**Pharmacogn.** Res.
A multifaceted peer reviewed journal in the field of Pharmacognosy and Natural Products
www.phcogres.com | www.phcog.net

ORIGINAL ARTICLE

# Comparing the Effect of Rose Drop, Ginger, and Cinnamon on Sexual Function in Depressed Women with Sexual Dysfunction

**Sheida Shabanian, Mahtab Ebrahimbabaei, Parvin Safavi, Masoud Lotfizadeh**

Clinical Research Development Unit, Hajar Hospital, Sahrekord University of Medical Sciences, Shahrekord, Iran

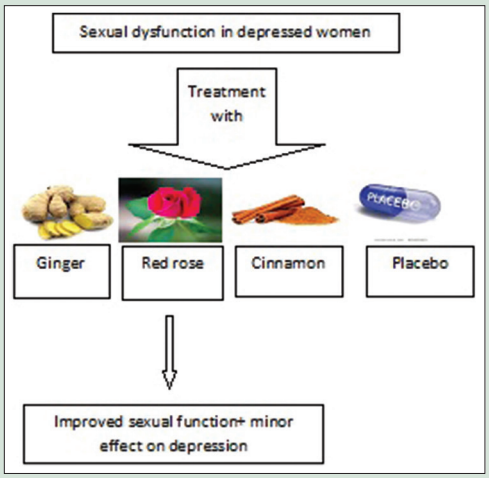
## ABSTRACT

**Background:** Sexual dysfunction is caused by multiple anatomical, physiological, medical, and psychological factors. Many studies have shown the efficacy of herbal remedies on increasing libido and sexual function. This study aimed to evaluate and compare the effects of three herbs of ginger, cinnamon, and rose on sexual function of depressed women with low sex drive. **Materials and Methods:** This randomized double-blinded clinical trial was conducted on 140 depressed women with sexual dysfunction who were divided into four groups receiving oral drops of rose, ginger, cinnamon, or placebo. The information about the two variables of sexual function and depression were collected by Female Sexual Function inventory questionnaire and Beck Depression Inventory, respectively. Data were analyzed using Chi-square, Wilcoxon signed-rank test, Kruskal–Wallis test, and Pearson correlation coefficient. **Results:** The mean scores of sexual dysfunction and depression were significantly improved in the three groups after treatment ($P < 0.05$) so that sexual dysfunction score in placebo group had the lowest rate of improvement with the mean of 1.55 ± 0.44 and in ginger group had the highest improvement rate with the mean of 4.04 ± 1.07. Depression in placebo group had the lowest improvement rate with the mean of 3.71 ± 1.94 and in cinnamon group had the highest rate of improvement with the mean of 6.29 ± 1.57, but there was no significant difference between the four groups ($P > 0.05$). The factors such as received treatments with impact factor of 0.723 and age with impact factor of 0.170 had direct relation and depression with impact factor of −0.078 had reverse relation to sexual performance improvement ($P < 0.05$). **Conclusion:** Herbal medicines, except for their positive impacts on sexual function, may have positive but minor effects on depression.

**Key words:** Cinnamon, depression, ginger, rose, sexual desire

## SUMMARY

- Mean scores of sexual dysfunction and depression were significantly improved in the three groups after treatment compared to placebo.
- Received treatments and age had direct relation, and depression had reverse relation to sexual performance improvement.
- Herbal medicines, in addition to their positive impacts on sexual function, may have positive but minor effects on depression.




**Abbreviations Used:** FSFI: Female sexual function inventory, BDI: Beck depression inventory, Spss: Statistical package for social science.

**Correspondence:**
Dr. Parvin Safavi,
Clinical Research Development Unit,
Hajar Hospital, Sahrekord University of Medical Sciences, Shahrekord, Iran.
E-mail: safavi_p@yahoo.com
**DOI:** 10.4103/pr.pr_150_17

