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Identification of medical plants acting on reproductive system disorders: An ethnobotanical study in Urmia, Northwest of Iran

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ABSTRACT

Many different plants have been used in traditional medicine to regulate fertility or to treat infertility. In Urmia ethnobotany, different medicinal plants are also used to treat various diseases, so the aim of the present study was to identify and report the medicinal plants which are effective in treatment of reproductive system disorders in Urmia. Semi-structured interviews and questionnaires were carried out between 2013 June and 2014 February in Urmia. The results of this study indicated that a total of twenty seven native medicinal plants have been used in the treatment of dysmenorrhea, uterine and vaginitis infections, impotency, prostate and etc. Most of the drug information of the present study is new, and awareness of these applications can be helpful in discovery of new applications for industrial pharmacology.

Keywords: Fertility, Infertility, Medicinal plants, Urmia, Iran

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INTRODUCTION

Fertility or the ability of having child is considered as success in reproduction and start of new life for couples. In contrast, infertility resulted from reproduction disorders which might be curable or not, can exposure many couples with consequence problems unintentionally. In recent years a number of factors such as changes in the role of women in social activities, delay of marriage age, change in the age of having child, smoking, alcohol and coffee, genetic factors, pesticides, increased use of contraceptive pills, the rate of abortion and unfavorable economic situations have reduced fertility in industrialized countries [1][2]. Infertility is defined by the failure to achieve a clinical pregnancy after 12 months or more, with regular unprotected sexual intercourse (with no other reasons, such as breastfeeding or postpartum amenorrhoea). It is a global medical disorder affecting an average of 10 – 15 percent of human reproductive-age population [3]. Infertility is one of the crises of life that lead to psychological problems and serious stressful experience for patients [4].

Based on conducted studies on stressful life events, infertility has been ranked in the fourth place after death of mother, death of father and unfaithfulness of partner [5].

Primary dysmenorrhea is defined as cramping pain in the lower abdomen occurring just before or during menstruation, in the absence of any identifiable pelvic disease [6]. General prevalence rates are 50- 90 percent and in Iran according to an epidemiologic study, the rate of this disease reported as high as 91 percent [7]. Primary dysmenorrhea is a very common problem in young women lower than 20 years old, while secondary dysmenorrhea which refers to painful menses resulting from pelvic pathology such as endometriosis is more common in the third and fourth decades of life [8][9].

Infections as well as anti-infectious agents can impair various important human functions, including reproduction [10-12]. Infections are also of special relevance among causing agents of infertility. Infectious agents can affect the functionality of genital tract by directly disturb of different parts of genital tract system resulting in infertility or prevention of successful fertility. Nowadays, different estimates from different parts of the world exist about the role of infections in infertility. This is from 39 percent in developed countries to 85 percent in African countries [13]. In the female genital tract, infections can involve different parts of the cervix, uterus and fallopian tubes. Therefore, given the extent of different infectious agents and the varied mode of their functionality, it must be better that the anatomic site of infection investigated in the evaluation of infertility [14].

Genital tract infections are among the common women problems for which more than ten million women in America refer to medical centers annually [15]. According to the World Health Organization, the three factors including Candidiasis, Trichomoniasis, and Bacterial infections causes more than 90 percent of vaginal infections [16]. Other diseases of the reproductive system are the testes and prostate problems [17], Impotency [18][19] Endometriosis [20] and etc.

Infertility is one of the most complex issues in medicine. In each population approximately 13% of subjects are infertile which in many cases can be correctable [21]. The use of traditional medicine and medicinal plants has always been a source of efficient natural medicines for people [22-30]. Herbal medicines are available, have a variety of health benefits and public interest is growing toward their use [31-37].

There are several plants in traditional medicines which have positive effects on infertility [38]. In Urmia, a variety of medicinal plants are used for treatment of various diseases [39-42]. In this study, we tried to identify plants that are used in treatment of disorders and diseases of the reproductive system in Urmia.

Figure 1 The map of Iran

EXPERIMENTA SECTION

This study was carried out using questionnaire and interviews from June 2013 to 2014 February in Urmia, Iran. Figure 1 presents the map of Iran. Urmia or Orumieh is one of the cities of West Azerbaijan province which is located in northwest of Iran (the red arrow shows Urmia).

Firstly, we provide the list of traditional healers in Urmia. Using interviews and the collection of herbarium specimens, native medicinal plants with positive effects on reproductive system disorders and diseases were selected. Questionnaires were distributed among herbalists of Urmia. The Ethnobotanical information of each plant as well as herbarium specimens were collected. Finally, the species of these plants were identified using different flora and sources such as Asadi [43], Ghahraman [44], Flora of Iranica [45], Flora of Turkey [46] and Flora of Iraq [47] with special attention to Dr Heydari Rikan. Finally, the data obtained from the questionnaires were entered in Excel 2010 and the frequency of family, used plant parts, traditional usage form and frequency of the treated diseases were analyzed.

