

## *Curriculum Vitae*

### **Foroogh Mirzania**

#### **CONTACT INFORMATION AND BIOGRAPHICAL DATA**

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**First Name:** Foroogh

**Last Name:** Mirzania

**Nationality:** Iranian

**Date of Birth:** March 17th, 1987

**Place of Birth:** -

**Language:** Persian, English

**Address:** Department of Department of  
Pharmacognosy, Faculty of Pharmacy,  
Lorestan University of Medical Sciences,  
Khorramabad, Lorestan Province, Iran.

**E-mail:** [mirzania.f@lums.ac.ir](mailto:mirzania.f@lums.ac.ir)

**Tel:** +989179525296

#### **EDUCATIONAL BACKGROUND**

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- **Postdoc in Phychemistry** **2020**  
Shahid Beheshti University, Tehran, Iran.

#### **TEACHING EXPERIENCES AS TA**

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- **Pharmacognosy II**
- **Pharmacognosy I**
- **Medicinal plants**
- **Specialized language of pharmacy field**
- **Organic Chemistry I**
- **Organic Chemistry II**
- **Organic Chemistry III**
- **Application of Spectroscopy in Organic Chemistry**

## **REVIEWER OF JOURNALS**

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- **Journal of Essential Oil Bearing Plants**
- **Journal of Essential Oil Research**
- **Natural Product Research**
- **Herbal Medicines Journal**
- **Mini Reviews in Medicinal Chemistry**

## **SPECIALIZATION**

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- **Advanced spectroscopic methods for analyses of natural products (1D & 2D-NMR, HRMS)**
- **Column Chromatography ( Sephadex- C<sub>18</sub>- Silica gel)**
- **2D-NMR Spectroscopy(COSY-HMQC-HMBC-APT-HSQC-DEPT-NOESY)**
- **Extraction, separation, isolation and structure elucidation of natural products**
- **Determination of plants extracts biological activity and bioassay guide fractionation of them**
- **Secondary metabolites and chemistry of natural compounds**
- **Essential oil analysis**
- **Isolation of compounds with the HPLC**
- **Antioxidant (DPPH-ABTS-FRAP), antimicrobial ( antibacterial and antifungal) activity of plant extracts and essential oils and pure compounds**
- **Total analysis of phenols and flavonoids**

## **LABORATORY RESEARCH SKILLS**

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- **Analytical- HPLC**
- **Prep- HPLC (Preparative High Performance Liquid Chromatography)**
- **GC-MS (Gas Chromatography- Mass Spectrometry)**
- **GC-FID (Gas chromatography- Flame Ionization Detector)**
- **FTIR (Fourier Transform Infrared Spectroscopy)**
- **UV-vis Spectrophotometer**
- **Column chromatography, Thin Layer Chromatography, Preparative Thin Layer Chromatography, Flash Chromatography**
- **Powerwave Microplate Spectrophotometer**