**Access this article online**
**Website:** www.phcogres.com
**Quick Response Code:**

## INTRODUCTION

According to the World Health Organization, sexual health is the integration and harmony among mind, emotion, and body, which guide human social and rational aspects toward improving his/her personality, leading to creation of a communication and love. Therefore, any disorder or dysfunction leading to disharmony and lack of satisfaction with sexual relationship can cause sexual dysfunction.[1] According to the American Psychiatric Association, sexual disorder in women is classified into four categories of disorder in sexual desire, arousal, orgasm, and pain.[2-4] This disorder is complex and influenced by multiple physical, psychological, and social factors. Having sexual disorder, even for short periods, can cause discomfort and sadness, and in chronic cases can lead to anxiety, aggression, problems in individual life, and depression.[5] On the other hand, global statistics indicate that sexual disorder in people with depression is twice to three times more frequent than normal people.[5] The rate of sexual dysfunction in depressed women is estimated as high as 70%–80%.[6,7] In addition, research conducted on the prevalence of sexual dysfunction can explain the coincidence of these disorders with depression due to similar symptoms such as losing the sense of satisfaction and interest as well as loss of sexual desire in these people. Many of the prospective studies have evaluated the relationship between sexual dysfunction and depression[8,9] and the relationship between depression and sexual dysfunction risk.[10,11]

On the other hand, sexual disorders and depression lead to high costs in health care as it was reported that 8%–25% of people suffering from these



**Cite this article as:** Shabanian S, Ebrahimbabaei M, Safavi P, Lotfizadeh M. Comparing the effect of rose drop, ginger, and cinnamon on sexual function in depressed women with sexual dysfunction. Phcog Res 2018;10:314-8.

disorders seek medical care.[12] Sexual dysfunction is especially concerning for people suffering from depression due to negative effect of many antidepressant drugs on sexual function.[13] Unfortunately, antidepressant drugs have some sexual complications, including decreased sexual desire and inhibited orgasm. In the case of using these drugs, sexual dysfunction may worsen in depressed women who have sexual problems, leading to increased depression.[14,15] In this regard, several approaches have been proposed by researchers, including reduction in dosage of chemical medicines or use of herbal extracts and drugs with minimal sexual side effects. In recent decades, extensive research has been conducted to assess effects of herbal products on the various diseases. Willingness to use these drugs is increasing throughout the world.[16]

Some of the herbs used in the treatment of depression and sexual dysfunction include ginger, cinnamon, and rose. Botanically, ginger has been derived from *Zingiber officinale* and is considered a member of Zingiberaceae family. In treating depression, it can be used as exhilarative, and it can be used in the treatment of sexual frigidity due to its warm nature.[17,18]

Cinnamon (Cinnamomum zeylanicum and Cinnamon cassia) grows in warm and tropical regions and belongs to Lauraceae family. Reconstructing brain tissue and damages associated with brain injuries,[19] it can be used in improving Parkinson's disease and Alzheimer's disease.[19,20] Due to its warm nature as ginger, it can be considered as a candidate to improve depression and sexual dysfunction.[21]

Extract of rose, with the scientific name of Rosa damascena, contains several active substances introduced as antianxiety and antidepressant in traditional medicine texts.[22] The therapeutic effects of this herb extract include antidepressant, regulator of appetite, calming, healing skin, antidryness and anti-itching of skin, effects on sexual dysfunction and frigidity, headache, and insomnia. Usage methods include oral, inhalational, and topical through the skin.[23]

As sexual dysfunction has several physiological and psychological effects on women that not only have a negative impact on their quality of life but also on sexual function of their partner,[24] it is so important to know how to treat and use the best method to manage this problem. On the other hand, considering the history of herbal medicine and increased attention of physicians and researchers of pharmaceutical sciences to increasing use of these substances, the current study was conducted to determine and compare the effect of rose, ginger, and cinnamon on sexual function of depressed women.

## MATERIALS AND METHODS

This study is a randomized double-blind clinical trial. The sample of this study included 140 depressed women referred to psychiatry clinics of Shahrekord, Iran, in 2015. Inclusion criteria included depressed married and sexually active women with complaints of decreased sexual desire. Exclusion criteria included pregnancy, lactation, menopause, being single, having high blood pressure, diabetes, heart disease, kidney disease, and seizures as well as those treated with aspirin, warfarin, oral or injectable contraceptives, sensitivity to mentioned herbs, or intolerance to them. In addition, possible adverse effects of these drugs on some diseases and interference with aspirin, warfarin, contraceptives, and blood pressure drugs were eliminated by determining the exclusion criteria.[25,26] After getting the license to do research from the Research Department of Shahrekord Medical University, patients qualified to participate in the study, after completing the consent form, were randomly divided into four groups (each group containing 35 participants) including the control group (placebo drop) and three groups receiving the drops of rose, ginger, or cinnamon, respectively, and matched in each group in terms of age, level of education, severity of depression, and type and dosage of the prescribed drug, if they were under antidepressant medications.