RESULTS

After analyzing of the data collected from the questionnaires, a total of 27 native medicinal plants of Urmia were identified among 20 families. The results of this study showed that a total of 27 native medicinal plants were used in the treatment of dysmenorrhea, uterine and vaginitis infections, impotency, prostate, etc. Further details are given in Table 1.

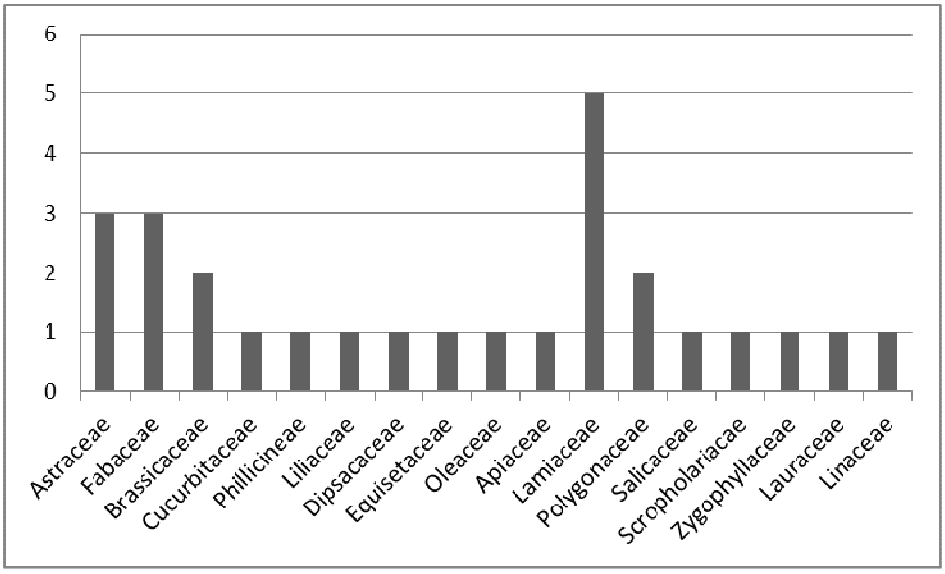

Figure 1. The frequency of plant families effective on reproductive system disorders

Table 1. Complete information on Urmia medicinal plants effective in treatment of genitourinary system disorders

No.	Scientific name	Family	Persian name	Used parts	How to use	Therapeutic effect on
1	*Achillea millefolium* L.	Astraceae	Bumaderan	Inflorescences	Boiled and brewed	Relieve menstrual cramps
2	*Alhagi camelorum* Fisch	Fabaceae	Kharshotor	Aerial part	Boiled and brewed	Uterine infections and vaginitis
3	*Alyssum desertorum* Stapf.	Brassicaceae	Ghodoumeh	Seed	Boiled, brewed and fumigation	Uterine infections and vaginitis
4	*Artemisia sieberi* Besser	Asteraceae	Dermaneh	Flowering branches	Boiled, brewed and fumigation	Pubic lice-killing
5	*Bryonia dioica* L.	Cucurbitaceae	Fashra	Root, powder and fruit	Boiled	Genital infection
6	*Capsella bursa-pastorris* (L.) Medik.	Brassicaceae	Kise keshish	Leave	Boiled	Genital tract infection
7	*Centaurea behen* L.	Asteraceae	Bahman Sephid	Root	Boiled and brewed	Eclipse women , impotency
8	*Ceterach officinalis*	Phillicineae	Sarakhs	Aerial parts	Poultice	Pubic lice-killing
9	*Colchicum kotschyi* Boiss.	Liliaceae	Gole hasrat	Flower	Poultice	Pubic lice-killing
10	*Dipsacus laciniatus* L.	Dipsacaceae	Khaje bashi	Root, leave, seed	Boiled and poultice	Genital tract infection
11	*Equisetum acvense* L.	Equisetaceae	Dome asb	Aerial part	boiled	Effective on prostate
12	*Fraxinus excelsior* L.	Oleaceae	Zaban gonjeshk	Leave	Boiled	Infertility and ovarian cysts
13	*Grammosciadium daucoide* DC.	Apiaceae	Shevid kohi	New leaf	Boiled	Dysmenorrhea
14	*Lamium album* L.	Lamiaceae	Gazane sephid	Flowering branches	Boiled and washes with boiled	Vaginit
15	*Lamium purpureum* L.	Lamiaceae	Gazane germez	Flowering branches	Boiled	Prostate, vaginit
16	*Linum usititassimum* L.	Linaceae	Katan	Seed	Boiled	Impotency
17	*Onobrychis cornuta* (L.) Desv.	Fabaceae		Leave	Boiled, brewed	Boost libido
18	*Onobrychis megataphros* Boiss.	Fabaceae	Esperes kohi	Flowering branches, seed	Boiled, brewed, Frankincense	Impotency
19	*Polygonum hydropiper* L.	Polygonaceae	Esperes	Flowering branches	Boiled	Regulate menstrual bleeding in women, impotency
20	*Rheum ribes* L.	Polygonaceae	Gazane abi	Stems and petioles	Boiled	Lowering of libido
21	*Salix triandra* L.	Salicaceae	Rivas	Bark, leave	Boiled	Dysmenorrhea
22	*Scropholaria kurdica* subsp. glabra	Scropholariacae	Bid badami	Aerial parts	Boiled	Antimicrobial genital
23	*Stachys lavandulifolia* Vahi.	Laminaceae	Gole meymoni	Flowering branches	Boiled	Dysmenorrhea, genital housing
24	*Teucrium orientale* L.	Lamiaceae	Chaye alafi	Aerial part	Boiled	Gorgereftegi zanan
25	*Tribulus terrestris* L.	Zygophyllaceae	Maryam nokhodi	Aerial part	Boiled	Boost libido
26	*Cinnamomum verum* J.Presl	Lauraceae	Darchin	Leave	Boiled	Impotency
27	*Ziziphora tenuior* L.	Lamiaceae	Kakoti	Inflorescences	Boiled	Impotency

