



5th National Congress on Medicinal Plants
18, 19 May 2016
Isfahan- Iran



Oral Presentation



MANAGEMENT OF *PHYTOPHTHORA* SPP. USING *THYMUS*
ERIOCALYX ESSENTIAL OIL

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Phytophthora species are soilborne oomycete that can infect more than 45 species of crops plants and survives in the soils as Oospores for several years [1, 2]. This pathogen can cause fruit, crown, and root rot, and stem and leaf blight disease. It is one of the most devastating diseases affecting cucurbit and vegetables production in Iran [3]. In this study we survey the antifungal activity of *Thymus eriocalyx* essential oil and Metalaxyl fungicides against three species of *Phytophthora* including *P. capsici*, *P. drechsleri* and *P. melonis* causal agent damping-off in plants of Pepper, Cucumber and Melon *in vitro* respectively. Six different concentrations of essential oils and fungicide were used for assessment of their inhibitory activities against the pathogen through mycelial growth inhibition on Corn Meal Agar. Fungal radial growth was measured and a median effective concentration (EC₅₀) value (ppm) was calculated according to the linear relation between inhibitory probit and concentration logarithm. The chemical composition of the essential oils was determined by gas chromatography-mass spectrometry (GC-MS). Also, Data were analyzed using SPSS software. The results showed that *Thymus eriocalyx* essential oil were very effective on three species of *Phytophthora*. Maximum and minimum EC₅₀ values of oil on species of *Phytophthora* were 41.060 and 28.494 for *P. capsici* and *P. melonis* respectively. The mean EC₅₀ values for Metalaxyl on *P. capsici*, *P. drechsleri* and *P. melonis* were 20.869, 20.055 and 17.702, respectively. The profile of the oil components of *T. eriocalyx* showed that Thymol (35.86%), Eucalyptol (7.74%), Borenol (7.95%), γ -Terpinene (5.49%) were the main compounds. Nevertheless, the effectiveness of the essential oils was variable depending to concentration of plant essential oil and species of fungi. This results show that essential oil may be have potential to control of some *Phytophthora* species and could be considered for developing new fungicides.

References

- [1] Bi, Y; Jiang, H; Hausbeck, M. K; Hao, J. *J. Plant Dis.* **2012**, *96*, 797-803.
[2] Jee, H. J; Nam, K. W; Cho, W. D. *Plant Pathol.* **2001**, *17*, 311-314.



124

**ETHNOBOTANICAL STUDY OF MEDICINAL PLANTS
IN HAMADAN W.IRAN**

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For many years medicinal plants were the only available material for human. Human found their properties by test and mistake. Further scientific developments provide appropriate tools to have a better knowledge of these materials. Different side effects of chemical drugs shift scientist to reexamined natural materials to find substitutions [3]. Iran with a wide range of habitats and rich flora is a precise sample of natural medicinal substances. To improve non chemical pharmacy field studies should be done to encounter with traditional beliefs of local inhabitants. Medicinal plants have a main role in the food and daily life of people in Hamadan. Data gathering was based on interviews with old locals, visiting daily market at spring and summer and studying the literature [1, 2]. Samplings from different localities were done. In present study 33 species of medicinal plants were recognized in this region. Most abundant medicinal families are Asteraceae and Lamiaceae but totally there are 16 families with traditional use in studied region. *Capparis* and *Foeniculum* are medicinal plants which are used in daily cuisine. *Stachys lavandulifolia* is used temporarily as a beverage to heal stomach pains too. Turmeric, Cumin and Fenugreek are used as additives in local breads.

References

- [1] Rechinger, K. H. Flora Iranica, Akademische Druckund. Verlagsanstalt Graz-Austria. **1963-1988**; Vol: 1-173.
- [2] Mozaffarian. V. Trees and Shrubs of Iran. 1st ed. Farhang Moaser. **2003**.
- [3] Mirhidar, H.; Plants learnings. *Daftare-Nashre-Farhange-Eslami*. **2002**; Vol I.



134

**COMPARATIVE STUDY OF CHEMICAL COMPOUNDS BETWEEN
ORGANIC AND NON-ORGANIC SAFFRON**

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Saffron (*Crocus sativus* L.) as a main medicinal and industrial cash crop has more than 70,000 ha with annual production of 300 tons in Iran. This plant is one of the most valuable herbs that attracted the world's attention due to various medical properties. Agronomic and environmental factors effect on the quality and quantity of active constituents in saffron. Tested saffron was collected from saffron farm which the necessary and requirement of organic production was done in Qaen. In this study, we compared chemical compounds of organic (OS) and non-organic saffron (NOS). In addition, was evaluated their total antioxidant, total phenolic contents, and radical-scavenging activity. Our result indicated that OS has more secondary metabolites than to NOS. The FRAP values of adequate concentrations of both organic OS and NOS extracts (2.5 g/l) indicated that the reducing power of the OS extract is significantly higher compared to NOS extract. The results of total phenolic values for both OS and NOS stigmas extracts indicated that the amounts of total phenolic content of equal concentration (2.5 g/l) of OS was dramatically more than NOS one. Also cytotoxic and antioxidant properties of OS are higher compared to NOS, significantly.

References

- [1] Behdani, M.A., Jami-Alahmadi, M., Fallahi, H.R. **2016**, *Journal of Crop Sciences and Biotechnology*. Accepted.
- [2] Caballero-Ortega, H., et al., *Acta Horticulturae.*, **2004**: p. 321-326.
- [3] Ghorbani, R., Koocheki, A. **2009**. *II International Symposium on Saffron Biology and Technol.* Mashhad, Iran.



