



The Impact of *Salvia officinalis* Extract on Depression in Postmenopausal Women: A Randomized Clinical Trial

Naeimeh Tayebi¹, Masoumeh Emamghoreishi², Marzieh Akbarzadeh^{3*}

Abstract

Objectives: This study aimed to investigate the impact of the *Salvia officinalis* extract on the depression of postmenopausal women referred to the bone density measurement center in Shiraz.

Materials and Methods: In this controlled randomized trial, 60 postmenopausal women were randomly divided into a control group and an intervention group. The participants were allocated to two groups of *S. officinalis* and placebo using random permuted blocks with a block size of 6. After 3 months, depression was measured by Edinburgh Postnatal Depression Scale (EPDS) in both groups. Then, the independent t test was used to analyze the obtained data in SPSS version 21.0.

Results: Based on the results, the control and intervention groups were homogeneous in terms of the level of education, occupation, and housing, and the decrease in mean depression scores in the *Salvigo* group was significant ($P < 0.001$).

Conclusions: *Salvia officinalis* extract has antidepressant properties. As the rate of depression increases during menopause, it is recommended to be used as a supplement.

Keywords: *Salvia officinalis*, Depression, Menopause, Women, Herbal medicines

Introduction

Medical and health advances have led to a relative increase in human life expectancy and consequently an increase in the population of postmenopausal women who need health care (1). Today, the world's population over 50 years of age is almost equal to the population of children under 5 years, and it is estimated that by 2050, the postmenopausal female population will be several times more than that of children under 5 (2). Menopause is a complex physiological process that marks the end of the reproductive phase of a woman's life (3). Many women experience a sense of loss, especially in their motherhood role, beauty, and youth (4). Depression is characterized by the loss of energy, self-esteem, interest, and ability to experience joy, and long-term depression is associated with sexual dysfunction (5). The menopausal phase is a period of reduced hormone production that is associated with problems that can decrease the quality and even the quantity of life of many women (6,7). Decreased estrogen levels in postmenopausal women lead to a wide range of symptoms (8).

According to epidemiological studies, about 65%-85% of women experience the unpleasant symptoms of menopause during their lives (7,9). Nowadays, side effects of chemical drugs, high cost of raw materials for these drugs, the low acceptance of chemicals among people, and the contraindication of these drugs in some people, the public's tendency to use herbal remedies with high

diversity and low side effects has prompted researchers to study herbal remedies (10,11). The World Health Organization has also emphasized the use of herbal remedies because of the side effects of chemical drugs (12). Many women decline to use topical vaginal estrogen (the standard effective treatment) because of its side effects (13).

Today, supplementary and different therapies for the treatment of menopausal symptoms are used instead of hormone replacement therapy, which include pharmaceutical and herbal medicines (14), and various plants have been used in many different aspects of women's care and treatment (15-20). About 15% to 17% of women with symptoms of menopause, who are affected by education, ethnicity, and herbal or medical counseling, use various therapies and phytotherapeutic medications (21). One of these treatments is the use of phytoestrogens. They are herbal estrogenic compounds and their long-term safety has been proven (22).

Considering that treating symptoms caused by depression is of great importance and that *Salvia officinalis* extract has phytoestrogenic effects due to its chemical compounds shown in Figure 1, this study was designed to clarify the effect of *S. officinalis* extract on symptoms of depression in postmenopausal women. Therefore, if this treatment is effective, this herbal medicine can be introduced as an appropriate and safe way to control the symptoms of depression in postmenopausal women.

Received 19 December 2020, Accepted 25 February 2021, Available online 2 May 2021

¹Department of Midwifery, School of Nursing and Midwifery, Bam University of Medical Sciences, Bam, Iran. ²Department of Pharmacology, School of Medicine, Shiraz University of Medical Sciences, Shiraz, Iran. ³Maternal-fetal Medicine Research Center, Department of Midwifery, School of Nursing and Midwifery, Shiraz University of Medical Sciences, Shiraz, Iran.