Before entering the study, all of the participants underwent tests of diabetes, kidney, and liver disease, and their blood pressure was measured. The drops were provided from Zardband Pharmaceuticals Company, and the formulation was approved by the Ministry of Health. Then, these drops along with distilled water drop for placebo group were given to patients with labeling in the form of A, B, C, and D so that neither the participants nor the psychiatrist was aware of the nature of prescribed drops. The sexual function of the participants was evaluated through Female Sexual Function Inventory (FSFI)[26] and severity of their depression through Beck Depression Inventory (BDI).[27] FSF includes 19 questions assessing the sexual function of women in six independent areas of desire, mental arousal, humidity, orgasm, satisfaction, and sexual pain.[26] Zero score indicates that person had no sexual activity during 4 weeks and the maximum score for each area equals to 6 (the highest sexual function), and it would be 36 for the total scale. BDI contains 21 questions and measures feedbacks and symptoms of depressed people. In this test, the minimum score is 0 and the maximum score is 63. Participants were asked to use the drops for two consecutive months. The researcher received contact number of patients to follow up taking the drug by patients. After 2 months, she wanted them to attend the clinic again to answer FSFI and BDI following taking herbal drops. After collecting the data, they were inserted into SPSS-20 software (IBM, Armonk, NY, United States of America). At the descriptive statistics level, indices such as mean, standard deviation, frequency, and percentage frequency were used. In addition, at the inferential statistics level, Chi-square test, Kruskal–Wallis test, Wilcoxon test, Mann–Whitney test, and regression analysis were used, and significance level was considered <0.05.

## RESULTS

In the process of the study, due to the exclusion criteria, the sample size was decreased to 33 persons in the placebo group, 34 persons in the rose group, 32 persons in the ginger group, and 32 persons in the cinnamon group. The mean age of women included in this study was 32.89 ± 7.52 (age range 20–52 years) matched in four groups ($P > 0.05$). Furthermore, the status of sexual dysfunction and depression levels was similar among four groups at baseline [Table 1]. The mean and standard deviation of FSFI subscales are shown in Table 2. Results showed that all aspects of sexual performance significantly improved after treatment in three treatment groups (rose, ginger, and cinnamon group) compared to baseline ($P < 0.001$); only the aspect of sexual pain in the ginger group showed no significant difference before and after treatment [Table 2]. Furthermore, results indicate that in the rose group, the improvement level of sexual desire, orgasm, and satisfaction are 1.34 ± 0.19, 1.46 ± 0.18, and 0.89 ± 0.21, respectively, that are the highest amounts [Table 3]. In the ginger group, there is highest amount of the mental arousal with the average 1.27 ± 0.22, and in the cinnamon group, there is highest humidity and sexual pain improvement with the averages 1.01 ± 0.23 and 0.99 ± 0.30, respectively. Statistically, all these aspects (except satisfaction) show a significant difference compared to the placebo group ($P < 0.05$). Furthermore, the improvement level in aspects of sexual desire and mental arousal has been significantly increased in three treatment groups than the placebo group ($P < 0.05$). However, two factors including orgasm and sexual pain have a significant difference in two treatment groups (rose and cinnamon groups) compared to the placebo group ($P < 0.05$), and the ginger group, in spite of the improvement, has no meaningful difference compared to the placebo group ($P > 0.05$). The humidity improvement has a significant difference to placebo group only in the cinnamon group ($P < 0.05$). Finally, the satisfaction of the patients in all three treatment groups has no significant difference to the placebo group in spite of the improvement ($P > 0.05$) [Figure 1]. Furthermore,

**Table 1:** Descriptive statistics and frequency distribution of depressed women characteristics in the four groups

| Factors | Placebo (*n*=33) | Rose (*n*=34) | Ginger (*n*=32) | Cinnamon (*n*=32) | *P* |
|---|---|---|---|---|---|
| Age | 32.34±7.32 | 33.35±8.01 | 32.19±7.89 | 33.1±6.81 | 0.909# |
| Educational status, *n* (%) | | | | | |
| <Diploma | 8 (24.2) | 14 (43.8) | 11 (34.4) | 13 (40.6) | 0.065* |
| Diploma + AD | 17 (51.5) | 11 (34.4) | 17 (53.1) | 11 (34.4) | |
| BA | 8 (24.2) | 4 (12.5) | 4 (12.5) | 8 (25) | |
| MSc | 0 | 3 (9.4) | 0 | 0 | |
| Sexual desire | 20.11±4.54 | 19.26±4.55 | 19.03±4.71 | 19.64±5.27 | 0.811# |
| Depression | 20.19±10.19 | 22.18±11.52 | 20.26±11.39 | 18.74±8.60 | 0.630# |