In this study for all 27 plants with positive effect on reproductive system, the analytical data are presented in figure 1-3.

Based on the results, Laminacae family dedicated the most frequency among other plant families.

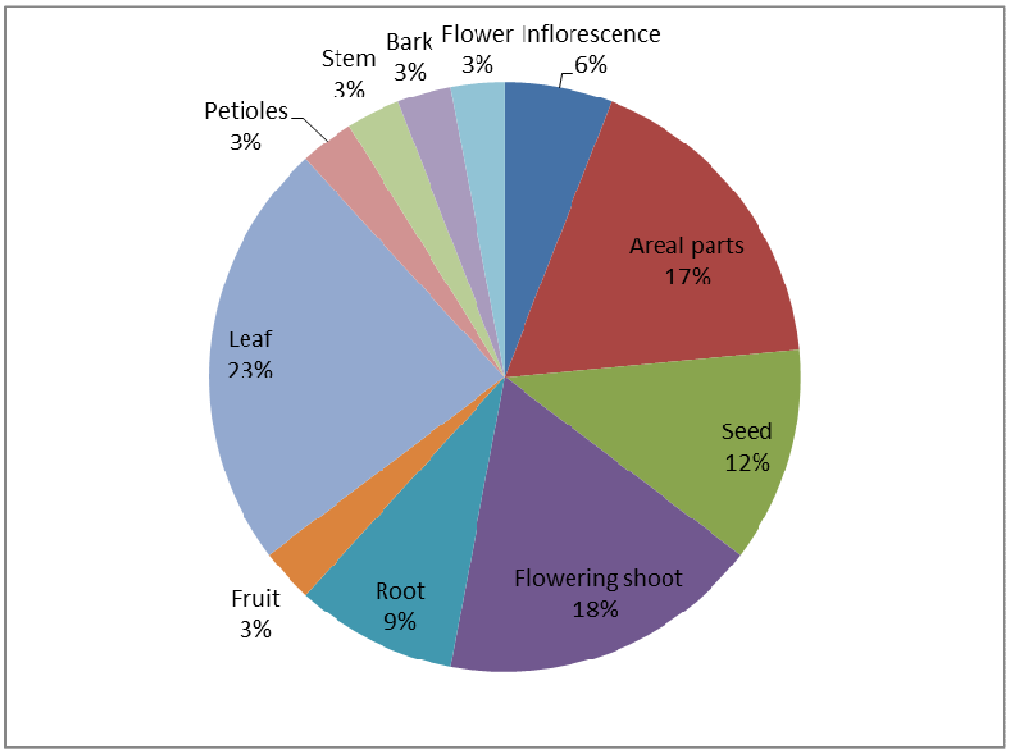

Figure 2. Frequency of used parts of plant effective on diseases of reproductive system

According to the results of statical analyses, the frequency of leave (23%) was higher than other parts in the treatment of disorders and diseases of the reproductive system**.**