*Corresponding Author: Marzieh Akbarzadeh, Tel: +98711-6474250, Fax: +98711-647425, Email: akbarzadm@sums.ac.ir



Materials and Methods

The present study was a double-blind randomized clinical trial (RCT) conducted on postmenopausal women who referred to Bone Density Center of Namazi Hospital in Shiraz and met the inclusion criteria to enter the study. Convenience sampling was used to recruit participants from postmenopausal women who referred to the Bone Density Center in Shiraz. The participants were allocated to two groups of Salvigol and placebo using random permuted blocks with a block size of 6. Demographic Information Questionnaire and Menopausal Rating Scale (MRS) were used in the study. MRS was used to assess psychological symptoms including depression, sadness, misery, nervousness, aggressiveness, anxiety, forgetfulness, memory loss, and confusion. The menopausal women signed the informed consent form. Women in the control and experimental groups received three Salvigol and placebo tablets per day. After 3 months, women were contacted and they completed the questionnaire and the independent *t*-test was used to analyze the quantitative data in SPSS version 21.0.

Results

At first, Kolmogorov-Smirnov test was used to investigate the normal distribution of variables (quantitative ones). Based on the results, all quantitative variables had normal distribution and parametric tests were used for their analysis. Based on the results of the independent *t*-test, the two groups were homogeneous in terms of education, occupation, and housing. The two groups were homogeneous in terms of age, menopausal age, menopausal duration, body mass index, length of marriage, number of births, number of pregnancies, number of children, and number of abortions based on the results

of the independent *t* test. In the Salvigol group, the mean scores of depression were 8.1 ± 8 and 2.1 ± 2.2 before and after the intervention, respectively. In the control group, the scores were 8.1 ± 7.9 and 7.8 ± 7.8 before and after the intervention, respectively. The paired *t*-test showed a great decrease in mean depression scores in the Salvigol group ($P < 0.001$), but in the placebo group, it was not significant based on paired *t* test results ($P = 0.133$) (Table 1).

Discussion

According to results of this study, *S. officinalis* extract reduced depression in postmenopausal women, which is consistent with studies in which the efficacy of herbal medicines was assessed in the treatment of postmenopausal symptoms (23). In a study by Askari et al, it was found that *Licorice* affects the physical dimensions of the quality of life. Prior to the intervention, the quality of life of 60 postmenopausal women was not different between the two groups, but after one month of intervention, there was a great difference in total quality of life score and vasomotor, psychosocial, and physical domains. The consumption of *Licorice* in postmenopausal women improves the quality of life (24). The results of the present study, in which *S. officinalis* extract could improve postmenopausal women's depression and indirectly improve women's quality of life, are in line with the outcomes of other studies (25).

One of the strengths of this study is the proper and scientific preparation of the drug at Shiraz University of Medical Sciences. The present study was conducted because there were few studies on the effects of these herbs on the psychological and physical symptoms of postmenopausal women. This study was also a double-blind trial. The lack of follow-up after discontinuation of the extract administration was one of the limitations of

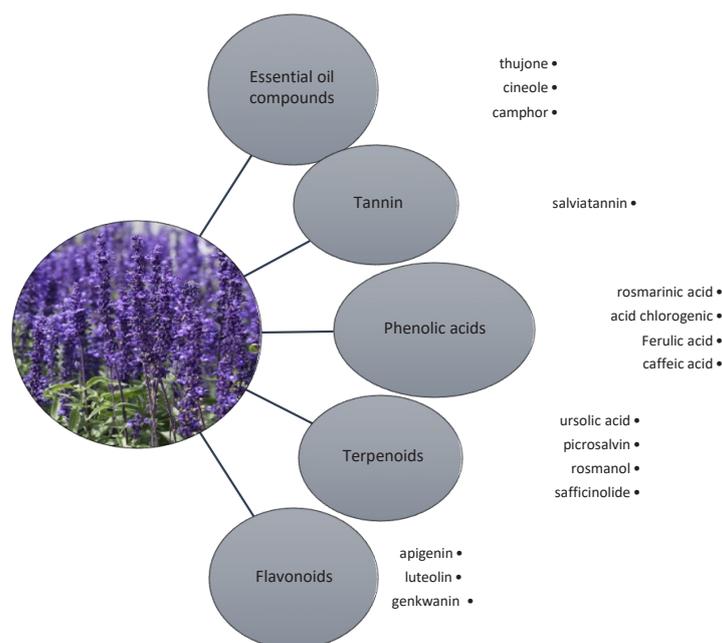


Figure 1. Chemical Compounds of *Salvia officinalis*.

