

MATERIALS AND METHODS

This was a clinical trial study. 30 women who had at least four symptoms of painful Premenstrual syndrome were evaluated. At first history of the menstrual cycle characteristics was taken and then the severity of PMS symptoms in were measured during two monthly menstrual cycle (the first cycle without of the Chamomile extract use and the second cycle with administration of the Chamomile extract before menstruation) by using of questionnaire of the Daily Record of Severity of Problems (DRSP) [26]. Use of the Chamomile extract was begun before the start of the second cycle of menstruation. All of women used of the 30 drops of the Chamomile extract in a glass of water per 8 hours, 3 days before beginning of menstruation.

The questionnaire of DRSP is a standard tool for determining the severity of PMS and it is approved by the majority of researchers. The DRSP has five categories of symptoms include anxiety symptoms (anxiety, nervous tension, irritability, difficulty in concentration, confusion), depressive symptoms (depression, despair, crying, insomnia, loss of interest in daily activities, decreased interest in activities outdoors, Loss of interest in social activities), emotional symptoms (increased appetite, bradychardia, fatigue), retention symptoms (weight gain, bloating, swelling of the hands and feet, breasts pain, abdomen and pelvic pains, joint pain) and physical symptoms (acne, nausea and vomiting, diarrhea, herpes infections) [27, 28]. All women were rated severity of their daily symptoms in spectrum of very low, low, moderate, severe and very severe. Data were analyzed by pair sample t- test with the significance level of $P \leq 0.05$ for comparison of mean PMS symptoms during two cycle of menstruation, by using of SPSS software.

RESULTS

The results were showed that women23 (76/6%) had regular menstrual cycles. The most PMS symptoms had been begun prior 3 days of menstruation (23/3%).The mean ± SD of overall severity of PMS symptoms without of the Chamomile consumption extract was 2/24 ± 0/125, while the mean of these symptoms after using of the Chamomile extract was decreased to 1/63 ± 0/061 that this difference was significant ($P \leq 0.05$). Consumption of chamomile reduced the severity of the PMS symptoms (approximately 60%). The comparison of five category of PMS symptoms in two cycles without and after Chamomile extract consumption was been showed in Figure 1. As it is seen, the mean of severity of symptoms was reduced. The mean overall of anxiety, depressive and retention symptoms of PMS after consumption of Chamomile extract had significant difference than without consumption of Chamomile extract. This reduction was higher in anxiety and retention symptoms than other symptoms. There was no significant difference between severity of overall emotional and physical symptoms in two cycles of menstruation.

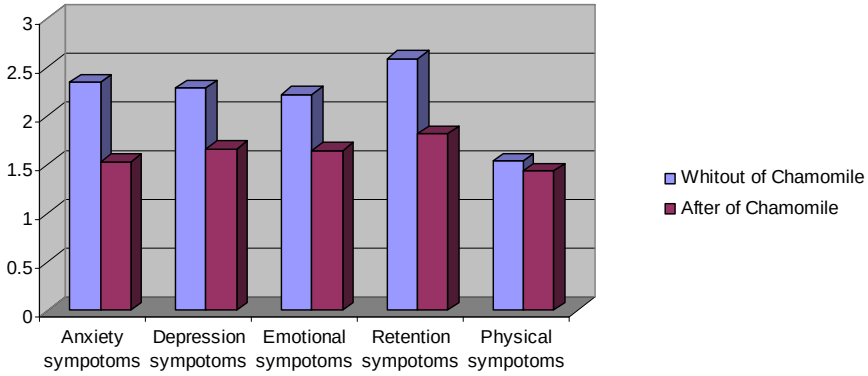

Figure 1. Symptoms of PMS in two menstrual cycles

Table 1 shows mean ± SD of severity of PMS anxiety and depressive symptoms. As it is seen, there is a significant difference between overall of factors of anxiety and depressive symptoms in two menstrual cycles. The Chamomile extract reduced the severity of these symptoms significantly (P≤0.05).

Table1. The mean ± SD severity of anxiety and depressive symptoms of PMS

Symptoms		Without of chamomile consumption	After of chamomile consumption	P Value
Anxiety Symptoms	Anxiety	2.3±0.174	1.47±0.104	0.000
	Nervous tension	1.97±0.195	1.4±0.091	0.002
	Difficulty concentrating	2.33±0.182	1.93±0.143	0.043
	Irritability	2.93± 0.179	1.47±0.104	0.000
	Sense of confusion	2.2±0.206	1.4±0.103	0.000
Depressive Symptoms	Depression	3.03±0.206	1.53±0.115	0.000
	Crying	1.57±0.141	1.26±0.095	0.005
	Despair	1.8±0.161	1.43±0.114	0.005
	Insomnia	2.37±0.200	1.77±0.123	0.000
	Loss of interest in work activities	2.17±0.160	1.73±0.117	0.002
	Decreased interest in activities outdoors	2.57±0.157	1.87±0.115	0.000

The mean ± SD of severity of PMS emotional, retention and physical symptoms is seen in table 2. The mean of severity of emotional symptoms (bradychardia and increased appetite) and physical symptoms (ance) had a significant difference after administration of chamomile in second cycle than first cycle, but there was no significant difference between other factors. The severity of PMS retention symptoms had significant difference between two menstrual cycles after consumption of Chamomile extract.

