

HERBAL MEDICINES FOR TREATMENT OF ANTIFUNGAL AND BACTERIAL VAGINITIS IN REPRODUCTIVE AGED WOMEN: A SYSTEMATIC REVIEW AND META-ANALYSIS

Baharzahra Nobahar

MD, Department of Obstetrician & Gynecologist, Tehran University of Medical Science (TUMS), Tehran, Iran

Masoumeh Javedanmehr

MD, Department of Obstetrician & Gynecologist, Mashhad University of Medical Science, Mashhad, Iran

*Corresponding Author: Baharzahra Nobahar, nobahar.b@gmail.com

Abstract. Background and aim: herbal treatment is one of the most valuable medical treasures in Iran. Iran is one of the three countries with a long history in this field. In this review and meta-analysis we have tried to examine the use of herbal medicines in fungal and bacterial infections and to achieve a comprehensive outcome. **Method:** In this systematic review and meta-analysis, we searched databases, including Iranian Registry of Clinical Trials, SID, Magiran, Scopus, PubMed, Google Scholar, for articles published from 2000 to 2019 on medicinal plants with antifungal and bacterial vaginitis effects. First, all the relevant studies on the effects of medicinal plants in vitro or in clinical trials in Iran, whose title or abstract included any of the keywords of “vaginal candidiasis”, “herbal medicine”, and “bacterial vaginitis” were retrieved. **Result:** In this study, we reviewed 7 studies. 687 women were enrolled in the study, 389 in the intervention group and 298 in the control group. In studies used Ginger-clotrimazole vaginal cream, Zataria multiflora vaginal cream, Honey vaginal cream, Garlic vaginal cream and Propolis Vaginal Cream and for control groups used clotrimazole vaginal cream, metronidazole vaginal gel, colostomyazole vagina pill and metronidazole oral pill. **Conclusion:** After integrating the findings from clinical trials and Meta-analysis, we concluded that the use of medicinal plants along with routine drugs can be effective.

Key words: Herbal medicines, antifungal, bacterial vaginitis.

1.Introduction. Bacterial vaginitis (BV) is a common but frustrating condition in which the normal balance of the vaginal flora is disrupted, leading to an overgrowth of anaerobic bacteria(1). Symptoms include itchiness, vaginal discharge, and an unpleasant odor(2). Herbal remedies are globally accepted for treatment of several diseases including infections. Certain herbs possess traditional evidence to be used in vaginitis, especially bacterial vaginitis(3, 4). Vaginal Candida infection, a common problem among women, has been regarded as a minor complaint suitable for self-medication(5). It has been estimated that vaginal candidiasis affects ~75% of women during their lifetime, and ~40–50% of them have recurrent episodes(6). On the other hand, drug resistance in this disease causes its frequent recurrence(7). Therefore, it seems more beneficial to apply products with antifungal effects but fewer complications, including medicinal plants that are suitable for treating this disease due to their compatibility with the normal vaginal flora(8). In traditional medicine, especially complementary medicine, herbal treatment is one of the most valuable medical treasures in Iran. Iran is one of the three countries with a long history in this field. In our country, there are few studies in the field of clinical trials on the effect of medicinal plants on vaginal infections(9, 10). A review of these studies can provide promising information on the use of this effective low-impact treatment for midwives and gynecologists. In this review and meta-analysis we have tried to examine the use of herbal medicines in fungal and bacterial infections and to achieve a comprehensive outcome.