#Used of Kruskal–Wallis test, *Used of Chi-square test

**Table 2:** Comparison the mean of sexual dysfunction aspects based on the four groups

| | Groups | Before | After | *P*# |
|---|---|---|---|---|
| Sexual desire | Placebo (*n*=33) | 3.43±0.91 | 3.61±0.98 | 0.222 |
| | Rose (*n*=34) | 3.07±1.16 | 4.41±1.32 | <0.001 |
| | Ginger (*n*=32) | 2.88±1.03 | 4±0.97 | <0.001 |
| | Cinnamon (*n*=32) | 3.35±1.13 | 4.34±1.06 | 0.001 |
| Mental arousal | Placebo (*n*=33) | 2.56±1.41 | 2.88±1.31 | 0.004 |
| | Rose (*n*=34) | 2.42±1.141 | 3.38±1.39 | <0.001 |
| | Ginger (*n*=32) | 2.32±1.22 | 3.59±1.04 | <0.001 |
| | Cinnamon (*n*=32) | 2.54±1.23 | 3.55±1.06 | <0.001 |
| Humidity | Placebo (*n*=33) | 3.48±1.45 | 4.46±0.95 | 0.069 |
| | Rose (*n*=34) | 3.22±1.57 | 4.23±0.83 | 0.001 |
| | Ginger (*n*=32) | 3.29±1.42 | 4.01±1.64 | 0.032 |
| | Cinnamon (*n*=32) | 3.45±1.22 | 4.77±1.52 | <0.001 |
| Orgasm | Placebo (*n*=33) | 2.80±1.32 | 3.12±1.44 | 0.179 |
| | Rose (*n*=34) | 2.46±1.09 | 3.92±1.61 | <0.001 |
| | Ginger (*n*=32) | 3.01±1.38 | 3.82±1.23 | 0.025 |
| | Cinnamon (*n*=32) | 2.89±1.20 | 4.08±0.88 | <0.001 |
| Satisfaction | Placebo (*n*=33) | 4.02±1.18 | 4.50±1.04 | 0.054 |
| | Rose (*n*=34) | 3.76±1.14 | 4.65±1.12 | 0.001 |
| | Ginger (*n*=32) | 3.78±1.20 | 4.55±0.97 | 0.012 |
| | Cinnamon (*n*=32) | 3.85±1.30 | 4.52±1.42 | 0.041 |
| Sexual pain | Placebo (*n*=33) | 3.49±1.62 | 3.28±1.68 | 0.793 |
| | Rose (*n*=34) | 3.48±1.62 | 2.61±1.34 | <0.001 |
| | Ginger (*n*=32) | 3.39±1.47 | 3.04±1.39 | 0.156 |
| | Cinnamon (*n*=32) | 3.56±1.23 | 2.57±1.29 | 0.003 |

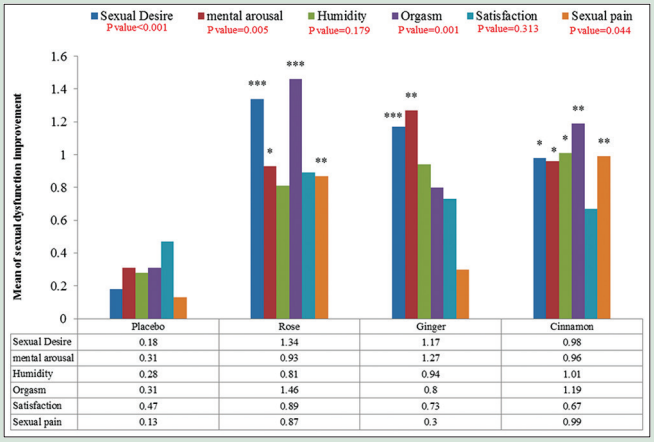
#Used of Wilcoxon signed-rank test

**Table 3:** Comparing the mean of depression based on the four groups

| | Depression | | | | |
|---|---|---|---|---|---|
| Groups | Before | After | Mean different | *P*# | *P** |
| Placebo (*n*=33) | 20.19±10.45 | 17.34±9.17 | 3.71 | 0.007 | 0.576 |
| Rose (*n*=34) | 22.18±11.52 | 15.43±10.19 | 6.72 | 0.004 | |
| Ginger (*n*=32) | 20.26±11.39 | 13.96±10.52 | 5.83 | 0.001 | |
| Cinnamon (*n*=32) | 18.74±8.60 | 12.33±9.88 | 6.92 | <0.001 | |