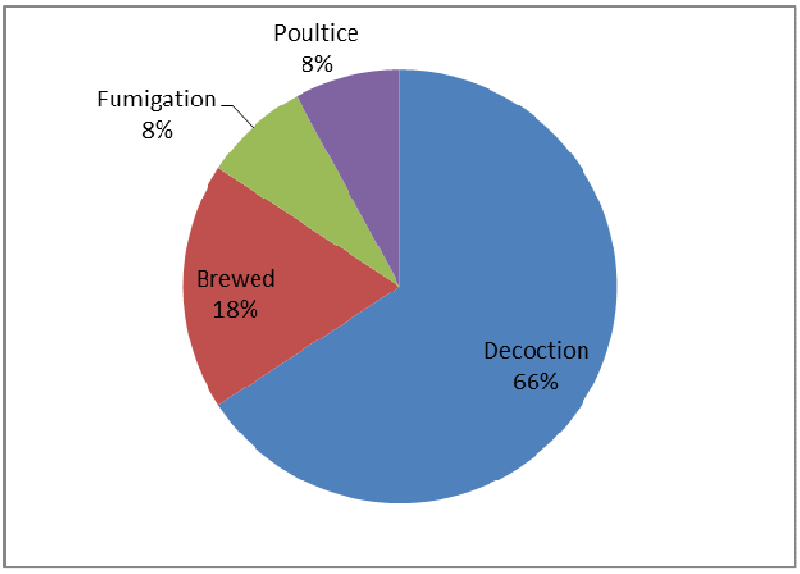

Figure 3. The frequency of the form of used medicines effective in treatments of reproductive system disorders

The boiled form with 66% had the highest frequency among the other used forms of medicinal plants in order to treat reproductive system disorders.

DISCUSSION

Due to specific climatic conditions and Geographical location, West Azerbaijan is suitable place for growing of a variety of plants. Nowadays, of about 8000 plant species which have been identified in our country, more than 1000 species are allocated to this province.

The results of the present study showed that a total of 27 native medicinal plants from 20 families in Urmia were effective in treatment of reproductive system disorders that herbalists in Urmia have used them for treatment of reproductive biology disorders.

In ethnobotany of Kerman Province located in the East of Iran, the Yarrow (*Achillea eriophora*) is used to treat menstrual cramping. Also, log (*Anethum graveolens*) is used to treat of joint pain and children cramping, Sagebrush (*Artemisia aucheri*) for treatment of abdominal pain, White nettle (*Lamium album*) for the treatment of rheumatoid, Rhubarb (*Rheum ribes*) to strengthen the liver and stomach, a species of monkey flower (*Scrophularia scopolii*) for the treatment of lumbar disc and respiratory and Thistle (*Tribulus terrestris*) is used to treat of external inflammation [48].

In Arasbaran located in the north of Iran, the plant of *Achillea millefolium* L. is used as anti-cancer, hypotensive, disinfectant and anti-gastritis. Horsetail (*Equisetum arvense*) is used as antidepressants, anti-inflammatory, anti-sweat, wound healing and cure for kidney diseases and diabetes. White nettle (*Lamium album* L) is used as anti-inflammatory, diuretic, fun, healer and elimination of discharge femininity [49].

In Sistan and Baluchistan province located in the South East of Iran, Madder (*Rubia tinctorum* L.) is used as a laxative, relieve constipation, treatment of kidney stones. In addition, the devil (*Tribulus terrestris*) is used for tonic and bitter tonic, antipyretic, urinary tract inflammation [50].

In Shiraz located in the south of Iran, Yarrow (*Achillea eriophora* DC.) is used to remove hemorrhoids, diarrhea, skin inflammation, blood clotting, anti-arthritic and antipyretic. White Flax (*Linum album* Ky. Ex Boiss.) is used for treatment ofCancer, Gastroenteritis, constipation, cough, diabetes and menstrual pain [51].

In Kazeroon (south of Iran) the log (*Anethum graveolens* L.) is used as an hypolipidecic agent, anticonvulsant and anti-vomiting. Also, Yarrow (*Achillea tenuifolia* Lam.) has been used to strengthen the nerves and heart. Shepherd's Purse (*Capsella bursa-pastoris* (L.)) is used as astringent and is also used to stop bleeding stomach. Fountain grass (*Nasturtium officinale* (L.) R. Br.) is used to Hungarian administrative expulsion or Treatment of Urology stones, Horsetail (*Equisetum arvense* L) to stops nosebleeds, Ash (*Fraxinus angustifolia*) as antiparasitic, housing and photodermatitis and the devil (*Tribulus terrestris* L.) is used for treatment of kidney stones [52].

In Kashan (center of Iran), traditional healers have used yarrow (*Achillea wilhelmsii* C. Koch) to relieve pain, the kind of alyssum (*Alyssum bracteatum* Boiss) for colds, a kind of camel's thorn (*Alhagi persarum* Boiss. & Buhse.) as body cooling [53].