2.Method. In this systematic review and meta-analysis, we searched databases, including Iranian Registry of Clinical Trials, SID, Magiran, Scopus, PubMed, Google Scholar, for articles published from 2000 to 2019 on medicinal plants with antifungal and bacterial vaginitis effects. First, all the relevant studies on the effects of medicinal plants in vitro or in clinical trials in Iran, whose title or abstract included any of the keywords of “vaginal candidiasis”, “herbal medicine”, and “bacterial vaginitis” were retrieved (fig1). **2.1.Inclusion criteria:** 1. Use any herbal medicines. 2. Antifungal or bacterial vaginitis. 3. Clinical trials or double-blind clinical trial or randomized controlled clinical trial. 4. Full text

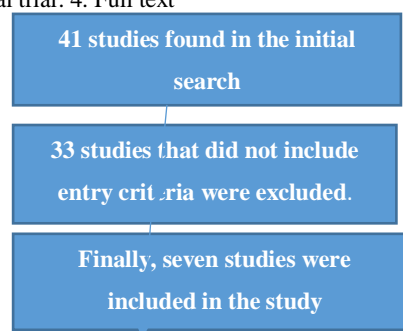


Figure 1. Stages of study selection

3.Result. In this study, we reviewed 7 studies. 687 women were enrolled in the study, 389 in the intervention group and 298 in the control group (table 1). In studies used Ginger-clotrimazole vaginal cream, Zataria multiflora vaginal cream, Honey vaginal cream, Garlic vaginal cream and Propolis Vaginal Cream and for control groups used clotrimazole vaginal cream, metronidazole vaginal gel, colostomyazole vagina pill and

metronidazole oral pill. Table 2 showed p value after treatment in intervention group and Control group. Also follow-up Treatment recovery in all study significant showed in table 2.

Table 3 showed meta-analysis after Treatment and follow-up with a confidence interval of 95% . Fig 2, showed Forest sample of results from follow-up Treatment recovery in two groups.

Table1. Profile of trials conducted on herbal medicines

writer	Patients (n)		study design	Condition treated	Experimental intervention	Control interventions	Main results
	Intervention group	Control					
Shabaniyan at el(11)	34	33	double-blind clinical trial	Ginger-clotrimazole vaginal cream 1% and clotrimazole vaginal cream 1%	Nightly applied - ginger 1% clotrimazole vaginal cream 1% with an applicator for 7 days.	patients nightly used 1% clotrimazole vaginal cream with an applicator for 7 days	Not significant
Masoudi at el(12)	40	40	randomized controlled clinical trial	vaginal gel of metronidazole plus <i>M. communis</i> 2% and	received vaginal gel of metronidazole plus <i>M. communis</i> 2% for five consecutive nights	metronidazole vaginal gel alone for five consecutive nights	significant
Fouladi at el(13)	35	38	double-blind clinical trial	Zataria multiflora vaginal cream 1% and clotrimazole 1%	Nightly applied Z.M.B 1% and clotrimazole 1% with an applicator for 7 days.	patients nightly used 1% clotrimazole vaginal cream with an applicator for 7 days	Not significant
Fazel at el(14)	45	32	double-blind clinical trial	Honey and Vaginal colutrimazole pill	nightly applied Honey, 5 cc once a night for 7 days whit On the same day, once a day, a colostomyazole vagina pill of 100 mg	once a day colostomyazole vagina pill of 100 mg for 7 days	significant
Golmakani at el (15)	25	25	randomized controlled clinical trial	Zataria multiflora vaginal cream and metronidazole oral pill	Nightly applied Z.M.B 1% with an applicator and and metronidazole oral pill for 7 days.	Nightly use metronidazole oral pill for 7 days.	significant
Shahnazi at el (16)	80	80	randomized controlled clinical trial	Garlic vaginal cream 2% and Clotrimazole 2%	Use Garlic vaginal cream 2% whit Clotrimazole 2% for 7 days.	Use Clotrimazole 2% for 7 days.	Not significant

Shahnazi at el (16)	80	80	randomized controlled clinical trial	Zataria multiflora vaginal cream and Clotrimazole 2%	Use Zataria multiflora vaginal cream whith Clotrimazole 2% for 7 days.	Use Clotrimazole 2% for 7 days.	Not significant
Mousavi at el(1)	50	50	randomized controlled clinical trial	Propolis Vaginal Cream and Clotrimazole	Use Propolis Vaginal Cream 5% for 7 days.	Use Clotrimazole Vaginal Cream for 7 days.	significant