138

COMPARATIVE STUDY OF EFFECT TREATMENT OF *FICUS CARICA* LATEX CREAM VS. PODOPHYLLIN IN TREATMENT OF GENITAL WARTS

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Genital warts are the most common sexually transmitted disease (STD) throughout the world. This STD is caused by some types of human papillomavirus (HPV). Pathogenicity spectra of vaginal HPV infection is very different and includes warts and cancer. Treatments for genital warts such as imiquimod, podophyllin and cryotherapy. The recovery and recurrence rates and complications were different amongst these treatments. Regarding traditional medicine applied in countries such as Iran and India, a variety of traditional treatments are used for common warts including fig latex. This double blind clinical trial was carried out in Yazd province from October 2013 to June 2015. A total of 32 female patients with external genital warts who were randomly divided into two groups entered this study. Fig latex cream was topically administered two or three times a day and podophyllin cream was topically used once a week. Duration of the treatment was investigated and the recovery rate was evaluated based on the reduced number and size of warts, recurrence rate one month after termination of treatment, complications during the treatment procedure and satisfaction level of patients. The mean duration of the treatment was 7.8 ± 6.12 weeks and 10.9 ± 6.18 weeks in fig latex cream and podophyllin cream groups respectively. There were no significant differences between these two groups ($p=0.19$). The recovery rate was reported %46.6 and %69.2 in fig extracts therapy and treatment with podophyllin, respectively. The number and size of the warts in both groups was significantly reduced before and after the intervention. Furthermore, there were no significant differences in the number and size of the warts in two groups. The frequency of complications was significantly higher in patients treated with fig latex cream compared podophyllin cream group ($p=0.008$). The recurrence rate was reported zero in both groups and no significant difference was observed between recurrence rates in both groups. Also there were no significant difference between satisfaction level of the patients in both groups. The findings of the present study show the therapeutic effect of ficus latex creams on treatment of genital warts. No significant recurrence was observed after termination of therapy and the satisfaction level of the patients was similar the patients treated by podophyllin.

Reference

[1] Bohlooli S, et al.; *International journal of dermatology*. 2007;46(5):524-6.



190

**ASSESSING COMPARISON THE EFFECT OF COOLING GEL PADS
AND TOPICAL OLIVE OIL ON THE INTENSITY OF EPISIOTOMY
PAIN AND WOUND HEALING**

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Episiotomy is one of the most common surgery intervention. The perineal pain resulting from episiotomy is a stressful factor in primiparous women which interferes with their ability of nursing and doing their duties as a mother. Cold therapy is a topical treatment which is effective in relieving inflammation and wound healing. Olive oil also increase the rate of wound healing. The present study has been conducted to evaluate and compare the effect cooling gel pads and topical olive oil on the intensity of episiotomy pain and wound healing in primiparous women referring to hospitals affiliated with the Gilan University of Medical Sciences in 2014. This randomized clinical trial was conducted on 90 primiparous women who referred to hospitals affiliated with the Gilan University of Medical Sciences. The participants were randomly allocated to two groups: those receiving cooling gel pads (for 20 minutes on demand, 12 hours after delivery and for 10 days) and the topical olive oil (2 times a day, 12 hours after delivery and for 10 days). The perineal pain intensity was evaluated using visual analogue scale (VAS) and the wound healing was evaluated by the REEDA scoring scale for 3 times: the 12 hours, 5th and 10th day after episiotomy. The two groups did not show any significant differences in demographic features and other intervening variables. There was a statistically significant difference in the intensity of perineal pain in two groups at 12 hours ($p= 0.04$) and on the day 5 after episiotomy ($p= 0.03$) and wound redness on the day 10 after episiotomy ($p= 0.04$). Using cooling gel pad and olive oil are effective in reducing the perineal pain intensity and episiotomy wound healing, as a safe, available and cost-effective method.



193

**TANACETUM PARTHENIUM LIPID TRANSFER PROTEINS ENHANCE
APOPLASTIC ACCUMULATION OF COSTUNOLIDE AND
PARTHENOLIDE**

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Feverfew, *Tanacetum parthenium* L., has been used for centuries as fever reducing herb and even now it is still being used to treat migraines. The most active compounds in feverfew extracts are the sesquiterpene lactones (ST) which are known as anticancer compounds, of which 85% is parthenolide. Since these almost hydrophobic compounds are made in glandular trichomes and are supposed to be secreted to the space between trichomes and cuticle, a transport mechanism should be involved. Here we investigated whether lipid transfer proteins (LTPs), forming a hydrophobic cavity in their tertiary structure, may be involved in transport of such metabolites. LTPs are secreted to the apoplast, hence may facilitating the transport of parthenolide/costunolide to or in the apoplast. We identified eight feverfew LTPs from glandular trichome library which were showing similar expression pattern to parthenolide biosynthesis pathway genes. All candidate LTPs were amplified by RACE-PCR approach and their CDS were subsequently cloned into plant expression vector under the control of CaMV35S promoter. Individual LTPs were coexpressed with costunolide or parthenolide biosynthesis pathway in *Nicotiana benthamiana* and the total production of costunolide and its conjugates as well as their apoplastic ratio was measured. We show for the first time that LTPs do indeed affect free products with LTP1 and 2 showing the most increase in costunolide and its conjugates. On the other hand, LTP3 was effectively increasing parthenolide content in the cells, where apoplastic content of this compound was 8 times higher than control plants. We also show that secretion of free costunolide to the apoplastis increased by 15.2% by LTP1+ LTP2. Characterisation on specificity and possible mechanism of actions LTPs is in progress.

References

- [1] Liu, Q.; Manzano, D.; Tanić, N.; Pesic, M.; Bankovic, J.; Pateraki, I.; Ricard, L.; Ferrer, A.; de Vos, R.; van de Krol, S.; Bouwmeester, H. *Metab. Eng.* **2014**, *23*, 145-153.
[2] Lev, S. (2010). *Nat. Rev. Mol. Cell Biol.* **2010**, *11(10)*, 739-750.



196

**EFFECT OF CHLOROCHOLINE CHLORIDE ON ACCUMUATION OF
BETULIN AND BETULINIC ACID IN CELL SUSPENSION CULTURE
OF *BETULA PENDULA***

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Silver birch (*Betula pendula* Roth) is a medicinally important woody plant. This plant produces a range of biologically active terpenoids such as betulin and betulinic acid. These triterpenes have been used for their medicinal properties. Recent clinical studies have shown that betulin was effective against a variety of tumors [1, 2]. The biotechnological techniques for the production of terpenoids using cell cultures, is a good strategy to enhance the yield of these natural compounds. The objective of the present study was to evaluate effect of different concentration of chlorocholine chloride and exposure time on the cell culture and growth index. In this research cell cultures of *B. pendula* was established on NT-based medium [3] with hormonal concentration of 2.5 mg L⁻¹ 2,4-D and 0.5 mg L⁻¹ BAP. Then the effect of chlorocholine chloride (with final concentration 0, 0.5, 1, 2 and 3 mg L⁻¹) on cell suspension cultures was investigated. chlorocholine chloride was added to the 8-day-old cell cultures and cell growth, betulin and betulinic acid content were monitored at 1, 2, 3, 5 and 7 days after feeding. The results showed that cell viability in the fed cells were decreased compared to controls. Also maximum increase in growth index was obtained on the 5 days after feeding with 0.5 mg L⁻¹ chlorocholine chloride. The accumulation of betulinic acid in cells 3 days after feeding by 2 mg L⁻¹ chlorocholine chloride was increased about 1.7-fold (3 mg g⁻¹ DW) compared to controls. Moreover, betulin accumulation was enhanced 7 days after feeding by 2 mg L⁻¹ chlorocholine chloride about 149.3-fold (19.4 mg g⁻¹ DW). In conclude, although the low concentration of chlorocholine chloride (0.5 mg L⁻¹) was resulted the highest increased cell growth but interestingly, betulin production can be increased by high concentration of chlorocholine chloride (2 mg L⁻¹).