**PUBLICATIONS AND PRESENTED PAPERS AND ABSTRACT IN NATIONAL AND INTERNATIONAL CONFERENCES**

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<b>NO</b>	<b>Title</b>	<b>Journal and Year</b>	<b>Authors</b>	<b>ISI</b>	<b>National</b>	<b>Internati onal</b>
1	Manoyloxide sesterterpenoids from <i>Salvia mirzayanii</i>	Journal of Natural Products. (2014)	S N Ebrahimi, M M Farimani, F Mirzania, M A Soltanipoor, M D Mieri, M Hamburger	*		
2	Chemotaxonomic importance of the essential oil composition in two subspecies of <i>Tucrium stocksianum</i> from iran.	Chemistry & Biodiversity (2013)	A.Sonboli, M. B. Bahadori, L. Arabi, ..., F. Mirzania	*		
3	Composition and antibacterial activity of the essential oil of <i>Flomidoschema parviflorum</i> from Iran	Chemistry of Natural Compounds (2015)	A.Sonboli, F. Mirzania, A. Aliahmadi, M.S.Amiri	*		
4	Chemical Composition and Antibacterial Activity of <i>Dracocephalum kotschyi</i> Essential Oil Obtained by Microwave Extraction and Hydrodistillation	International Journal of Food Properties (2017)	M. M. Farimani, F. Mirzania, A. Sonboli, F. M. Moghaddam	*		
5	Antioxidant activity, total flavonoid and phenolic contents of three different extracts of Hyrcanian Reishi	Current Bioactive Compounds (2017)	S. Keypour, F. Mirzania, M.M. Farimani	*		
6	Comparison of Chemical Composition, Antifungal and Antibacterial Activities of Two Populations of <i>Salvia macilenta</i> Boiss. Essential Oil	Records of Natural Product (2018)	F. Mirzania , M.M. Farimani ,Y. Sarrafi	*		
7	Essential oil composition of <i>Dracocephalum kotschyi</i> Boiss. from Iran	Natural Product Research (2018)	A. Sonboli, F. Mirzania, A. Gholipour	*		
8	Biochemical evaluation of antioxidant activity, phenol and flavonoid contents of <i>Dracocephalum kotschyi</i> Boiss. extracts obtain with different solvents	Health Biotechnology and Biopharma (2018)	F. Mirzania, M.M. Farimani			
9	Comparative Evaluation of Chemical Compositions and	Journal of Agricultural Science and	F. Mirzania, Y. Sarrafi, M. Moridi	*		

	Biological Activities of Wild and Cultivated <i>Froriepia subpinnata</i> Essential Oils	Technology (2019)	Farimani			
10	Chemical diversity of essential oil composition from five populations of <i>Dracocephalum kotschyi</i> Boiss	Health Biotechnology and Biopharma (2021)	F. Mirzania, A. Sonboli	*		
11	New Sesterterpenoids from <i>Salvia mirzayanii</i> Rech.f. & Esfand. Stereochemical Characterization by Computational Electronic .Circular Dichroism	Frontiers in Chemistry (2022)	Foroogh Mirzania, Mahdi Moridi Farimani, Yaghoob Sarrafi, Samad Nejad Ebrahimi, Jakob Troppmair, Marcel Kwiatkowski, Hermann Stuppner, *Mostafa Alilou	*		
12	A Review of Traditional Uses, Phytochemistry, and Pharmacology of <i>Salvia chloroleuca</i> Rech. f. & Aellen	Current Traditional Medicine (2022)	Iraj Salimikia, Foroogh Mirzania *	*		
13	Evaluation of Antioxidant, Mutagenicity and Anti-mutagenicity Potential of <i>Astragalus gossypinus</i> Fisch. Extracts	Current Bioactive Compounds (2022)	Javad Ghasemian-Yadegari, Javad Khalili Fard Ardali, ..., Foroogh Mirzania*	*		
14	New sesterterpenoids from <i>Salvia mirzayanii</i> stereochemical characterization by computational electronic Circular Dichroism	Swiss Chemical Society fall meeting Lausanne, Swiss 6 Sep (2013)	S N Ebrahimi, M M Farimani, F Mirzania, M Hamburger			*
15	New sesterterpenoid from <i>Salvia mirzayanii</i> stereochemical characterization by computational electronic Circular Dichroism.	61 <sup>st</sup> International congress and annual meeting of the society for medicinal plants and natural product research (GA) , Germany 1- 5 Sep (2013)	S. N Ebrahimi, M. M Farimani, F. Mirzania, M. Hamburger			*
16	Novel Sesterterpenoids with an Unprecedented Structure from <i>Salvia mirzayanii</i> Rech.f. & Esfand.	5th International Symposium on Phytochemicals in Medicine and Food (5-ISPMPF), 25August -1 September 2021 Nanchang- China	Foroogh Mirzania, Yaghoob Sarrafi, Mostafa Alilou, Samad Nejad Ebrahimi, Mahdi Moridi Farimani			*
17	Isolation and Structural Elucidation of New Sesterterpenoids from <i>Salvia lachnocalyx</i> Hedge	5th International Symposium on Phytochemicals in Medicine and Food (5-	Foroogh Mirzania, Yaghoob Sarrafi, Mostafa Alilou, Iraj Salimikia, Mahdi			*