Table 2. P value after treatment in two groups and follow-up Treatment recovery

study	P (after treatment in two groups)	result	follow-up	Control group (Treatment recovery)	Intervention group (Treatment recovery)	result
Shabanian at el(11)	0.42	No significant	1-month	48.5%	51.2%	Not significant
Masoudi at el(12)	0.001	significant	three weeks	42.5%	55.05%	significant
Fouladi at el(13)	0.08	No significant	After treatment	47.4%	54.3%	Not significant
Fazel at el(14)	0.0001	significant	21 days	19.4%	100%	Significant
Golmakani at el (15)	0.026	significant	After treatment	63%	88.9%	Significant
Shahnazi at el (16)	0.06	Not significant	21 days	80%	80%	Not significant
Shahnazi at el (16)	0.06	Not significant	21 days	80%	80%	Not significant
Mousavi at el(1)	0.003	significant	After treatment	68%	92%	significant

Table3. Heterogeneity chi-squared = 2.02 (d.f. = 7) p = 0.959

study	95% Conf. Interval		% Weight
	lower	Upper	
Shabanian at el(11)	-43.858	146.258	8.74
Masoudi at el(12)	-28.278	138.318	11.39
Fouladi at el(13)	-38.602	147.202	9.16
Fazel at el(14)	61.977	138.023	54.65
Golmakani at el (15)	-34.578	212.378	5.18
Shahnazi at el (16)	-76.797	236.797	3.21
Shahnazi at el (16)	-76.797	236.797	3.21
Mousavi at el(1)	-41.278	225.278	4.45