References

- [1] Alakurtti, S.; Mäkelä, T.; Koskimies, S.; Yli-Kauhaluoma, J. *Eur J Pharm Sci* . **2006**, 29,1-13.
[2] Enwerem, N. M.; Okogun, J. I.; Wambebe, C. O.; Okorie, D, A.; Akah, P. A. *Phytomedicine*. **2001**, 8,112-114.



236

EVALUATION OF PHENYLALANIN AMMONIA LYASE (*PAL2*) GENE INVOLVED IN ANTIOXIDANT SYNTHESIS PATHWAY IN SOME ENDEMIC MEDICINAL PLANTS

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Nowadays, the use of natural antioxidants instead of synthetic ones has been improved in food industries. Many of medicinal plants can be added in the foods as natural spices. Moreover, Herbs and spices are amongst the most important targets to search for natural antioxidants from a safety point of view. These properties are due to their many active phytochemicals such as phenolic compounds, flavanoids, terpenoids and carotenoids. phenylalanin ammonia lyase (*pal₂*) gene is a major compound of antioxidant synthesis pathway in some medicinal plants. The Sequencing of phenylalanin ammonia lyase was also reported by previous researchers to use in phylogeny of important genera belong to Anthemideae subfamily. The aim of the present study was to evaluate diversity among some endemic species of Apiaceae using detection of *pal2* involved in antioxidant synthesis pathway. Therefore, this study was designed to identify the gene amplification in some of the native species of the family Apiaceae. We used the Basic Local Alignment Search Tool (BLAST) to finds regions of local similarity between sequences. The program compares protein sequences to sequence databases and calculates the statistical significance of matches. Thus, in order to designed primers, we compared similarity between sequences for the first time with the Mulitalin software and finally primers were deisgned based on conserve sequences. Conserve primers were designed and applied in three species of Apiaceae family including *Dorema aucherii*, *Ferula assa-foetida* and *Prangos ferulacea*. The PCR products were amplified the amplicon about 700 base pairs and finally the PCR products were sequenced [1-3].

References

- [1] Baharfar, R., Azimi, R., Mohseni, M., **2015**. *J. Food Sci. Technol.* 52, 6777-83.
- [2] Exarchou, V., Nenadis, N., Tsimidou, M., Gerothanassis, IP., Troganis, A., Boskou, D., **2002**. *J. Agric. Food Chem.* 50, 5294–5299.
- [3] Gharibi, S., Sayed Tabatabaei, B. E., Saeidi, G., Goli, S. A. H., Talebi, M., **2013**. *Ind. Crops Prod.* 50, 154– 158.



375

**OPTIMIZING THE PRODUCTION OF ARNEBIA EUCHROMA OIL, AN
IRANIAN TRADITIONAL ANTI-INFLAMMATORY FORMULATION**

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Havachoobeh (*Arnebia euchroma*) root is traditionally claimed as one of the most potent anti-inflammatory herbs. Recent investigations have confirmed its antibacterial, anti-oxidant, and anti-inflammatory activities [1]. It is full of deep red materials which the most part of them belong to hydroxynaphthoquinones (HNQ) especially shikonin derivatives [2]. These compounds are responsible for most of therapeutic actions of the herb [1]. As a consequence of considerable medicinal effects, libertine collection of the roots endangers the herb. Therefore, optimizing the method of preparation of pharmaceutical products of this herb can be helpful in preserving and protecting the herb from inexistence. In Iranian traditional medicine, the method of preparing Havachoobeh root oil is to boil 40 g of crushed roots in 200 g of sesame oil [3]. The residue of the roots is then discarded. In this study, we try to extract and determine the active compounds from the residue by sequential extraction. Regarding the scientific documents, we will finally highlight the probable therapeutic properties of the root extracts. Forty grams of crushed roots were boiled in 200 g sesame oil for 30 min at 100°C. The oil was filtered and kept in a closed container (Oil 1). The residue of roots was boiled again in 200 g new sesame oil for four times (Oil 2-5). All these samples were extracted via ethanol 96 to separate HNQ. The total content of HNQ was the measured by spectrophotometry at 516 nm while using L-shikonin as standard. The results showed that HNQ contents of oil 1 to 5 are 0.4, 0.25, 0.09, 0.06, and 0.02% (w/w), respectively. Previous in vivo investigations suggested the oral anti-inflammatory dose of HNQ as 9-12.5 mg/kg (equivalent to 1-1.4 mg/kg in human) [4, 5]. Based on these studies, only the oil 1 contains enough content of HNQ and can be prescribed in human by the dose of 3 tablespoon daily. On the other hand, recent investigations have determined topical therapeutic doses of HNQ much less than oral ones [6]. Thus, oil 2 to 5 can be used for topical ailments such as skin burns, wounds, and ulcers.

References

- [1] Farzaei, M. H. et al. *Wounds*. **2014**, 26, 197-206.
- [2] Anonymous. Pharmacopoeia of the People's Republic of China; Guang Dong Science and Technology Press: Guang Dong, **1992**; pp. 151-2.
- [3] Aghili, M. H. *Qarabadin-e Kabir*; Traditional Manuscript: Tehran, **2005**; p. 585.



