

In vitro evaluation of the effect of herbal medicine of western of Iran, Ilam on clinical and standard spices of *Candida Albicans* (Disk Diffusion Method); A Systematic Review

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Abstract:

Background: In the current decades, the infection induced from *Candida* yeasts especially *Candida albicans* is significantly increasing. In respect of classically using of herbal medicine in the western of Iran, Ilam for infection treatment, in this study was analyzed different studies that were done in this field.

Material & Methods: This Systematic Review study was done according to achieved study on the Websites like Google, Scholar, Magiran, Iran medex, Pub Med, Science Direct, Iran doc, SID. The data were extracted with respective key words.

Results: The results showed the using of different concentration of extracts by researchers. However, the most inhibition zone diameter was related to alcoholic extract of Inner Stratum of Oak fruit in 1600µg/disk concentration with 26mm inhibition zone and the least was related to alcoholic and aqueous extract of *Medicago sativa* in 2000 µg/disk concentration and none of inhibition zone.

Conclusion: The performed study showed an acceptable effect of some herbal extracts that were used classically in the western of Iran, Ilam. This results needs to more and widespread study with more details to economical using of this plants as medicine.

Key words: *Candida Albicans*, herbal medicine, Systematic Review.

Introduction:

The vaginal infection caused by bacteria, fungi and protozoan. The most important of fungal spices that caused this disease was *Candida* spices and especially *Candida Albicans*. The *Candida albicans* is responsible for 80-95% of *Candidiasis Vulvovaginitis* cases (1). In fact, the *Vuvovaginitis* is more common in women who took clinical cares, and more than 10 million are suffered from that in a year (2, 3). It is estimated that at least 7 persons in every 10 women are suffered from fungal infection once and 4 persons in 10 women suffered from recurrent infection (4, 5). There are predisposing factors such as board and long-term using antibiotics, steroids, immune-suppressors drugs, and chronic diseases like diabetes, AIDS and malignancy, that they caused increase in the prevalence of *Candidiasis* infection. There is suggested many factors as *Candida albicans* virulence such as adherence, persistence of relation, genesis of germ tube, sensitivity of attachment, phenotypic changing, intervention with host immune-system, synergism with bacteria and hydrolyses or the others metabolites produced (6). Now a day, the more extensively of opportune fungal infection in predisposed individuals in one hand, and increasing in drug resistance in the other hand and bad effect of them, caused the bold importance for evaluating the effect of herbal medicine (7). The classically treatments were more inexpensive and effective than modern. In fact, the chances of suffering from resistant pathogens are low in using herbal medicines. There is a history of different using of herbal medicines for *Vaginitis* infections in western of Iran. There are many studies that evaluated the anti-*Candidiasis* extract in aqueous, phenolic, alcoholic, hydro-alcoholic way that originated from plants like *StriataScrophularia*, *GundeliaTourneforti*, *NectaroscordumTripedale*, *Allium jesdianum*, Inner Stratum of Oak Fruit, *Medicago sativa*. The studies that performed on *Candida albicans* with mentioned extractswere used Disk Diffusion method and this present study reported unexpected and considerable results. We evaluated and analyzed the results of other researches on *Candida albicans*.

Review process:

This present is a Systemic Review study that in order to achieve to studied available on Web sites like Google, Pub med, Scholar, SID, Iran doc, Iran Medex, Magiran, Science Direct and using the key words such as Candida Albicans, Disk Diffusion, Alcoholic Extract, phenolic Extract, Aqueous Extract, found English and Persian studies. After sorting, the data were collected and analyzed.

Body Text:

Plant collecting and extracting:

The evaluated plants were collected according to germination season and area in special time and special region of mountains of western of Iran, Ilam. In the evaluated studies were used from different parts like leaves, stems, roots and barks of plants. In order to extracting from plants in different studies, there were used standard methods.