I-squared (variation in ES attributable to heterogeneity) = 0.0%

Test of ES=0: z= 5.87 p = 0.000

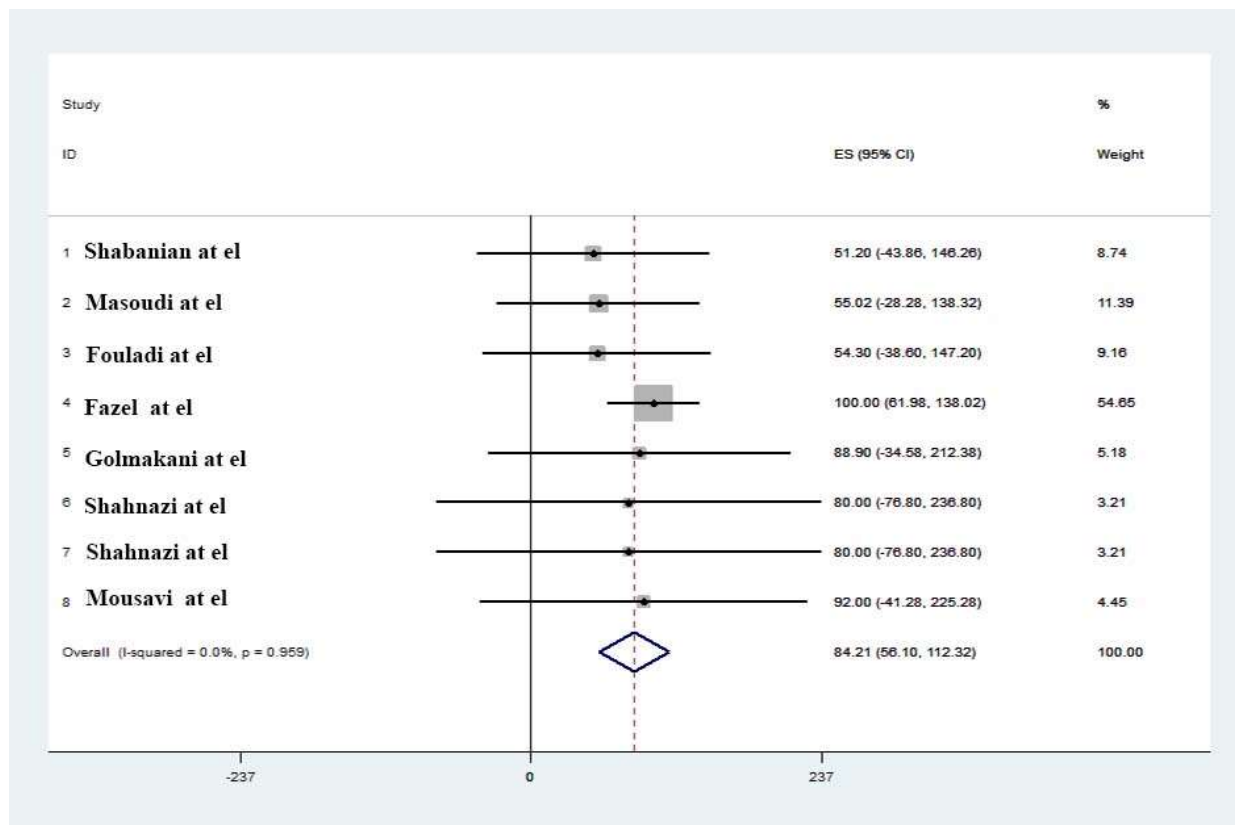


Figure2. Forest sample of results from follow-up Treatment recovery in two groups, meta-analysis shown as mean difference with 95% CI. The size of each circle is indicative of the relative weight of the study carried out in the meta-analysis.

4. Discussion

In this systematic review and meta-analysis we have tried to examine the use of herbal medicines in fungal and bacterial infections and to achieve a comprehensive outcome.

A study to determine the antifungal effects of ginger rhizome showed that a protein in the plant can be used against numerous fungi(17). A study that examined the antimicrobial properties of ginger extract 10% indicated that minimum inhibitory concentration was 2.5% in the ethanoic extract of ginger and inhibitory properties of this plant on bacteria were confirmed; as a result, this plant can be used as an antifungal compound(18). Ginger and clotrimazole vaginal cream 1% is more effective than the clotrimazole vaginal cream 1% alone in the reduction of complaints and improvement of patients with vaginal candidiasis. This cream, as an herbal and natural medicine, may be a good alternative for people who cannot use azoles Shabanian at el(11). On the other hand Zataria multiflora and Garlic is one of the most commonly used herbal remedies that are traditionally used for infections and including the treatment of fungal vaginitis. Very limited studies have been done on the effects of thyme and garlic in humans. Garlic and Zataria multiflora boiss vaginal creams are effective in treatment of the candidal vaginitis in terms of reduction of the patient complaints, improved clinical

observations and laboratory measures to prevent recurrence without causing any serious side effects and it can be used as an effective treatment option in cases of drug resistance, Shahnazi at el (16). In the study of Kordi et al, entitled as 'Comparison of the effect of garlic extract vaginal douche and clotrimazole vaginal cream in the treatment of women with vaginal candidiasis', successful therapy (therapeutic response and culture) in the garlic extract vaginal douche group was less than clotrimazole vaginal cream group. The two groups had no significant differences in terms of therapeutic response based on the symptoms(19). Also Lavandula angustifolia which is commonly used in traditional medicine.

5. Conclusion

After integrating the findings from clinical trials and Meta-analysis, we concluded that the use of medicinal plants along with routine drugs can be effective. Also, for better results, it is recommended that more clinical trials be conducted. The investing authors suggest further investigations to be carried out to check a more exact effect of anti-trichomonas vaginalis activity of Lavandula angustifolia essential oil under In vivo condition to recommend it as a therapeutic medicine, if positive results proved(20). At Fazel at el(14) study result showed Using honey alone is an effective treatment for candida vaginitis. Also, the combination of 5 ml of honey and 100 mg of claretrimazole is effective in treating the most common vaginitis.

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