560
QUALITATIVE AND QUANTITATIVE ANALYSIS OF PLANT
MATERIALS

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Plant materials are used throughout different countries as home remedies for the prevention and treatment of various diseases, over-the-counter drug products and raw materials for the pharmaceutical industry, and represent a considerable proportion of the global drug market. It is needed to ensure the quality of medicinal plant products by using modern control techniques and applying suitable standards. In the present study, we classified a series of tests for assessing the quality of medicinal plant materials. It constituted a collection of test procedures to support the development of national standards based on local market conditions, with due regard to existing national legislation and national and regional norms. Plant preparations have a very special characteristic that distinguish them from chemical medicines, because a single plant may contain a great number of bioactive compounds and a combination of plants even more. This complexity is one of the most important challenges to researchers attempting to identify a single bioactive compound or chemical group in the enormous universe that comprises a single crude extract. Several techniques similar to those used for the analysis of synthetic drugs are also frequently employed for analysis of medicinal plant materials (e.g. volumetric analysis, gravimetric determinations, gas chromatography, column chromatography, high performance liquid chromatography and spectrophotometric methods). Sample preparation is one of the critical steps in analysis of plants. Some modern sample-preparation techniques include solid-phase micro-extraction, supercritical-fluid extraction, pressurized-liquid extraction, microwave-assisted extraction, solid-phase extraction, and surfactant-mediated extraction. Subsequent evaluation revealed some products to be adulterated with other related plants from the same genus or family. Determination of adulteration in herbal products could be achieved by some accurate physical and chemical analysis [1-3].

References

- [1] Parthik, P.; Patel, N. M.; Patel, P. M. *IJRAP*. **2011**, 2, 4, 1148-1154.
- [2] Ahmad, I.; *et al.* *Modern phytomedicine*; WILEY-VCH: Verlag GmbH & Co. KGaA: Weinheim, 2006.
- [3] *Quality control methods for medicinal plant materials*; World Health Organization: Geneva, 1998.



568

EFFECT OF THE LEMON INTAKE ON WEIGHT LOSS, METABOLIC PROFILES AND BIOMARKERS OF OXIDATIVE STRESS IN OVERWEIGHT SUBJECTS: A RANDOMIZED DOUBLE-BLIND PLACEBO-CONTROLLED CLINICAL TRIAL

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Overweight has been defined as accumulated body fat in the body [1]. Overweight is associated with increased risk of type 2 diabetes mellitus (T2DM), cardiovascular disease (CVD), and nonalcoholic fatty liver disease and decreased quality of life [2]. However, the use of various medications [3] and bariatric surgery has also been argued as an alternative strategy in some cases. Due to the several side effects of these strategies, there is an increasing demand for using herbal medications, including lemon in the management of excess weight. The current study for the first time was performed to determine the effects of lemon pearl intake on weight loss and metabolic profiles among overweight subjects. Methods: This randomized double-blind placebo-controlled clinical trial was conducted among 103 overweight subjects aged 15-65 years old. After 2 weeks Run-in period Participants were randomly assigned into three groups to receive: 1) lemon soft gel 100 mg (n=35); 2) orlistat 120 capsule (n=34) and 3) placebo (n=34) three times a day for 8 weeks. Anthropometric measures and metabolic profile, total antioxidant capacity and glutathione in fasting blood samples were taken at baseline and after 8 weeks of intervention. Results: Consumption of the lemon pearl, orlistat and placebo resulted change in weight (-0.56 ± 1.05 , -0.46 ± 1.67 and 0.29 ± 1.36 kg, respectively) and BMI change (-0.21 ± 0.41 , -0.18 ± 0.66 and 0.11 ± 0.53 kg/m², respectively) that changes in both of treatment group was significant and non significant in compared with control group. Blood indexes changes in 3 of the groups was not significant. Conclusion: Taking lemon pearl for eight weeks among overweight subjects had the significant reduction in weight and BMI compared with the placebo group.

References

- [1]. *Obes Res.* **1998**, 6, 2, 51-209.
- [2]. Catenacci, V. A.; Hill, J. O.; Wyatt, H. R. *Clin Chest Med.* **2009**, 30, 415-444.
- [3]. Yanovski, S. Z.; Yanovski, J. A. *JAMA.* **2014**, 311, 74-86.



583

**PREPARATION, ^{99m}Tc LABELING AND EVALUATION OF
HYDROALCHOLIC EXTRACT FROM *KELUSSIA ODORATISSIMA*
MOZAFF FOR CYTOTOXIC EFFECTS ON CANCER CELLS AND
TUMOR IMAGING**

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Medicinal plants are rich resource of secondary metabolites which are important both in traditional and modern medicine. Due to spread of cancer, early diagnosis is very important in treatment process. Medicinal plants contain compounds with cytotoxic effects and further, cause growth inhibition of cancer cells. Among these compounds are phthalides. Phthalides prevention of cell cancer growth exerts their DNA methylation inhibitory by different mechanisms [1, 2, 3]. The study on *kelussia odoratissima* mozaff showed that phthalides are the main compound in essential oil of this plant. In this work, in order to design an anticancer drug and also a tumor imaging agent in this work lead extract of this plant was prepared and after labeling its effect for anticancer property is investigated. *Kelussia odoratissima* Mozaff was collected from Zard-Kooh Mountains, Charmahal-e Bakhtiari province and was extracted by maceration method, and then different fractions of crude extract were prepared. Cytotoxic effects of these fractions were evaluated in human colon carcinoma cell line HT-29 via MTT test. Radiocomplex was prepared with use of ^{99m}Tc in the presence of SnCl₂·2H₂O as a reducing agent. Labeling yield and in vitro stability of the complex was investigated by HPLC. Crude extract and its fractions especially chloroform fraction showed cytotoxic effect for human colon carcinoma HT-29 cells. Labeling yield of more than 80% was obtained corresponding to a high specific activity. Radiocomplex showed good stability in the presence of normal saline. Biodistribution studies in tumor bearing mice and structure evaluation of its anticancer materials are under way. The extract from this medicinal plant may be useful for tumor treatment and imaging and further investigation in this area is required.

References

- [1] Winnie, L. T. K.; Chi, H. C.; John. A.; Rudd, G. L. *J. Ethnopharmacology*. **2008**, *120*, 36-43.
[2] Niefang, Y.; Mingrong, W. *Curr. Med. Chem.* **2008**, *15*, 1350-1375.
[3] Wiston, j. C. *Am. J. Clin. Nutr.* **1999**, *70*, 491S-9S.