Table 2. Mean ± SD severity of emotional, retention and physical symptoms of PMS

Symptoms		Without of chamomile consumption	After of chamomile consumption	P Value
Emotional Symptoms	Bradychardia	1.73±0.172	1.33±0.1	0.012
	increased appetite	3.30±0.199	2.13±0.150	0.000
	fatigue	1.63±0.155	1.5±0.115	0.255 (NS)
Retention Symptoms	Breasts pain	3.07±0.185	1.90±0.139	0.000
	abdomen and pelvic pain	3.43±0.171	2.37±0.148	0.000
	swelling of the hands and feet	1.67±0.168	1.40±0.113	0.009
	muscle and joint pain	3.17±0.209	2.13±0.142	0.000
	bloating	1.97±0.212	1.53±0.142	0.002
	weight gain	2.2±0.206	1.60±0.141	0.001
Physical Symptoms	Nausea and vomiting	1.27±0.106	1.20±0.088	0.161(NS)
	diarrhea	1.57±0.141	1.50±0.124	0.264(NS)
	acne	1.83±0.198	1.60±0.163	0.017
	herpes infection	1.47±0.178	1.43±0.130	0.161(NS)

NS: Non significant

DISCUSSION AND CONCLUSION

The findings of the present study showed that Chamomile extract reduced the severity of PMS anxiety, depressive symptoms and retention symptoms had significant difference after consumption of Chamomile extract in second cycle of menstruation than the first cycle. For ancient times, using of herbs was effective to relieve pain during menstruation [24]. Impact of more effective Chamomile on the mental symptoms, seems logical and rational. Because this impact is due to anti-anxiety and sedative affects of Chamomile through effect on the materials such as flavonoids, apigenin; and phytostrogenic materials on the central nervous system [18, 25]. The reduction of severity of primary dysmenorrhea pain was observed with the use of Chamomile and mefenamic acid and there was a significant difference use of Chamomile and mefenamic acid as the Chamomile more reduced primary dysmenorrhea pain [26]. Also Chamomile extract reduced menstrual pain, anxiety and psychological problems significantly [27]. The Chamomile improved PMS overall symptoms such as physical and psychological symptoms during the period of treatment and compared with mefenamic acid, it was more effective on the severity of PMS overall symptoms and mental symptoms than mefenamic acid. Impact of on the PMS physical symptoms was similar [28]. Comparison between the Chamomile and fennel extracts in the treatment of PMS showed that Chamomile more reduced abdominal and pelvic pains, depression and anger and the fennel extract more effective on fatigue and lethargy [29].

Although the cause of PMS is not known yet but it is possible that many of the mediators that cause PMS symptoms are prostaglandins, according to anti-prostaglandin of Chamomile; and, anti-inflammatory and sedative effects of it through materials and components such as chamazulene and alpha bisabolol [30, 31]. This reduction is justifiable in retention symptoms. There was no significant difference in severity of physical symptoms such as nausea, vomiting and diarrhea, acne and herpes infection (except acne) and fatigue of emotional symptoms between cycle without Chamomile consumption and after using Chamomile, due to the lack of significant properties of chamomile, was not unexpected. The significant difference in severity of PMS psychological symptoms was expected. Flavonoid found in Chamomile is a stimulant factor of central nervous system and apigenin and luteolin found in it by bounding to benzodiazepine receptors have anxiolytic and sedative effects [32]. There are many steps women can take to improve PMS symptoms. Many involve simple lifestyle adjustments such as exercise, dietary modifications (cutting back on salt, fatty foods, caffeine), nutritional supplements (vitamin B-6, calcium, magnesium, Vitamin E, and tryptophan have all been shown to benefit women suffering from PMS), stress reduction and herbal remedies (evening primrose oil and chaste tree berry are herbal supplements that have both been studied and found to be effective in the treatment of PMS) [10, 11].

Finally, it is recommended using of Chamomile extracts, a suitable herbal drug, in the treatment of premensutal syndrome symptoms in women.

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