		ISPMF), 25 August -1 September 2021 Nanchang- China	Moridi Farimani			
18	Identification of Bicyclic nor-Sesquiterpenes from Acetone Extract of <i>Teucrium stocksianum</i> Boiss.	5th International Symposium on Phytochemicals in Medicine and Food (5- ISPMF), 25 August -1 September 2021 Nanchang- China	Foroogh Mirzania, Yaghoub Sarrafi, Mostafa Alilou, Mahdi Moridi Farimani			*
19	Antioxidant and Anti-mutagenicity of <i>Astragalus gossypinus</i> Fisch. Extracts	5th International Symposium on Phytochemicals in Medicine and Food (5- ISPMF), 25 August -1 September 2021 Nanchang- China	Javad Ghasemian-Yadegari, Javad Khalili Fard Ardali, Marzieh Rashidipour, Hamze Nouraie, Sepideh Jamshidi Sikevandi, Mohammad Taghavi Rad, Foroogh Mirzania			*
20	Participate in the Seminar	2nd Seminar Series on Tropical Plant Biotechnology Organized by Tropical Medicinal Plants Research Group Universitas Airlangga 10 <sup>th</sup> July 2021- Surabaya- Indonesia				
21	A new sesterterpenoid from <i>Salvia mirzayanii</i> .	National congress of medicinal plants, Kish Island 16, 17 May(2012)	M. M Farimani, F.Mirzania, S.N Ebrahimi, M.A.Soltanipoor		*	
22	A novel sesterterpenoid with an unprecedented structure from <i>salvia mirzayanii</i> .	19 <sup>th</sup> Iranian seminar on organic chemistry vali e Asr university of Rafsanjan 5, 7 Sep (2012)	M. M Farimani, F.Mirzania, S.N Ebrahimi, M.A.Soltanipoor		*	
23	Composition of different extraction methods in the extraction of essential oils from <i>Dracocephalum kotschyi</i> .	2 <sup>nd</sup> National Congress on medicinal plants, Shahid Beheshti University 15, 16 May (2013)	F.Mirzania, M. M Farimani, A.Sonboli		*	

24	Antioxidant properties of chloroform, methanol and water extract of Hyrcanian <i>Ganoderma lucidum</i> karst.	2 <sup>nd</sup> National Congress on medicinal plants, Shahid Beheshti University 15, 16 May (2013)	S. Keypoor, M. M Farimani, F.Mirzania		*	
25	Composition and antibacterial activity of the essential oil of <i>Flomidoschema parviflorum</i> from Iran.	2 <sup>nd</sup> National Congress on medicinal plants, Shahid Beheshti University 15, 16 May (2013)	A.Sonboli, F. Mirzania, A. Aliahmadi, M.S.Amiri		*	
26	Two new eudesmane sesquiterpenes from <i>Salvia mirzayanii</i>	3 <sup>rd</sup> National Congress on Medicinal Plants May 2014 14 ,15 Mashhad- Iran	F Mirzania, M M Farimani, Y Sarrafi, M A Soltanipoor		*	
27	Purification and identification of two new sesterterpenes from acetone extract of <i>Salvia mirzayanii</i>	The 22 <sup>nd</sup> Iranian Seminar of Organic Chemistry 19-21 August 2014 Faculty of Chemistry, University of Tabriz, Tabriz, Iran	Foroogh Mirzania , Mahdi Moridi Farimani ,Yaghoub Sarrafi		*	
28	Antioxidant properties of hexane, acetone and methanol extracts of <i>Salvia mirzayanii</i>	The 22 <sup>nd</sup> Iranian Seminar of Organic Chemistry 19-21 August 2014 Faculty of Chemistry, University of Tabriz, Tabriz, Iran	Foroogh Mirzania , Mahdi Moridi Farimani ,Yaghoub Sarrafi		*	
29	Essential oil composition of <i>drac ocephalum oligadenium</i> from iran	4 <sup>nd</sup> National Congress on medicinal plants, Shahid Beheshti University 15, 16 May 2015	A.Sonboli, F. Mirzania, M. M Ashenaabad		*	
30	Comparison of total phenol and flavonoid contents in hexane, acetone and methanol extracts of <i>Salvia mirzayanii</i> .Rech. & Esfand	18 <sup>th</sup> Iranian Chemistry Congress, Semnan University,30 August-1September, 2015	F. Mirzania, Y. Sarrafi		*	