609

COLCHICINE FLUORESCENCE AMPLIFICATION WITH ENVIRONMENTAL PARAMETERS

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Colchicine is an alkaloid, which derived from a plant source known as *Colchicum L.*, possesses anti-inflammatory and anti-mitotic properties. Colchicine and its analogues have been used clinically for the treatment of certain forms of leukemia and of solid tumors. It is clearly degraded under light exposure and the degradation products being pharmacologically inactive [1, 2]. Colchicine is degraded in acidic and alkaline pH [3]. It is demethylated to colchicine with dilute acid, and further hydrolyzed with concentrated acid to trimethylcolchicine acid. Colchicine exhibits a spontaneous fluorescence, but the intensity of the signal is much smaller compared to the UV absorbance. Fluorescence spectroscopy is an influential tool for determination of chemical and biological system's reactivity, whereas it provides non-intrusive measurements of substances in low concentration under physiological conditions. The present study demonstrated the effect of some parameters such as: pH, light and ionic concentration on fluorescence intensity of Colchicine. The stock solution of colchicine ($3.0 \times 10^{-4} \text{ mol L}^{-1}$) in double distilled water was prepared for the fluorescence, light, pH, and ionic concentration studies. The solutions were stored at ambient temperature (25°C). The $10^{-3} \text{ mol L}^{-1}$ of Colchicine has a pH of 5 and in the pH of 10 the intrinsic fluorescence of Colchicine shows the maximum enhancement. The results of light on Colchicine molecule was investigated by fluorescence method. The intrinsic fluorescence of $10^{-3} \text{ mol L}^{-1}$ Colchicine solution which is treated in different time lightening from 6 to 66 hours was measured. Lightening more than 12 hours caused quenching of the intrinsic fluorescence of the Colchicine. The effect of changing ionic concentration on the intrinsic fluorescence of Colchicine was also investigated with different concentrations of NaCl (5% to 25%). The maximum enhancement was observed in 20% solution of NaCl. All the results in line with Ertel and Wallace, 1970, and Bodoki *et al.*, 2005.

References

- [1] Bodoki, E.; Oprean, R.; Vlase, L.; Tamas, M.; Sandulescu. R. *J Pharm Biomed Anal.* **2005**, *37*, 971.
[2] Clark, J. I.; Garland, D. *J Cell Biol.* **1978**, *76*, 619.
[3] Wilczok, T.; Buszman, E.; Sułkowska, A.; Lubas. B.; *Hoppe Seylers Z. PhysiolChem.* **1979**, *360*, 59.



746

**EFFECTS OF TROXERUTIN ON THE MYOCARDIAL
ISCHEMIA/REPERFUSION INDUCED ARRHYTHMIAS
IN DIABETIC RATS**

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Troxerutin is a trihydroxyethylated derivative of the natural bioflavonoid rutin. Sufficient evidence has shown that it has many biologic effects, such as anti-oxidative, anti-inflammatory, antierythrocytic, anti-fibrinolytic, anti-thrombotic and anti-neoplastic effects. To date, effects of troxerutin on the myocardial ischemia/reperfusion (I/R) injuries in diabetic conditions remain unclear. The aim of this study was to investigate the effects of troxerutin on the cardiac arrhythmias induced by myocardial I/R in diabetic rats. Male Wistar rats (230-300g) were randomly selected, and then diabetes with duration of 10 weeks was induced by single injection of streptozotocin (50mg/kg; ip). The animals were divided into four groups: control, control+ troxerutin, diabetic and diabetic+ troxerutin. Troxerutin (150mg/kg) was orally administered during a month after induction of diabetes in the mentioned groups. The heart of rats were removed and quickly mounted on a Langendorff apparatus, perfused at a constant perfusion pressure of 100 mmHg and at 37 °C by modified Krebs-Henseleit buffer medium gassed with 95% O₂- 5% CO₂ (pH=7.4). The hearts were subjected to 30 min regional ischemia followed by 60 min reperfusion. At the end of the experiment, cardiac arrhythmias were analyzed based on the Lambeth conventions to determine the number of premature ventricular contractions (PVC), ventricular tachycardia (VT), the incidence and duration of VT and ventricular fibrillation (VF) during ischemia and 20 min at the beginning of reperfusion. Troxerutin had considerable effects on the arrhythmias of ischemic phase as caused significant reduction on PVC (P<0.01), VT and VF arrhythmia in diabetic rats. In addition, troxerutin showed a significant reduction on the VF incidence during reperfusion phase in diabetic groups (P<0.01). In conclusion, the present study indicated that troxerutin can decrease the arrhythmias induced by I/R in diabetic rats. Maybe, this flavonoid can be used as a potential therapeutic agent against cardiovascular diseases such as arrhythmias in diabetic conditions.



776

**ISOLATION AND IDENTIFICATION OF THREE PHENOLIC
COMPOUNDS FROM *ALLIUM FISTULOSUM***

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Allium fistulosum (Welsh onion) is a perennial herb that is widely cultivated throughout the world, specially is a very famous vegetable in Asian countries, both the white sheaths and green leaves are eatable [1, 2]. This plant is also a very known vegetable in Iran and beside the food and medicinal uses, it is used routinely as a raw vegetable with the main meals [3]. Phytochemical investigation of *A. fistulosum* leded to the isolation of three main phenolic compounds including two cinnamic acid derivatives and a flavonol glycoside. The chemical structure of the compounds have been elucidated unambiguously by spectroscopic methods, including 1D and 2D NMR and MS. Finally the isolated compounds identified as N-p-coumaroyltyramine (1), (10)-methoxy-N-p-coumaroyl tyramine (2) and isorhamnetin-3-O-galactoside (3), respectively. While the coumpound (1) has previously been reported from *A. fistulosum*, the compounds (2) and (3) described from this plant for the first time.