Table 1. Comparison of Mean Depression Score Before and After the Intervention

Depression	Intervention Group	Control Group	P Value
Before intervention	8.8 ± 8	8.1 ± 7.9	0.729
After intervention	2.1 ± 2.2	7.8 ± 7.8	<0.001
Changes	6.7	0.3	<0.001
P value	<0.001	0.133	

Note: Significance level: $P < 0.05$; P : Significance level for the intervention and control group; Statistical tests: Paired t test

this study. Consequently, it is not possible to discuss the effects after discontinuation of the extract administration.

Conclusions

Salvia officinalis extract has antidepressant properties. Therefore, it is recommended to use it as a supplement in menopause since the rate of depression increases during menopause. Although no significant adverse events associated with the use of *S. officinalis* extract were observed in this study, further studies with a larger sample size are recommended to evaluate the efficacy and safety of this drug.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

This study was approved by the Ethics Committee of Shiraz University of Medical Sciences (No. 13940) and it was registered in the Iranian Clinical Trial Registry (identifier: IRCT2015111713940N2).

Financial Support

This study was supported by the Shiraz University of Medical Sciences.

References

- Ghorbani M, Azhari S, Esmaeeli H, Ghanbari Hashem Abadi B. Investigation of the relationship between personality characteristics and vasomotor symptoms in menopausal women. *Iran J Nurs Midwifery Res.* 2016;21(4):441-447. doi:10.4103/1735-9066.185618
- zhari S, Ghorbani M, Esmaeeli H, Ghanbari Hashem Abadi B. Relationship between personality characteristics and sleep quality in menopausal women referred to gynecology clinics of university hospitals in Mashhad, Iran. *J Midwifery Reproductive Health.* 2013;1(1):26-32. doi:10.22038/jmrh.2013.1222
- Converso D, Viotti S, Sottimano I, Loera B, Molinengo G, Guidetti G. The relationship between menopausal symptoms and burnout. A cross-sectional study among nurses. *BMC Womens Health.* 2019;19(1):148. doi:10.1186/s12905-019-0847-6
- Hakimi S, Simbar M, Ramezani Tehrani F. Perceived concerns of Azeri menopausal women in Iran. *Iran Red Crescent Med J.* 2014;16(5):e11771. doi:10.5812/ircmj.11771
- Yazdanpanahi Z, Nikkholgh M, Akbarzadeh M, Pourahmad S. Stress, anxiety, depression, and sexual dysfunction among postmenopausal women in Shiraz, Iran, 2015. *J Family Community Med.* 2018;25(2):82-87. doi:10.4103/jfcm.JFCM_117_17
- Sharifi N, Najar S, Rezaii N, Jalili L, Yazdizadeh H, Yarzadeh M. The association between menopausal symptoms and general health among Iranian women with menopause: a cross-sectional study. *Int J Womens Health Reprod Sci.* 2019;7(2):196-203. doi:10.15296/ijwhr.2019.33
- Bosak Z, Irvani M, Moghimipour E, Haghhighizadeh MH, Jelodarian P. Evaluation of the effect of Chamomile vaginal gel on Subjective symptoms of vaginal atrophy in postmenopausal women: a randomized clinical controlled trial. *Iran J Obstet Gynecol Infertil.* 2019;22(7):23-31. doi:10.22038/ijogi.2019.13814
- Ibrahim ZM, Ghoneim HM, Madny EH, et al. The effect of menopausal symptoms on the quality of life among postmenopausal Egyptian women. *Climacteric.* 2020;23(1):9-16. doi:10.1080/13697137.2019.1656185
- Woods NF, Mitchell ES. Symptoms during the perimenopause: prevalence, severity, trajectory, and significance in women's lives. *Am J Med.* 2005;118 Suppl 12B:14-24. doi:10.1016/j.amjmed.2005.09.031
- Sarris J, Byrne GJ. A systematic review of insomnia and complementary medicine. *Sleep Med Rev.* 2011;15(2):99-106. doi:10.1016/j.smrv.2010.04.001
- Abbasinia H, Alizadeh Z, Vakilian K, Jafari Z, Matoury poor P, Ranjbaran M. Effect of Chamomile extract on sleep disorder in menopausal women. *Iran J Obstet Gynecol Infertil.* 2016;19(20):1-7. doi:10.22038/ijogi.2016.7631
- Modarres, M, Mirmohamad Ali, M, Oshrieh Z, Mehran A. Comparison of the effect of mefenamic acid and Matricaria camomilla capsules on primary dysmenorrhea. *J Babol Univ Med Sci.* 2011;13(3):50-58.
- Sinha A, Ewies AA. Non-hormonal topical treatment of vulvovaginal atrophy: an up-to-date overview. *Climacteric.* 2013;16(3):305-312. doi:10.3109/13697137.2012.756466
- Mahdavian M, Mirzaei Najmabadi K, Hosseinzadeh H, Mirzaeian S, Badiie Aval S, Esmaeeli H. Effect of the Mixed Herbal Medicines Extract (Fennel, Chamomile, and Saffron) on Menopause Syndrome: a Randomized Controlled Clinical Trial. *J Caring Sci.* 2019;8(3):181-189. doi:10.15171/jcs.2019.026
- Zare A, Moshfeghy Z, Zarshenas MM, Namavar Jahromi B, Akbarzadeh M, Sayadi M. *Quercus brantii* Lindl. Vaginal cream versus placebo on Bacterial Vaginosis: a randomized clinical trial. *J Herb Med.* 2019;16:100247. doi:10.1016/j.hermed.2018.11.003
- Moshfeghy Z, Asadi K, Akbarzadeh M, et al. *Quercus brantii* Lindl. vaginal douche versus clotrimazole on vaginal candidiasis: a randomized clinical trial. *J Pharmacopuncture.* 2018;21(3):185-194. doi:10.3831/kpi.2018.21.022
- Heydari N, Abootalebi M, Jamalimoghadam N, Kasraeian M, Emamghoreishi M, Akbarzadeh M. Investigation of the effect of aromatherapy with Citrus aurantium blossom essential oil on premenstrual syndrome in university students: a clinical trial study. *Complement Ther Clin Pract.* 2018;32:1-5. doi:10.1016/j.ctcp.2018.04.006
- Heydari N, Abootalebi M, Jamalimoghadam N, Kasraeian M, Emamghoreishi M, Akbarzadeh M. Evaluation of aromatherapy with essential oils of Rosa damascena for the management of premenstrual syndrome. *Int J Gynaecol Obstet.* 2018;142(2):156-161. doi:10.1002/ijgo.12534
- Akbarzadeh M, Zeinalzadeh S, Zolghadri J, Mohagheghzadeh A, Faridi P, Sayadi M. Comparison of *Elaeagnus angustifolia* extract and sildenafil citrate on female orgasmic disorders: a randomized clinical trial. *J Reprod Infertil.* 2014;15(4):190-198.
- Zeinalzadeh S, Akbarzadeh M, Mohagheghzadeh A, Faridi P, Sayadi M. Comparison of the effects of *Elaeagnus angustifolia* flower capsule and sildenafil citrate tablet on anxiety resulting from sexual dysfunction in women referring to the selected