In Lorestan province located in the South West of Iran, *Matricaria aurea* is used to treat female infections, the *Eremostachys laevigata* & *Eremostachys pulvinata* is used for treatment of genital infection, *Faba vulgaris* is used to treat women mastitis, *Ulmus minor* is used in the treatment of infertility [54].

Comparing ethnobotany of different parts of Iran showed that some medicinal plants investigated in this study have new therapeutic effects which are reported for the first time in this study, although, some presented similar effect to those of other studies. Still, in many parts of our country there are some unknown species of medicinal plants that have been used for the treatment of indigenous people diseases. Most of the drug information presented in the current study is new, and awareness of these applications can be helpful in discovery of new applications for industrial pharmacology. In other words, our enthobotany study in comparison with those of other parts showed that Iranian traditional medicine used different medicinal plants for different therapeutic effects.

Most of the plans introduced in this review paper have phenolic compounds and antioxidant activities [55-64]. Some reproductive system disorders cause oxidative stress [65]. Oxidative stress other than in reproductive disorders, is also implicated in a wide variety of diseases including infectious conditions [66-68], as well as kidney [69,70] or liver [71][72] complications. These conditions involve many changes, including alterations in redox state [73][74]. Medicinal plants with antioxidant activity have been shown to inhibit these conditions. These agents are also effective in inhibition of toxic agents induced complications [75]. Therefore, they may act, at least in partial, by counteracting oxidative stress induced reproductive disorders.

Because of high prevalence of reproductive system disorders in various populations, attempt to produce new natural medicines from medical plants has attracted many interests [76-78]. Currently, such researches have been the subject of extensive studies worldwide [79-102].

CONCLUSION

Having the proper climatic conditions, Ghasemloo Forestry in Urmia, is a rich source of plant species. So, much knowledge in field of botany can be seen in this area. Therefore, it seems that local residents in Urmia by utilizing the experience of his predecessors use medicinal herbs in the treatment of disorders and diseases. The documenting of this valuable drug information is of crucial important, thereby providing traditional drug information for the modern science of pharmacology. Most of the drug information of the present study is new, and awareness of these applications can be helpful in discovery of new applications for industrial pharmacology. It is suggested that the effects of the medical herbs investigated in this study apply in clinical trials in order to produce new natural drugs if they show beneficial health effects.

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REFERENCES

[1] L Speroff, R Glass, N Kase. 6th ed. Baltimorel Maryland:Lippincott Williams & Wilkins, **1999**.
[2] H Shojaei Saadi, M Abdollahi. *International Journal of Pharmacology*, **2012**, 8: 467-69.
[3] A Oliva, A Spira, L Multigner. *Hum Reprod*, **2001**, 16(8):1768-76.
[4] B Sadock, V Sadock, H Kaplan.. 9th ed. Philadelphia:Lippincott Williams & Wilkins, **2003**.
[5] BJ Oddens, I den Tonkelaar, H Nieuwenhuyse. *Hum Reprod*, **1999**, 14(1), 255-61.
[6] JS Berek, E Novak. Lippincott Williams & Wilkins, **2002**, 4.
[7] Z Molazem, F Alhani, M Anooshe, SA Vagharseyyedin. *Zahedan J Res Med Sci*, **2011**, 13(3), 47-51.
[8] A Akbarzadeh pasha. Tehran: *Golban Pub*, **2007**.
[9] Z Harel. *J Pediatr Adolesc Gynecol*, **2006**, 19(6), 363-71.
[10] N Bagheri, GH Rahimian, L Salimzadeh, F Azadegan, M Rafieian-Kopaei, Taghikhani A, H Shirzad. EXCLI J, **2013**, 12, 5-14.
[11] K Hosseini-asl, M Rafieian-kopaei, **2002**, 97(9), 2471-2472
[12] G Rahimian, MH Sanei, H Shirzad, F Azadegan-Dehkordi, A Taghikhani, L Salimzadeh, M Hashemzadeh-Chaleshtori, M Rafieian-Kopaei, N Bagheri , **2014**, 67-68:1-7.
[13] W Cates. *Lancet*, **1985**, 596-598.
[14] P Chigumadzi. *Afri Trop Doc*, **1998**, 28, 168-172.
[15] JD Sobe. *Am J Obstet Gynecol*, **1985**, 152: 924-35.
[16] World Health Organization (WHO). Geneva: WHO, **1995**.
[17] CM Jesus, J Goldber, JL Camargo. *International Braz J Urol*, **2005**, 31(1):54-6.
[18] HA Feldman. *Journal of Urology*. **1994**, 151:54- 61.
[19] KA Roberts. **94**(9), 2248-2253.
[20] K Zonderva, DH Barlow. *Baillieres Best Pract Res Clin Obstet Gynaecol*, **2000**, 14(3), 403-14.
[21] E Braunwald, L Landsberg and JB Young, J.B. Harrisons Principles of Internal Medicine, 14th Ed., McGraw Hill, New York, **1998**, 675.
[22] M Bahman, K Sak, M Rafieian-Kopae, SA Karamati, Z Eftekhari, M Jelodari. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 14-21.