References

- [1] Ueda, H.; Takeuchi, A.; Wako, T. *Bioscience, biotechnology, and biochemistry*. **2013**, 77, 9, 1809-13.
[2] Jafarian, A.; Sajjadi, S.; Mohammadzadeh, A. *Research in Pharmaceutical Sciences*. **2007**, 1, 2, 59-65
[3] Jazaieri, Gh. *The language of foods*; 2,ed. Sepehr publication; Tehran, 1987; 92-4



789

**PREVENTIVE AND RELIEVING EFFECTS OF *NIGELLA SATIVA* ON
OBSTRUCTIVE RESPIRATORY DISEASES, BASIC AND CLINICAL
EVIDENCES**

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Nigella sativa (*N. sativa*) is one of the most widely used medicinal plants. It has been used as food additive, preservative and herbal remedies for different diseases from ancient time. In traditional medicine (Ayurveda, Unani and Tibb) many astonishing effects like treatment and prevention of many diseases related to the respiratory, gastrointestinal, immune and nervous system had been mentioned for *N. sativa* [1]. Online literature searches were done using different search engine such as Medline, Pubmed, Iran medex, Scopus, and Google Scholar backed to 1960 to identify articles, editorials, and reviews about preventive and relieving effects of *N. sativa* on obstructive respiratory disorders. In recent three decades, numerous researches have been done to approve those folk properties, identifying plant-derived natural substances and understanding their mechanisms of action in the body. Different extracts, fractions and constituents of *N. sativa* showed anti-inflammatory, immunomodulatory and antioxidant effect in animal models of obstructive respiratory disorders associated with lung inflammation, oxidative stress and imbalance of immune system. Clinical studies also indicated preventive effect as well as relieving effect of the plant and its constituents on various obstructive respiratory diseases. There are many basic and clinical evidences of *N. sativa* and its constituents on preventive (anti-inflammatory, antioxidant and immunomodulatory) and relieving (bronchodilatory) effects on obstructive respiratory diseases. Therefore *N. sativa* could be of therapeutic values as both preventive and relieving therapy in obstructive respiratory diseases [2].

References

- [1] Ahmad, A.; Husain, A.; Mujeeb, M.; Khan, S. A.; Najmi, A. K.; Siddique, N. A.; Damanhour, Z. A.; Anwar, F.; Kishore, K. *Asian Pac. J. Trop. Biomed.* **2013**, *3*, 337-352.
- [2] Gholamnezhad, Z.; Keyhanmanesh, R.; Boskabady, M. H. J. *Functional Foods.* **2015**, *17*, 910-927.



969

**THE EVALUATION OF SOIL FERTILITY SYSTEMS ON SAGE
(*SALVIA OFFICINALIS* L.) UNDER DIFFERENT MOISTURE
CONDITIONS**

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Sage is a popular medicinal plant which is widely used in cosmetics and pharmaceutical industries. A two years study was conducted to study the effects of different fertility systems on growth and essential oil production of sage under water deficiency. For this purpose, we used a randomized complete block design arranged in split plots with three replications. Treatments included three irrigation levels (irrigation after depletion of 40% available water, irrigation after depletion of 60% available water, irrigation after depletion of 80% available water) and five different soil fertility systems (control (no fertilizer) (F0), chemical fertilizer (urea) (Ur), nitrogen fixing bacteria (NFB), vermicompost (V) vermicompost + nitrogen fixing bacteria (V+NFB)) will be allocated to main plots and sub plots respectively. Results showed that the highest plant height, canopy diameter, leaf area index, and dry matter yield were obtained at no stress and V+NFB at all three harvest. Also, the maximum essential oil content, essential oil yield and essential oil compounds were obtained at moderate stress and V+NFB at all three harvest. The maximum essential oil content was obtained at second harvest time and the highest essential oil yield, α -thujone, 1, 8- cineol and camphor were obtained at third harvest time. Also, the results showed that the highest content of photosynthetic pigments were observed in treatment of vermicompost + bacteria and in no stress conditions. The maximum of Rosmarinic acid and caffeic contents were obtained in moderate stress. The results showed that the highest sugar and proline contents were observed in vermicompost + bacteria treatment and severe stress. Overall, organic fertilizers could partially improve the harmful effects of water deficit stress on sage plant. Overall, application of vermicompost and inoculating the plant with PGPR resulted in the highest qualitative and quantitative yields of sage as these treatments favored different soil characteristics and help in establishing a sustainable agricultural system.



970

**USE OF NEW DRUG DELIVERY SYSTEMS FOR INCREASING THE
BIOAVAILABILITY OF HERBAL ACTIVE INGREDIENTS WITH
EMPHASIS ON THE FORMULATION OF CURCUMIN
NANOPARTICLE**

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Recently, there is an increase use of herbal medicines because of more healing and less adverse effects compared with conventional medicines. However, many herbal preparations and extracts while exhibit impressive effects in in-vitro conditions, they present less or minimal effects in in-vivo practices. This is as a result of low fat solubility, improper molecular size, weak absorption and ultimately low bioavailability. By recent advances in the technologies of drug delivery systems, new prospects have been built toward increasing the bioavailability of herbal active ingredients. These technologies include: Liposomes, microspheres, nanoparticles, autosomes, etc. These technologies can be implemented and evaluated on some herbal active ingredients, such as: sinomenine, naringin, genistein, quercetin, glycyrrhizin, piperine and Curcumin. Curcumin is a photochromic pigment which is extracted from the rhizomes of perennial Turmeric plant (*Curcuma longa*), and has numerous pharmacologic activities. As an antioxidant, it inhibits oxidative processes. In addition, it exhibits anti-inflammatory, anti-cancer, anti-viral and anti-bacterial activities. Its several pharmacologic activities bring it into the center of attentions in research programs [1, 2].

References

- [1] Anand, P.; Kunnumakkara, A. B.; Newman, R. A, *Molecular Pharmaceutics*, **2007**, *4*: 807-818.
[2] Basnet, P.; Skalko-Basnet, N, *Molecules*, **2011**, *16*: 4567-4598



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18, 19 May 2016
Isfahan- Iran



971

**FOR A NEW STRATEGY OF MEDICINAL PLANTS PRODUCTION IN
ACCORDANCE WITH AGROECOLOGICAL PRINCIPLES**

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In the past decades, farming based on profit rules has destabilized the sustainable systems of the planet with an industrial productivism ideology, ignoring its ecosystem and its environmental resources capacities. Consequently soil is polluted, the erosion accentuated, biodiversity affected and the more important: the menace of water scarcity increased. Agroecology as a suitable agriculture, compatible with ecological principles is one of the options which can reduce the devastating effects of this situation. Concerning ecological crisis, particularly water crisis in our country, there is now an urgent need to define new strategies for developmental programs of medicinal plants, in accordance with the basic principles of agroecology. Zardband Pharmaceuticals Company, as a pioneer in this matter, try to produce medicinal plants in respect of these principles. Its practical field experience could be used to improve this new strategy.