31	Comparison of antibacterial activity of <i>Dracocephalum kotschyi</i> Boiss. essential oils with different extraction methods	The 23 <sup>rd</sup> Iranian Seminar of Organic Chemistry, University of Kurdistan, Sanandaj, Iran, 8-18 September, 2015	F. Mirzania , M.M. Farimani ,Y. Sarrafi		*	
32	Total phenol and flavonoid contents in different extracts of <i>Dracocephalum kotschyi</i> Boiss. from Iran	The 23 <sup>rd</sup> Iranian Seminar of Organic Chemistry, University of Kurdistan, Sanandaj, Iran, 8-18 September, 2015	F. Mirzania, Y. Sarrafi		*	
33	Comparison of chemical composition of essential oil of <i>Eryngium caucasicum</i> wild and .cultivated plants	1 <sup>st</sup> Iranian Medical Chemistry Seminar, Kermanshah University, 17,18 February 2016	Y. Sarrafi , F. Mirzania		*	
34	Investigation and comparison of essential oil components of two populations of <i>Froriepia subpinnata</i> (Ledeb.) Baill. From Iran	1 <sup>st</sup> Iranian Medical Chemistry Seminar, Kermanshah University, 17,18 February 2016	F. Mirzania, Y. Sarrafi , M.M. Farimani		*	
35	Comparison of <i>Froriepia subpinnata</i> (Ledeb.) Baill. essential oil components in wild and field population	5 <sup>th</sup> National Congress on Medicinal Plant 18,19 May 2016 Isfahan- Iran	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
36	Composition of essential oil components of <i>Salvia macilenta</i> Boiss. from Iran, population Kerman and Baluchistan	5 <sup>th</sup> National Congress on Medicinal Plant 18,19 May 2016 Isfahan- Iran	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
37	Comparison of Essential oil Composition in Wild and Cultivated Populations of <i>Mentha aquatica</i> L. from Iran	The 24 <sup>nd</sup> Iranian Seminar of Organic Chemistry 24-26 Aug. 2016 Azarbaijan Shahid Madani University	F. Mirzania, Y. Sarrafi, M. M. Farimani, M. Kamangar		*	
38	Extraction and Identification of Two Secondary Metabolites from <i>Teucrium stocksianum</i> Boiss.	The 24 <sup>nd</sup> Iranian Seminar of Organic Chemistry 24-26 Aug. 2016 Azarbaijan Shahid Madani University	F. Mirzania, Y.Sarrafi, M. M. Farimani		*	