[23] B Delfan, M Bahmani, H Hassanzadazar, K Saki, M Rafieian-Kopaei. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 376-379.
[24] M Shirzad, R Kordyazdi, N Shahinfard, M Nikokar. *J HerbMed Pharmacol*, **2013**, 2(2), 45-48.
[25] M Asadi-Samani, M Bahmani, M Rafieian-Kopaei. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 22-28.
[26] M Bahmani, M Rafieian-Kopaei, H Hassanzadazar, K Saki, SA Karamati, B Delfan. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 29-33.
[27] K Saki, M Bahmani, M Rafieian-Kopaei. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 34-42.
[28] M Bahmani, HA Shirzad, M Majlesi, N Shahinfard, M Rafieian-Kopaei. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 43-53.
[29] Z Rabiei, M Rafieian-Kopaei, E Heidarian, S Saghaei, **2014**, 39(2), 353-60.
[30] SA Karamati, H Hassanzadazar, M Bahmani, M Rafieian-Kopaei. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 2), 599-601.
[31] S Asgary, R Kelishadi, M Rafieian-Kopaei, S Najafi, M Najafi, A Sahebkar. *Pediatr Cardiol*, **2013**, 34(7), 1729-35.
[32] B Delfan, M Bahmani, M Rafieian-Kopaei, M Delfan, K Saki. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 2), 879-884.
[33] H Shirzad, M Shahrani, M Rafieian-Kopaei. *Int Immunopharmacol*, **2009**, 9 (7-8), 968-70.
[34] H Shirzad, F Taji, M Rafieian-Kopaei. *J Med Food*, **2011**, 14(9), 969-74.
[35] B Delfan, M Bahmani, Z Eftekhari, M Jelodari, K Saki, T Mohammadi. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 2), 938-942.
[36] M Bahmani, M Rafieian, M Baradaran, S Rafieian, M Rafieian-kopaei. *J Nephropathol*, **2014**, 3(2), 81-85.
[37] M Bahmani and M Rafieian-Kopaei. *Asian Pac J Trop Dis*, **2014**, **4**(4): 315-316.
[38] H Fallah Huseini, S Kianbakht. *J Med Plant*, **2012**, 11(9), 192-6.
[39] M Asadbeigi, T Mohammadi, M Rafieian-Kopaei, K Saki, M Bahmani, B Delfan. Asian Pac J Trop Med, **2014**, 7(Suppl 1), S364-S368.
[40] M Bahmani, SA Karamati, H Hassanzadazar, SH Forouzan, M Rafieian-Kopaei, B Kazemi-Ghoshchi, J Asadzadeh, AGH Kheiri, E Bahmani. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 2), 906-910.
[41] K Saki, M Bahmani, M Rafieian-Kopaei, H Hassanzadazar, K Dehghan, F Bahmani, J Asadzadeh. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 2), 895-901.
[42] M Bahmani, A Zargaran, M Rafieian-Kopaei, K Saki. *Asian Pac J Trop Med*, **2014**, 7(Suppl 1), 348-354.
[43] M Asadi, E Masoumi, M Khatamsaz, VA Mozaffarian. *Floar Iranica*, **2008**, no 1-59.
[44] A Ghahraman. *Iranica colored flora*. **1985**, Volume 1-23.
[45] LH Reshinger. **1963-1998**. *Flora Iranica*, vols. 1- 173.
[46] PH Davis, **1965-1988**. Flora of Turkey, vols. 1-10.
[47] CC Townsend and E Guest. **1966-1985**. *Flora of Iraq*, vols. 1-9,
[48] F Sharififar, A Kouhpayeh, MM Motaghi, A Amir-Khosravi, A PouR-Mohseninasab. *J Herbal Drugs*, **2010**, 3, 19-28.
[49] M Sedighi, H Nasri, M Rafieian-kopaei, S Mortazaei. *J HerbMed Pharmacol*, **2013**, 2(1): 5-8.
[50] M Iranmanesh, S Najafi, M Yousefi. *J Herb Drugs*, **2010**, 1, 58-65.
[51] M Dolatkhahi, M Ghorbani-Nahoji, A Mehrafarin, GR Amininezhad, A Dolatkhahi. *J Med Plants*, **2012**, 11(42), 163-178.
[52] M Dolatkhahi, M Ghorbani-Nahoji, E Mehrafarin, GHRAmininezhad, E Dolatkhahi. *J Medicinal Plants*, **2013**, 11(2), 45, 163-178.
[53] SH Abbasi, S Afsharzadeh, ER Mohajeri. *J Herbal Drugs*, **2012**, 3(3): 147-156.
[54] SH Ahmadi, P Babakhalo, ME Karimifar. Yafteh, **2009**, 5, 85-100.
[55] M Mirhosseini, A Baradaran, M Rafieian-Kopaei. *J Res Med Sci*, **2014**, 19, 758-61
[56] M Sadeghi, H Khosravi-Boroujeni, N Sarrafzadegan,S Asgary, H Roohafza, M Gharipour, F Sajjadi, S Khalesi, M Rafieian-Kopaei. *Nutr Res Pract*, **2014**, 8(3), 336-41.
[57] H Nasri, M Rafieian-Kopaei. *Iranian J Public Health*, **2014**, 43(2), 255-257.
[58] S Asgary, A Sahebkar, M Afshani, M Keshvari. *Phytother Res*, **2013**, DOI: 10.1002/ptr.4977
[59] M Rafieian-Kopaei, S Behradmanesh, S Kheiri, H Nasri. *Iran J Kidney Dis*, **2014**, 8(2):152-4.
[60] A Baradaran, H Nasri, M Nematbakhsh, M Rafieian-Kopaei. *Clin Ter*, **2014**, 165(1):7-11.
[61] SY Asadi, P Parsaei, M Karimi, S Ezzati, A Zamiri, F Mohammadizadeh, M Rafieian-Kopaei. *Int J Surg*, **2013**,11(4):332-7.
[62] P Parsaei, M Karimi, SY Asadi, M Rafieian-Kopaei. Int J Surg, **2013**, http://dx.doi.org/10.1016/j.ijsu.2013.08.014