#Used of Wilcoxon signed-rank test, *Used of Kruskal–Wallis test for mean different based four groups

results showed that the depression scores have been significantly improved after treatment compared to baseline in the studied four groups ($P < 0.05$) as the placebo group has the lowest reduction of depression with the average 3.71 ± 1.94 and the cinnamon group has the highest reduction of depression with the average 6.92 ± 1.57, but statistically, there has not been found any significant difference among four groups by the use of Kruskal–Wallis test ($P = 0.576$). Furthermore,




| | Placebo | Rose | Ginger | Cinnamon |
|---|---|---|---|---|
| Sexual Desire | 0.18 | 1.34 | 1.17 | 0.98 |
| mental arousal | 0.31 | 0.93 | 1.27 | 0.96 |
| Humidity | 0.28 | 0.81 | 0.94 | 1.01 |
| Orgasm | 0.31 | 1.46 | 0.8 | 1.19 |
| Satisfaction | 0.47 | 0.89 | 0.73 | 0.67 |
| Sexual pain | 0.13 | 0.87 | 0.3 | 0.99 |

**Figure 1:** Bar graph to determine and compare the mean of sexual dysfunction improvement in depressed women after treatment rather than before in the four groups. Significant level of each group comparison with placebo; *$P < 0.05$, **$P < 0.01$, ***$P < 0.001$

comparing each treatment group to the placebo group showed that none of three treatment groups had any significant difference with the placebo group ($P > 0.05$) [Table 3]. Finally, investigating the role of effective factors on sexual performance by the use of simple linear regression showed that factors such as the treatment with the impact factor of 0.723 and age with the impact factor of 0.170 have a direct and significant role in the improvement of sexual performance, and in comparison, the depression score of the patients with the impact factor −0.078 had reverse and significant role in the improvement of sexual performance dysfunctions ($P < 0.05$) [Table 4].

## DISCUSSION

Many studies are conducted on the effect of herbal medicine on sexual function. For example, the study of Liu *et al.* showed an increase of plasma testosterone in orchidectomized rats after administration of Chinese herbal medicine and concluded that a central nervous system mechanism such as alteration of NAc might be involved.[28]

In the present study, the results showed the increase of sexual desire and improvement of sexual performance in the three treatment groups. There are many previous researches on the effectiveness of ginger including the study performed by Kaur *et al.* that investigated in detail the healing effects of the ginger on increasing sexual desire and improving frigidity.[29] Furthermore, cinnamon is one of the herbs suggested to increase sexual desire due to its warm nature, prescribed by many physicians to treat the sexual dysfunctions. Different studies show the significant effects of cinnamon on the neurological problems and sexual performance issues. In 2005, Thompson and Thompson introduced the use of cinnamon in the treatment of women's sexual problems.

**Table 4:** Regression analysis to determine the effective factors on improving sexual dysfunction

| Factors | Before | After | P# |
|---|---|---|---|
| Treatment | 0.723 | 0.367 | <0.001 |
| Age | 0.170 | 0.059 | 0.005 |
| Depression | −0.078 | 0.043 | 0.037 |

#Used of regression linear

They claimed that the use of cinnamon can improve sexual desire.[30] Furthermore, the red rose extract has long been regarded as a refreshing and stimulating substance used for sexual desire,[23] and in our study, it showed significantly remarkable positive effects on depressed women with sexual dysfunctions. In the current study, the depression scores were significantly improved in all groups even in the placebo group, but this amount was higher but not significant in the ginger group. This may reflect the placebo effect of treatments on depression. Interestingly, in all four groups (even in the placebo group), there has been observed the positive increase of mental arousal. This increase reflects the positive psychological impact of treatment on the patients. As described earlier, the red rose extract has positive effects on the parasympathetic neurons that are joy stimulant and tranquilizing.[23] On the other hand, ginger has strong stimulating effect for the sexual function. Furthermore, ginger has been mentioned as an effective mental stimulating substance in the study of Kaur *et al*.[29] Furthermore, cinnamon, as mentioned before, has a positive impact on the sexual and mental arousal.[18]