39	Isolation and Structure Elucidation of Two Secondary Metabolites from <i>Salvia lachnocalyx</i> Hedge.	19 <sup>th</sup> Iranian Chemistry Congress, 20-23 February. 2017 Shiraz University	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
40	Two phenolic constituents isolated from <i>Teucrium stocksianum</i> Boiss.	6 <sup>th</sup> National Congress on Medicinal Plant 9,10 May 2017 Tehran- Iran	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
41	Isolation and structural elucidation of two secondary metabolites from <i>Teucrium stocksianum</i> Boiss.	The 25th Iranian Seminar of Organic Chemistry September 2-4, 2017, Iran University of Science and Technology, Tehran, Iran	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
42	Evaluation and comparison of antifungal and antibacterial activity of <i>Eryngium caucasicum</i> trauve. essential oils.	The 25th Iranian Seminar of Organic Chemistry September 2-4, 2017, Iran University of Science and Technology, Tehran, Iran	F. Mirzania, Y. Sarrafi		*	
43	Extraction and identification of two terpenoids from hexane extract of <i>Salvia mirzayanii</i> .	8 <sup>th</sup> National Seminar of Chemistry and Environment, September 6-7, 2017, Kharazmi University, Tehran, Iran	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
44	Purification and structural elucidation of two secondary metabolites from <i>Teucrium stocksianum</i> Boiss.	8 <sup>th</sup> National Seminar of Chemistry and Environment, September 6-7, 2017, Kharazmi University, Tehran, Iran	F. Mirzania, Y. Sarrafi, M. M. Farimani		*	
45	Extraction and Identification of four flavonoids from acetone extract of <i>Salvia sharifii</i> Rech. f. .& Esfand	7 <sup>th</sup> National Congress on Medicinal Plant 10,12 May 2018 Shiraz- Iran	Foroogh Mirzania, Yaghoub Sarrafi, Mahdi Moridi Farimani		*	



46	Isolation and Characterization of a Secondary Metabolite from Acetone Extract of <i>Salvia mirzayanii</i> Rech. f. and Esfand.	7 <sup>th</sup> National Congress on Medicinal Plant 10,12 May 2018 Shiraz- Iran	Foroogh Mirzania, Yaghoub Sarrafi, Mahdi Moridi Farimani		*	
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## SUBMITTED PAPERS

- Variation of Eryngo (*Eryngium caucasicum* Trautv) Oil Content and Biological Activity in Wild and Cultivated Conditions
- Isolation, Structural Elucidation and Absolute Configuration of New Sesterterpenoids from *Salvia lachnocalyx* Hedge.
- Two novel sesterterpenoid with an unprecedented structure and one norsesterterpene from *Salvia mirzayanii* Rech.f. & Esfand.
- Evaluation of Antioxidant, Mutagenicity and Anti-mutagenicity Potential of *Astragalus gossypinus* Fisch. Extracts
- New Sesterterpenoids from *Salvia mirzayanii* Rech.f. & Esfand. Stereochemical Characterization by Computational Electronic Circular Dichroism.
- Antileishmanial Activity of Natural Diterpenoids: A Comprehensive Review. *Salvia chloroleuca* Rech. f. & Aellen: Chemical and pharmacological review of a medicinal plant.
- Isolation, Structure Elucidation, and Absolute Configuration of Two New Eudesmane Sesquiterpenes from *Salvia mirzayanii* Rech.f. & Esfand.
- New Benzofurans from *Petasites hybridus* Rhizomes and Absolute Configuration by Circular Dichroism.

## RESEARCH PROJECTS

Topic	Funding Organization	Start Date (YY/MM/DD)	End Date (YY/MM/DD)
New anti-AD Drug Candidates: Research and Discovery from Combined Iranian and Chinese Medicinal Herbs	Iran National Science Foundation Science deputy of Presidency	2019/08/21	present
Phytochemical investigation of <i>Salvia Sharifii</i> Rech. f. and <i>Esfand Salvia mirzayanii</i> Rech. f. & Esfand <i>Teucrium stocksianum</i> ,	Iran National Science Foundation Science deputy of Presidency	2019/05/22	present

Antimicrobial and antioxidant activities and chemical composition of <i>Dracocephalum kotschyi</i> essential oil obtained by microwave extraction: Comparison with hydrodistillation & Antimicrobial and antioxidant activities of various extracts of the plant	Shahid Beheshti University, Research and Technology Council	2010/01/01	2012/12/30
Comparison of chemical composition and antimicrobial activities of essential oil of <i>Eryngium caucasicum</i> wild and cultivated plants	University of Mazandaran	2016/06/04	2017/03/1
Isolation and structural elucidation of terpenoids of <i>Salvia lachnocalyx</i>	Lorestan University of Medical Sciences	2020/02/22	present

### **PROJECTS WHICH IS COMPLETED AND THE PAPERS ARE BEING SUBMITTED**

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- Extraction and identification of some secondary metabolites from *Teucrium stocksianum* Boiss.
- Extraction and identification of some secondary metabolites from acetone extract of *Salvia sharifii*.
- Investigation of antioxidant activity, phenol and flavonoid contents of *Salvia mirzayanii* aerial parts extracts.
- Comparison of essential oil composition in wild and cultivated populations of *Mentha aquatica* L. from Iran.
- Phytochemical investigation of *Stachys inflata*.
- Terpenoids with toxoplasmosis activity.