- clinics of Shiraz University of Medical Sciences. *J Evid Based Complementary Altern Med.* 2016;21(3):186-193. doi:10.1177/2156587215595777
21. Sadeghi M, Abbaspoor Z, Namjouyan F, Cheraghian B. Effect of Glycyrrhiza glabra vaginal cream on the mental symptoms of vaginal atrophy in postmenopausal women. *Iran J Obstet Gynecol Infertil.* 2018;21(4):53-61. doi:10.22038/ijogi.2018.11227
 22. Jassim GA. Strategies for managing hot flashes. *J Fam Pract.* 2011;60(6):333-339.
 23. Ghazanfarpour M, Sadeghi R, Abdolahian S, Latifnejad Roudsari R. The efficacy of Iranian herbal medicines in alleviating hot flashes: a systematic review. *Int J Reprod Biomed.* 2016;14(3):155-166.
 24. Asgari P, Bahramnezhad F, Narenji F, Golitaleb M, Askari M. A clinical study of the effect of Glycyrrhiza glabra plant and exercise on the quality of life of menopausal women. *Chronic Dis J.* 2016;3(2):79-86. doi:10.22122/cdj.v3i2.155
 25. Sadeghi A H, Bakhshi M, Behboodi Z, Goodarzi S, Haghani H. Effect of sage extract on hot flashes in postmenopausal women. *Complementary Medicine Journal.* 2013;2(4):324-335.

© 2025 The Author(s); This is an open-access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>), which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.