Disk Diffusion Method:

In the used studies, the anti-fungal effects of herbal medicine were evaluated by Disk Diffusion method. In this method were used Blank disks in this way, that according to relevant standards, the exact colonies of fungi were counted and the cellular suspension were prepared with standard count (2000 Cfu/ml), that it was transported on Sabouraud Dextrose Agar, and it was cultured by sterile swab, and the exact concentration of extract was added to blank disks. The inhibition zone diameter was recorded after 24-48 hours (8, 9).

Candida albicans spices:

In the studies were used different clinical spices and standard spices with ATCC 2091 and ATCC 10231.

Results:

In different studies that were used on different extracts, the researchers used different concentration to each others. However, the most inhibition zone was related to Inner Stratum of Oak fruit in 1600µg/disk concentration with 26mm diameters, and the least was related to aqueous and alcoholic extract of Medicago Sativa 2000µg/disk and none of inhibition zone (Table1).

Discussion:

The candida spices are the most important agents of fungal infections in humans and animals. These infections are more common in people who had basically factors like cancer and leukemia, mellitus diabetes, long-term treatment with antibiotics and corticosteroids, AIDS and pregnancy, burn and organ transplanted. There are increasing in usage of herbal medicines because of increasing in fungal infection in predisposed individuals (suffered from AIDS, took antibiotics...) and in one hand inherent and acquired drug-resistance and interested in using herbal medicine because of low complications and suitable effectiveness (10). In order to evaluate the aqueous and alcoholic extract of *StriataScrophulari* that was performed by Havasian et al; 2013 on candida albicans isolated from fungal vaginitis, the most inhibition zone was related to alcoholic extract with 6mm, and it showed the low inhibition effect of this extract on candida albicans isolated (11). The authors of this study suggested that the phenolic extract of *StriataScrophulari* should be more effective on fungal spices. In order to evaluate the inhibition effect of aqueous extract of *NectaroscordumTripedale* that was done by Panahi et al; 2013, the result showed the low effect of extract in the most concentration on candida albicans, in the respect of Saponin existence in the structure of plant, usage of phenolic and alcoholic extract for evaluating the anti-fungal effects were suggested (12). In order to evaluate the anti-candida effect of *Allium hirtifolium* that was done by Madani et al; the results showed none of effect on candida albicans. The authors claimed that these results might related to instability of CysteineSULFOXIDE or the resistance of *Cnadida* spices against *Allium* family (13). The results study that was done by Niani et al; 2011, on alcoholic extract of *GundeliaTourneforti* and aqueous and alcoholic extract of *Medicago sativa*, showed none of effect (14). This study showed lack of effective material on plant structures. In order to evaluate the inhibition effect of Inner Stratum of Oak Fruit that was done by Panahi et al; 2013, the results showed high effectiveness on candida albicans isolated from fungal vaginitis achieved from alcoholic extract, in respect of classical use of this plant in the western of Iran, Ilam and unclear fractions of structure, that was suggested that with detection of this plant fractions, the Cytotoxicity and MTT were measured (15).

Conclusion:

The studied showed acceptable effect of some herbal medicine that were used classically in the western of Iran, Ilam, it was necessary to performed more studied with more details to use this plant as drugs.

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Table 1: The inhibition effect of several extract on *Candida Albicans*

Plant	Extract	Filter disk impregnated (20 µl of Concentration (mg/ml)	Inhibition zone (10mm hole size)	Author
Striata <i>Scrophularia</i>	Hydroalcoholic	2000 µg/disk	6 mm	Havasian
Nectaroscordum <i>Tripedale</i>	Aqueous	3200 µg/disk	13 mm	Panahi
Gundelia <i>Tourneforti</i>	Alcoholic	2000 µg/disk	0 mm	Naini
<i>Allium hirtifolium</i>	Aqueous	2000 µg/disk	7 mm	Madani
Inner Stratum of Oak Fruit	Alcoholic	1600 µg/disk	26 mm	Panahi
<i>Medicago sativa</i>	Aqueous and Alcoholic	2000 µg/disk	0	Naini