### **BOOK**

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- Natural Products Chemistry at a Glance

### **THEORETICAL COURSES WERE PASSED IN M.SC AND PHD**

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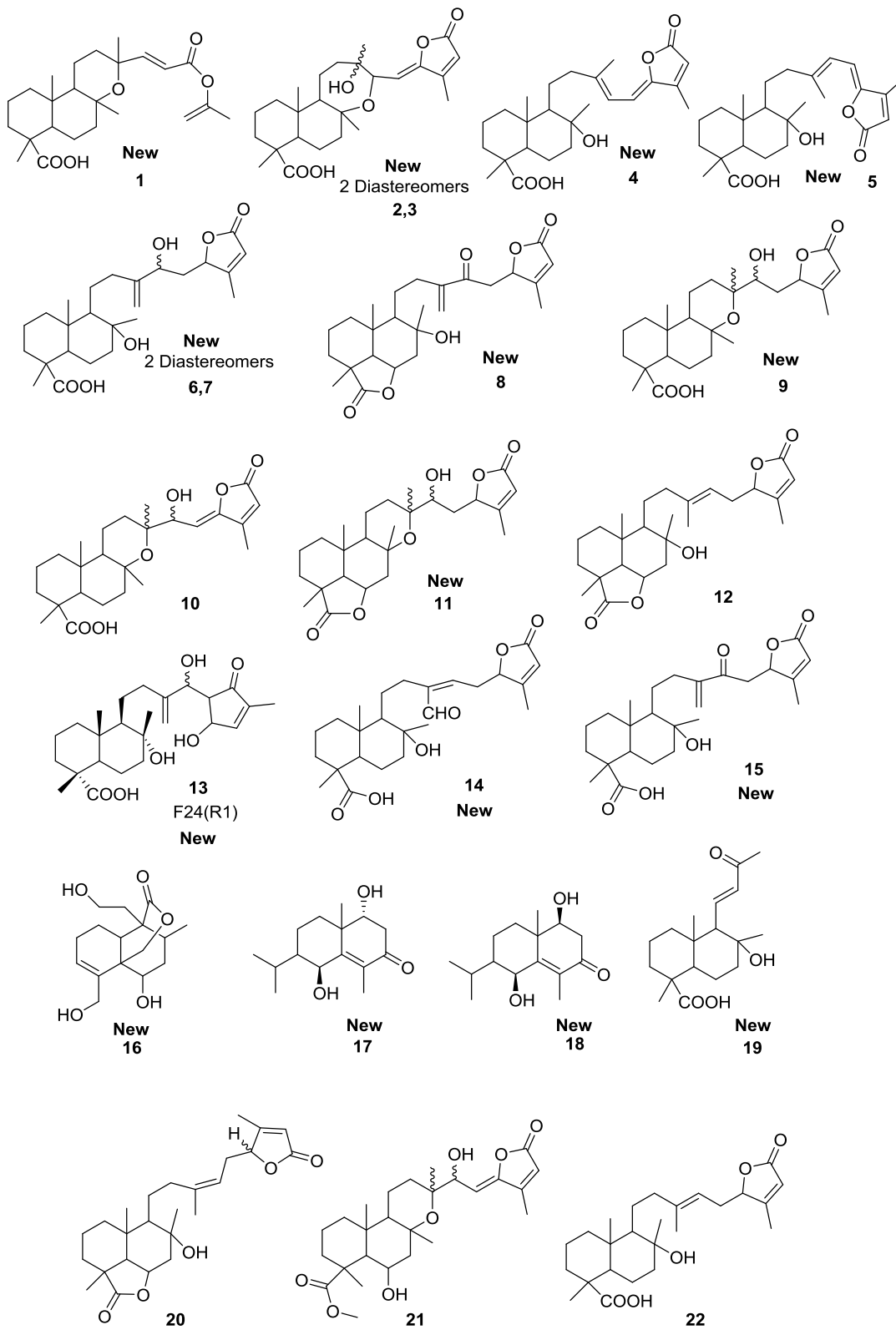
Advanced Methods in Separation and Purification of Natural Products, Advance in NMR Spectrometry, Application of Instrumental Techniques for the Separation and Identification of Natural Products , Chemistry of Natural Products, Separation and Identification of Natural