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972

**SCIENTIFIC BASES OF MODERN HERBAL MEDICINE
MANUFACTURING**

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Herbal medicine is applicable in two fields of traditional and modern herbal medicine. What are addressed in this article and lecture is scientific bases of modern herbal medicine manufacturing; in which the basic principles of making medicines from raw materials, extracted from the herbal medicine and controlling methods discussed. As well as to its compatibility with international standards and comparing it with synthetic medicines will be discussed. Therefore at the end of the discussion for the audience a realistic view is reached from modern herbal medicine [1- 3].

References:

- [1] Trease and Evans' Pharmacognosy 16th edition
- [2] Aulton's Pharmaceutics **2013**
- [3] PDR **2010**



**INTRODUCTION AND CLASSIFICATION OF SUPER FOODS:
EMPHASIZING ON CHLORELLA AS A POTENTIAL
SOURCE OF FOOD AND ENERGY**

D.A.Matin

In view of introducing some of super foods: oral medications for the future of humanity: three groups of food that is divided by research centers of Europe, America and Japan are as follows:

1. Live foods and eating raw food (vegetarian).
2. Super foods each one alone has at least more or less ten common nutritional and medicinal properties such as complete protein, Polysaccharide, cleaners and liver poisoned more than 20 nutrients.
3. The group of foods is quite distinctive and healing such as fungus, Algae and Microscopic Algae are Phytoplankton's.

Research has proven that Hall super foods simultaneously are food and medicine, which are opponents for the toughest conditions. The features of super food are taste, stability of satiety for a long time and effective absorption material till 90% of the food whenever the person is aging or ill. A very little amount of food eaten is excreted because the high percentage of it is involved in cell metabolism so they are cells and organs active and enjoyable food. 1000 types of vitamins, mineral, amino acid, sugars short chain of polysaccharide, fat, enzyme, coenzyme, antioxidants has identified. The super foods are included nutrient density lacking hormones, harmful chemicals, toxic metals such as Mercury, Lead, Cadmium, uranium, etc. Super food due to eating live are not cooked like other common foods because the perfect nutritional and pharmaceutical value is in eating raw food. Super foods are cultivating easier. By eating them the key of psychological emotions and stresses will decreased within two or three weeks. Most of the time don't replace free radicals in cell metabolism. Super foods are not stuffed so they are not fattening. Japan research center told Japanese who were suffered from atomic radiation sickness: by eating 8 grams of this plant each day can toxin what is in the urine or stool. Chlorella as one the potential source of food and energy or as a super foods will be presented here.



5th National Congress on Medicinal Plants
18, 19 May 2016
Isfahan- Iran



968

**EVIDENCE BASED HERBAL DRUG EFFECTS ON PSYCHONEURO
DISORDERS AND ERECTILE DYSFUNCTIONS**

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In the evaluation of the evidence based effects of herbal drugs on the psychoneuro disorders, sleeplessness, insomnia, anxiety, Alzheimer, multiple sclerosis and erectile dysfunction will be discussed. It has been proved that chamomile, and *Melissa officinalis* are helpful for insomnia, *passiflora incarnatus* and lavender has a similar effect. Studies suggest that valerian is by far the best natural solution for insomnia for most people. No one knows what causes Alzheimer's disease however, turmeric and its constituent's curcumin in the prevention and treatment of Alzheimer is effective. It has antioxidant, anti-inflammatory effect and thus improves brain functions in the patient. It also prevents the formation and precipitation of beta amyloid a harmful protein in the brain which is a cause for Alzheimer disease. Extracts of *Boswellia serrata* has been clinically studied for multiple sclerosis. It may the help slow the progression of this disease. *Ginkgo biloba* extract also is useful in the age associated memory impairment, dementia and Alzheimer. *Panax ginseng* counteracts physical and mental fatigue. *Hypericum* is comparable to tricyclic antidepressants and fluoxetine in mild to moderate depression. Herbal products contain the extract of *tribulus terrestris* is effective in the treatment of impotence and sexual desire disorder.



5th National Congress on Medicinal Plants
18, 19 May 2016
Isfahan- Iran



969

**DOMESTICATION OF NATIVE AND ENDEMIC ELITE MEDICINAL
PLANTS, AN INEVITABLE NECESSITY**

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There are 8000 plant species in Iran, about 2300 of them have medicinal, aromatic, flavoring or hygienic-cosmetic properties. 1728 of Iranian plant species are endemic, means there are growing in Iran, exclusively and there are supposed as an exclusive capacity in the country. Nowadays, the most important medicinal plants that are cultivated in Iran are saffron, cumin, Rose, Henna, Coriander, indigo and borage. Other cultivated medicinal plants have less than 1000 hectares surface. Iran's share of the world market of medicinal plants (including saffron) up to 400 million dollars in 2014. While, the volume of world trade in medicinal plants increased from \$ 60 billion in 1996 to \$ 100 billion in 2010 and according to the forecast of the World Bank and World Trade turnover in 2050 based on medicinal plants and herbal medicines to some 5,000 billion dollars. On the other hand, some of native and endemic medicinal plants of Iran with more amount and quality of active ingredient, have ability to compete with similar products in the world. For example in Iran, Satureja genus consists of 16 species, 11 of them are endemic. Pimpinella genus have 20 species, 6 of them are endemic, Nepeta genus consists of 67 species, most of them are endemic, Anthemis genus have 39 species, 15 of them are endemic. Some of these endemic species in all mentioned genus contains more percentage and quality of essential oil rather than commercial species of that cultivated in many countries. While none of these endemic species, are not widely cultivated in the country now. Research for the domestication of these elite species is one of the priorities of Iran's. In this lecture, Comparative advantages of some endemic species of Thymus and Satureja with Thymus vulgaris and Satureja hortensis as well as Research findings for domestication of them and introduction of proper species or populations for each ecological regions of Iran will be presented.



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NEW MEDICINAL PLANTS

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Two definitions can be produced for new plants. The first, the plant that crosses historical filter. In the other hand, the plant that can be seen in one area/zone/country for the first time. The second, introducing new proper utilization for one old plant. We have numerous new plants in our country, according to both definitions. *Momordica carantia*, *Guizotia abyssinica* are new medicinal plants for our flora, *Thymus daenensis*, *Satureja Khozestanica*(wild plants) have been produced for fields of central region of Iran. Rilsan is new valuable compounds that are made from castor oil. All of the mentioned plants(karela, Niger seed, castor, savory, thyme) are examples of new plants. In this manuscript, according to our research results, we describe some medicinal, morphological and agronomical traits of certain new medicinal plants.