[63] M Bahman, A Zargara, M Rafieian-Kopaei. *Rev Bras Farmacogn*, **2014**, 24, 468-48
[64] M Amirmohammadi, SH Khajoenia, M Bahmani, M Rafieian-Kopaei, Z Eftekhari, M Qorbani. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 1): S250-S254
[65] A Agarwal, S Gupt, R Sharma. *Reprod Biol Endocrin*, **2005**, (3:28): 1-21.
[66] N Bagheri, A Taghikhani, G Rahimian, L Salimzadeh, F Azadegan Dehkordi, F Zandi, MH Chaleshtori, M Rafieian-Kopaei, H Shirzad. *Microb Pathog*, **2013**, 65:7-13.
[67] M Rafieian-Kopaie, H Nasri, F Alizadeh, B Ataebi, A Baradaran. *Iranian J Pub Health*, **2013**, 42(5), 529-533.
[68] N Bagheri, A Taghikhani, G Rahimian, L Salimzadeh, F Azadegan Dehkordi, F Zandi, MHN Chaleshtori, M Rafieian-Kopaei, H Shirzad. *Microb Pathog*, **2013**, 65, 7-13.
[69] H Nasri, M Rafieian-Kopaei. *Iranian J Publ Health*, **2013** ,42(10): 1194-1196.
[70] A Baradaran, H Nasri, M Nematbakhsh, M Rafieian-Kopaei. *Clin Ter*, **2014**, 165(1):7-11.
[71] A Taghikhani, H Afrough, R Ansari-Samani, N Shahinfard, M Rafieian-Kopaei. *Bratisl Lek Listy*, **2014**, 115(3), 121-4.
[72] M Taghikhani, H Nasr, A Asgar, H Afrough, AR Namjoo, R Ansari-Samani, N Shahinfard, M Rafieian-kopaei. *Life Sci J*, **2012**, 9(4), 3025-31.
[73] M Rafieian-Kopaei, A Baradaran, M Rafieian. *J Res Med Sci*, **2013**, 18(7): 628
[74] A Baradaran, H Nasri, M Rafieian-Kopaei. *J Res Med Sci*, **2014**, 19(4), 358-67.
[75] E Heidarian, M Rafieian-Kopaei. *Pharm Biol*, **2013**, 51(9), 1104-9.
[76] M Rafieian-Kopaei. *J HerbMed Plarmacol*, **2012**, 1(1):1-2.
[77] S Asgary, A Sahebkar, M Afshani, M Keshvari. *Phytother Res*, **2013**, DOI: 10.1002/ptr.4977
[78] H Khosravi-Boroujeni, N Mohammadifard, N Sarrafzadegan, F Sajjadi, M Maghroun, A Khosravi, H Alikhasi, M Rafieian, *L Azadbakht*, **2012**, 63(8), 913-20.
[79] M Bahmani, M Rafieian-Kopaei, M Jeloudari, Z Eftekhari, B Delfan, A Zargaran, SH Forouzan. *Asian Pac J Trop Dis*, **2014**, 4(Suppl 2): 847-849.
[80] H Khosravi-Boroujeni, N Sarrafzadegan, N Mohammadifard, F Sajjadi, M Maghroun, S Asgari, M Rafieian-Kopaei, L Azadbakht. *J Health Popul Nutr*, **2013**,31(2), 252-61.
[81] M Bahmani, K Saki, H Golshahi, M Rafieian-Kopaei, N Abdali, A Adineh , F Namdari and F Bahmani. *J Chemical Pharmaceutical Res*, **2015**, 7(1), 640-645.
[82] M Bahmani, H Shirzad, S Rafieian and M Rafieian-Kopaei. *Journal of Evidence-Based Complementary & Alternative Medicine*, **2015**, DOI: 10.1177/2156587215571116.