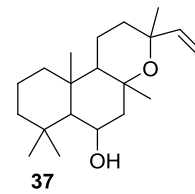
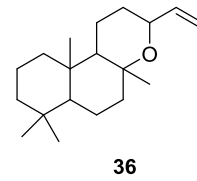
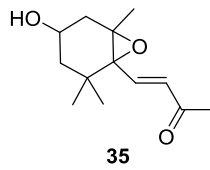
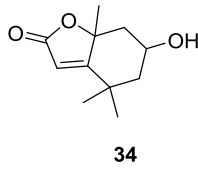
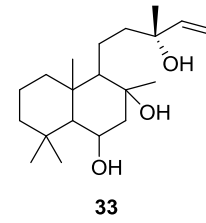
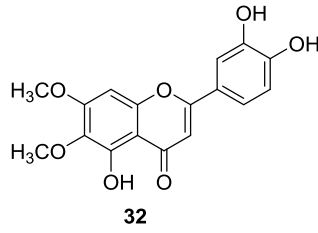
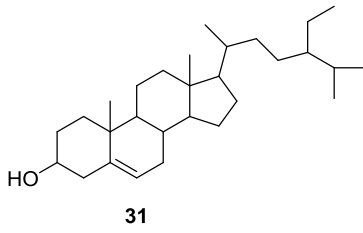
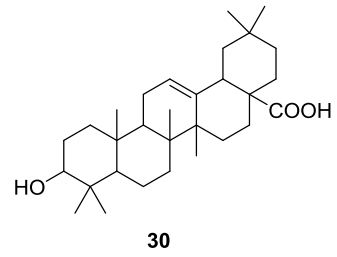
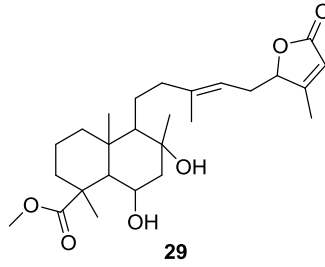
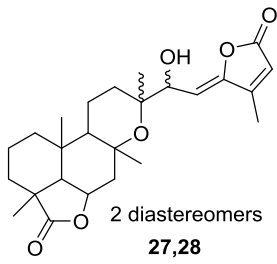
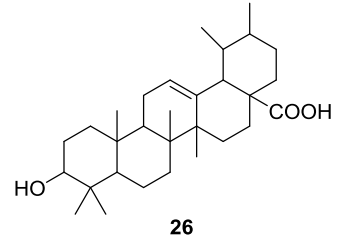
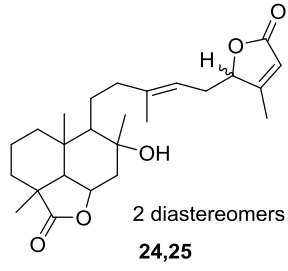
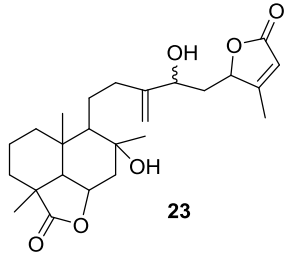
Products, Stereochemistry (CD), Plant Physiology, New Developments in Natural Products, Biochemistry, Medicinal Chemistry, Biochemistry, Advance Organic Chemistry, Advance Analytical Chemistry, Advanced Synthesis.