References

- [1] S. Davazdahemami, F. Sefidcon, M. Rezaei and M. Naderi. *International Journal of Biosciences*. **2014**, 7, 47-50.
- [2] Safaii, L. E. Sharifi Ashoorabadi, S. Davazdahemami, D. Afiuni. *International Journal of Agriculture and Crop Sciences*, **2014**, 7(13). 1346 -1351.



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IRAN HEALTH SYSTEM REFORM AND HERBAL MEDICINE

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Nowadays Iran health system experiences huge reforms. Health is in transition due to changes in the pattern and burden of diseases. In order to achieve the goals of health system reform, an effective health agenda must ensure that Iranian health system is complemented with herbal medicine. Iran government is committed to ensuring the integration of traditional medicine into health care systems. One of the well establish of traditional medicine is herbal medicine. It has been reported that sufferers of many diseases are turning to herbal remedies especially for non-communicable diseases treatment. Herbal remedies are readily available and accessible for many patients in rural and urban area. Herbal medicines are as old as Iranian history and it can play a significant role in health system reform. The Ministry of Health and Medical Education of Iran policy should is considered herbal medicine capacity for improvement of health in health transformation plan.



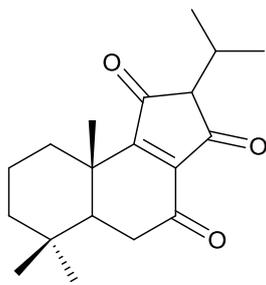
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NEW BIOACTIVE SCAFFOLDS FROM IRANIAN ENDEMIC SPECIES

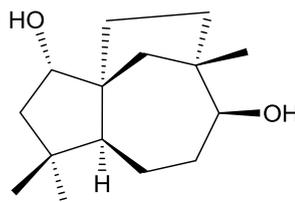
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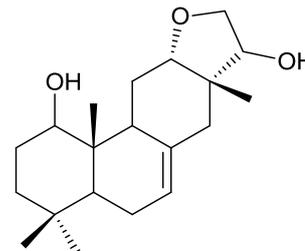
Natural products research continues to explore a variety of lead structures, which may be used as templates for the development of new drugs by the pharmaceutical industry [1]. These substances, representative of very wide chemical diversity, continue to demonstrate the importance of compounds from natural sources in modern drug discovery efforts [2]. Nowadays, one of the strategies for drug discovery is extraction and identification of chemical constituents of the plants and assessment of their bioactivities through cellular or animal studies. Our recent studies, aimed at identifying structurally interesting and bioactive metabolites from the Iranian endemic species, resulted in the isolation of several new compounds; some of them possess unusual and unique structures (**1-3**). The structures were elucidated by a combination of 1D and 2D NMR, HRESIMS, and X-ray crystallographic analyses. Plausible biosynthetic pathways toward these new skeletons were proposed. Biological properties of the new compounds were also investigated. Some of these compounds showed good *in vitro* antiplasmodial and anticancer activities at submicromolar concentrations.



1



2



3

References

- [1] Newman, D.J., Cragg, G.M. *Journal of Natural Products*, **2012**, 75, 311–335
- [2] Lahlou, M. *Pharmacology & Pharmacy*, **2013**, 4, 17-31



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18, 19 May 2016
Isfahan- Iran



967

ENDEMIC MEDICINAL PLANTS IN IRAN

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During a careful research on the complete list of Iranian medicinal plant species which are listed by Mozaffarian (2013) includes spontaneous and exotic plants have taken from Flora Iranica (Rechinger K.H. 1968-2015) and others Floras and books, that contains Iranian medicinal plants names. Out of an estimated 8000 higher plants including Ca. 2000 endemic plant species comprising medicinal and aromatic species of spontaneous and exotic plants containing medicinal trees and shrubs, annual and perennial herbs and some introduced medicinal and nutrition plants as food, spices and flavoring. About 850 well know medicinal plants in Iran adopted from well known references. Out of them 400-450 species are common medicinal plants, which are used in traditional herbal medicine non of them or very rarely are endemic, because from very early time most common and accessible plants are used by herbal medicine practitioner for being much more easier and acceptable for user. Therefore between common medicinal plant very rarely we can find endemic plants. Though with a sightseeing to totally checklist of medicinal and aromatic plants in Iran we can find many species which are endemic, but rarely used as medicinal plants. Most endemic aromatic plants are belong to large botanical families like Compositae, Labiatae and Umbelliferae and are included in the below genera [1, 2].

Achillea 7 species	Stachys 11 species
Anthemis 13 species	Teucrium 2 species
Tanacetum 12 species	Thymus 2 species
Cyclotrichium 3 species	Zhumeria 1 species
Dracocephalum 3 species	Haplophyllum 13 species
Eremostachys 5 species	Ferula 15 species
Hymenocrater 4 species	Pimpinella 7 species
Lagochillus 4 species	Azilia 1 species
Marrubium 1 species	Ducrosia 1 species
Mentha 1 species	Echinophora 1 species
Micromeria 1 species	Johrenia 1 species
Nepeta 33 species	Johreniopsis 3 species
Salvia 13 species	Malabaila 3 species
Satureja 6 species	Pycnocycla 4 species
Scutellaria 7 species	

Based on Geobotanical researches most of Iran belongs to the Holarctic kingdom and coastal areas of the Persian Gulf and Oman Sea belong to Paleotropical kingdom and this two kingdom comprises Euro – Siberian, Irano – Turanian and Saharo – Sindian or Nubo-Sindian regions and comprises 5 provinces and 8 subprovinces. Which about 160 wild and cultivable medicinal plants grow in Hyrcania province, 170 species in Azarbaijani subprovince, 208 in Alborzian and 144 in North khorasanian subprovince, 155 species in Kurdo-Zagrosian, 120 species in Central –Iranian and 115 in South Iranian provinces. Which non of them are Endemic medicinal plants.

References

- [1] Mozaffarian V, Identification of Medicinal and Aromatic plants of Iran, 2013.
[2] Rechinger K.H. 1968-2015: Flora Iranica, No. 1-180, 1960-2015.