In this study, we also compared the effect of three herbs with each other on different aspects of sexual function. It was shown that red rose, ginger, and cinnamon improved sexual desire and mental arousal effectively although the effect of cinnamon in producing humidity was higher than other herbs. In the improvement of sexual pain and orgasm, cinnamon and red rose had the highest effect. In this regard, Bombardelli *et al*. investigated, in their study, the effective formulation of cinnamon on orgasm and concluded that the use of cinnamon can be suitable in sexual excitement and reaching orgasm in both men and women.[31] Red rose can be effective, due to the positive effects on the cold humors of the women, and can improve the orgasm problems in the women with depression.[23] Regarding to sexual satisfaction, none of the three herbs had a significant positive effect compared to placebo. This may be due to the effect of multiple factors, including the quality of relationship with sexual partner on sexual satisfaction of women.

It has been observed, in the final analysis for investigation of effective factors in the improvement of sexual performance, that the treatment and age can be considered as factors positively affecting sexual performance. In other words, the treatment can be an important step in the improvement of sexual dysfunctions, and by increasing age, the persons decrease their sensitivities gradually and can comply to the sexual conditions better and increase their awareness and manage the sexual issues well.

Furthermore, severity of depression is an effective factor with a negative impact on sexual functioning, and as the severity of depression of a person increases, her sexual functioning will get worse, and if the depression is treated, the severity of the sexual dysfunctions will decrease. In fact, with regard to previous studies, the relation between depression and sexual dysfunction has been directly evaluated. According to the study of Fabre and Smith, it has been shown that in women, depression affects sexual function scores more than Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition diagnoses for sexual dysfunction. With increasing severity of depression, sexual dysfunction becomes greater.[32]

Therefore, it can be said that in all treatment groups, the improvement of sexual performance and depression was significantly obvious and it can be concluded that the herbal medicines have positive effects on sexual dysfunctions in women with psychological problems. These results can help the future clinical studies.

## CONCLUSION

Physicians may suggest herbal medicines in patients with sexual dysfunction. Herbal medicines, except for their positive impacts on sexual function, may have positive but minor effects on mental health of patients.


### Acknowledgments

This article was obtained from a research project approved by the Research and Technology Deputy of the Shahrekord University of Medical Sciences (approval no. 1878). Hereby, the researchers gratefully thank the women who participated in this study.

### Financial support and sponsorship

Nil.

### Conflicts of interest

There are no conflicts of interest.


## REFERENCES


1. Jahanfar SH, Molainejad M. The Literature of Sexual Dysfunction. Tehran: Published by Salemi; 2002. p. 12.
2. DSM-5 American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. Arlington: American Psychiatric Publishing; 2013.
3. Lewis RW, Fugl-Meyer KS, Bosch R, Fugl-Meyer AR, Laumann EO, Lizza E, *et al*. Epidemiology/risk factors of sexual dysfunction. J Sex Med 2004;1:35-9.
4. Christensen BS, Grønbaek M, Osler M, Pedersen BV, Graugaard C, Frisch M, *et al*. Associations between physical and mental health problems and sexual dysfunctions in sexually active Danes. J Sex Med 2011;8:1890-902.
5. Bonierbale M, Lançon C, Tignol J. The ELIXIR study: Evaluation of sexual dysfunction in 4557 depressed patients in France. Curr Med Res Opin 2003;19:114-24.
6. Montejo AL, Perahia DG, Spann ME, Wang F, Walker DJ, Yang CR, *et al*. Sexual function during long-term duloxetine treatment in patients with recurrent major depressive disorder. J Sex Med 2011;8:773-82.
7. Baldwin DS. Sexual dysfunction associated with antidepressant drugs. Expert Opin Drug Saf 2004;3:457-70.
8. Ernst C, Földényi M, Angst J. The Zurich study: XXI. Sexual dysfunctions and disturbances in young adults. Data of a longitudinal epidemiological study. Eur Arch Psychiatry Clin Neurosci 1993;243:179-88.
9. Dryman A, Eaton WW. Affective symptoms associated with the onset of major depression in the community: Findings from the US national institute of mental health epidemiologic catchment area program. Acta Psychiatr Scand 1991;84:1-5.
10. Araujo AB, Johannes CB, Feldman HA, Derby CA, McKinlay JB. Relation between psychosocial risk factors and incident erectile dysfunction: Prospective results from the Massachusetts male aging study. Am J Epidemiol 2000;152:533-41.
11. Moreira ED Jr., Lbo CF, Diament A, Nicolosi A, Glasser DB. Incidence of erectile dysfunction in men 40 to 69 years old: Results from a population-based cohort study in Brazil. Urology 2003;61:431-6.
12. Mercer CH, Fenton KA, Johnson AM, Wellings K, Macdowall W, McManus S, *et al*. Sexual function problems and help seeking behaviour in Britain: National probability sample survey. BMJ 2003;327:426-7.
13. Serretti A, Chiesa A. Treatment-emergent sexual dysfunction related to antidepressants: A meta-analysis. J Clin Psychopharmacol 2009;29:259-66.
14. Flament MF, Cohen D, Choquet M, Jeammet P, Ledoux S. Phenomenology, psychosocial correlates, and treatment seeking in major depression and dysthymia of adolescence. J Am Acad Child Adolesc Psychiatry 2001;40:1070-8.
15. Shen WW, Hsu JH. Female sexual side effects associated with selective serotonin reuptake inhibitors: A descriptive clinical study of 33 patients. Int J Psychiatry Med 1995;25:239-48.
16. Newall CA, Anderson LA, Phillipson JD. Herbal Medicines. A Guide for Health-Care Professionals. London: The Pharmaceutical Press; 1996.
17. Ang-Lee MK, Moss J, Yuan CS. Herbal medicines and perioperative care. JAMA 2001;286:208-16.
18. Albertson K. Acupuncture and Chinese Herbal Medicine for Women's Health:

Bridging the Gap Between Western and Eastern Medicine. 10th eds. USA: Createspace Independent Publishing Platform; 2009.
19. Brahmachari S, Jana A, Pahan K. Sodium benzoate, a metabolite of cinnamon and a food additive, reduces microglial and astroglial inflammatory responses. J Immunol 2009;183:5917-27.
20. Khasnavis S, Pahan K. Sodium benzoate, a metabolite of cinnamon and a food additive, upregulates neuroprotective parkinson disease protein DJ-1 in astrocytes and neurons. J Neuroimmune Pharmacol 2012;7:424-35.
21. Egamberdieva D, Abdiev A, Khaitov B. Synergistic interactions among root-associated bacteria, rhizobia and chickpea under stress conditions. In: Azooz MM, Ahmad P. (Eds.). Plant-environment interaction: Responses and approaches to mitigate stress. USA: Wiley;2016:250-62.
22. Lawless J. The Illustrated Encyclopedia of Essential Oils: The Complete Guide to use of Oils in Aromatic and Herbalism. Dorset, UK: Element Book, Shaftesbury; 1995.
23. Tisserand R, Young R. Essential Oil Safety: A Guide for Health Care Professionals. chuchilllivingstone,Elsevier Health Sciences; 2013.
24. Hayes RD, Dennerstein L, Bennett CM, Fairley CK. What is the "true" prevalence of female sexual dysfunctions and does the way we assess these conditions have an impact? J Sex Med 2008;5:777-87.
25. Kessler RC. Epidemiology of women and depression. J Affect Disord 2003;74:5-13.
26. Rosen RC. Assessment of female sexual dysfunction: Review of validated methods. Fertil Steril 2002;77 Suppl 4:S89-93.
27. Beck AT, Steer RA, Garbin MG. Psychometric properties of the beck depression inventory: Twenty-five years of evaluation. Clin Psychol Rev 1988;8:77-100.
28. Liu H, Cui J, Zhai H, Xue J, Wang X. Chinese herbal medicine enhances sexual function and c-fos/nNOS expression in the nucleus accumbens of orchidectomized rats. J Tradit Chin Med 2016;36:347-52.
29. Kaur J, Satvinder K, Anu M. Herbal medicines: Possible risks and benefits. Am J Phytomed Clin Ther 2013;1:226-39.
30. Thompson R, Thompson J, Thompson J . Methods to Treat One or All of the Defined Etiologies of Female Sexual Dysfunction. United States Patent Application US 11/176,546; 2005 Jul 7.
31. Bombardelli E, Morazzoni P, Riva A, Seghizzi R. Inventors; IndenaSpA, Assignee. Formulations useful in the treatment of male and female impotence. United States Patent US 7,361,370; 2008.
32. Fabre LF, Smith LC. The effect of major depression on sexual function in women. J Sex Med 2012;9:231-9.