[83] M Bahmani, K Saki, M Asadbeygi, A Adineh, SH Saberianpour, M Rafieian-Kopaei, F Bahmani and E Bahmani. *J Chem Pharmaceutical Rese*, **2015**, 7(1):646-653.
[84] B Delfan, HR Kazemeini, M Bahmani. *Journal of Evidence-Based Complementary & Alternative Medicine*, **2015**, DOI: 10.1177/2156587214568458.
[85] M Bahmani, SH Forouzan, EA Fazeli-Moghadam, M Rafieian- Kopaei, A Adineh and SH Saberianpour. J *Chem Pharmaceutical Res*, **2015**, 7(1):634-639.
[86] M Bahmani, M Mirhoseini, H Shirzad, M Sedighi, N Shahinfard and M Rafieian-Kopaei. *A Journal of Evidence-Based Complementary & Alternative Medicine*, **2015**, DOI: 10.1177/2156587214568457.
[87] M Ghasemi Pirbalouti, M Momeni and M Bahmani. *Afr J Tradit Complement Altern Med.* ,**2013**, 10(2), 368-000.
[88] M Bahmani and EKH Banihabib. *Global Vet*, **2013**, 10 (2), 153-157.
[89] Z Eftekhari, M Bahmani, A Mohsenzadegan, M Gholami-Ahangaran, J Abbasi, N Alighazi. *Comp Clin Path*, **2012**, 21, 1219-1222.
[90] M Bahmani, J Abbasi, A Mohsenzadegan, S Sadeghian, M Gholami Ahangaran. *Comp Clin Pathol*, **2013**, **22**:165–168.
[91] M Gholami-Ahangaran, M Bahmani, N Zia-Jahromi. *Asian Pac J Trop Dis*, **2012**, **2**(1), 101-103.
[92] A Kheradmand , M Taati, H Babaei. *Animal Biology*, **2009**, 59(2): 159-168.
[93] M Alirezaei, A Kheradmand, R Heydari, N Tanideh, S Neamati, M Rashidipour. *Mediterranean Journal Nutrition and Metabolism*, **2012**, 5(3): 205-211.
[94] A Kheradmand , O Dezfoulian, M Alirezaei, B Rasoulian. *Biochemical and Biophysical Research Communications.*, **2012**, 419(2), 299-304.
[95] S Neamati, M Alirezaei, A Kheradmand. *International Journal of Peptide Research and Therapeutics*, **2011**, 17(3): 239-245.

[96] A Vasheghani-Farahani , M Tahmasbi, H Asheri, H Ashraf, S Nedjat, R Kordi, R. *Asian Journal of Sports Medicine*, **2011**, 2(2), 106-116.
[97] AH Memari, R Kordi, V Ziaee, FS Mirfazli, MS Setoodeh. *overweight and obesity*, **2012**, 6(1), 234-239.
[98] R Kordi, M Rostami, P Noormohammadpour, MA Mansournia. *European Spine Journal*, **2011**, 20(8), 1312-1317.
[99] R Kordi, M Abdollahi, AH Memari, MG Najafabadi. *Asian Journal of Sports Medicine*, **2011**, 2(3), 205-210.
[100] R Kordi, F Hemmati, H Heidarian, V Ziaee. *Sports Medicine, Arthroscopy, Rehabilitation, Therapy and Technology*, **2011**, 3(1), 3.
[101] R Kordi, M Ali Mansournia, RA Nourian. *Journal of Sports Science and Medicine*, **2007**, 6(2), 39-44.
[102] R Kordi, RG Dennick, BE Scammell. *British Journal of Sports Medicine*, **2005**, 39(1), 20-23.