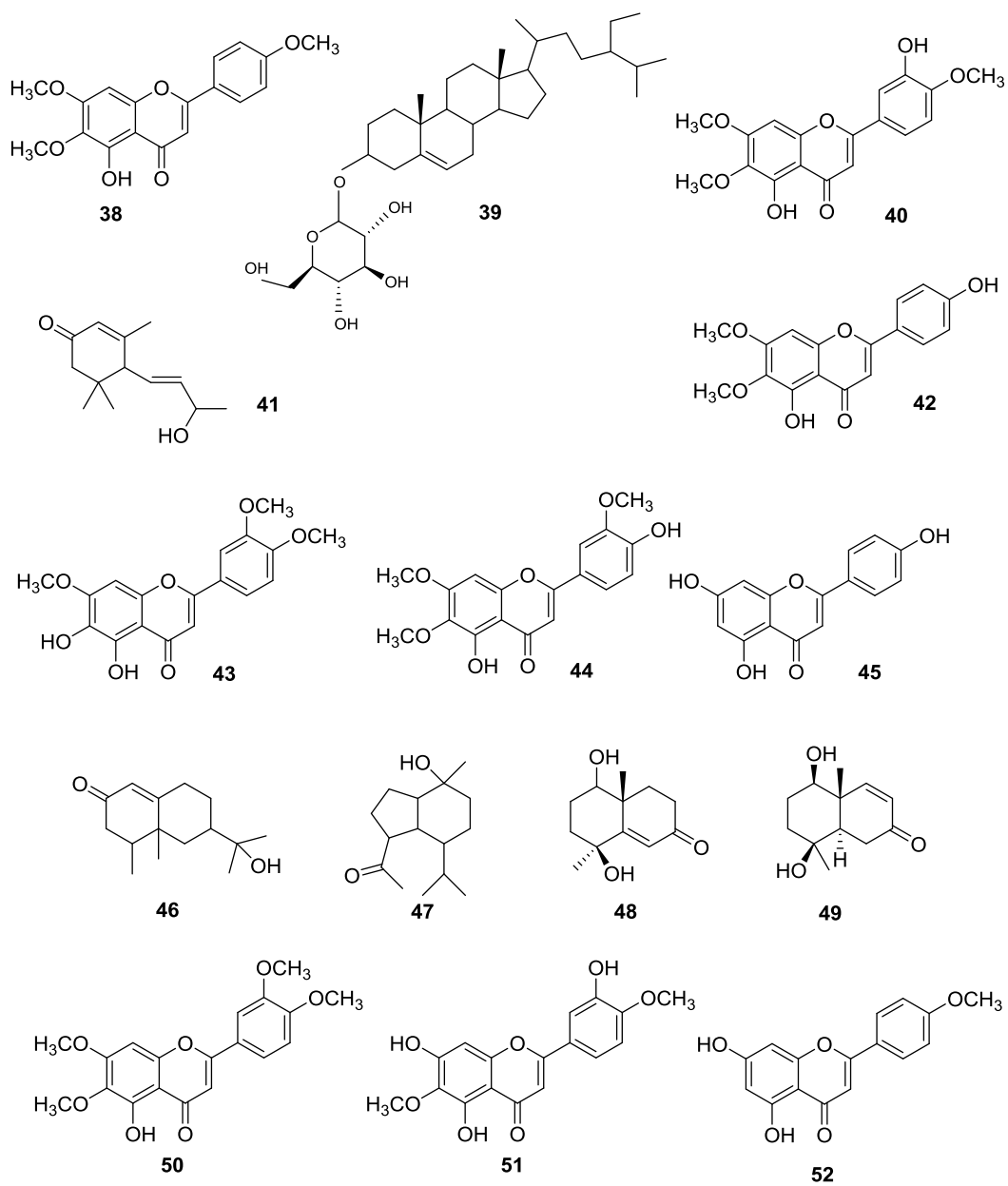
## ABSTRACT OF THE PHD THESIS

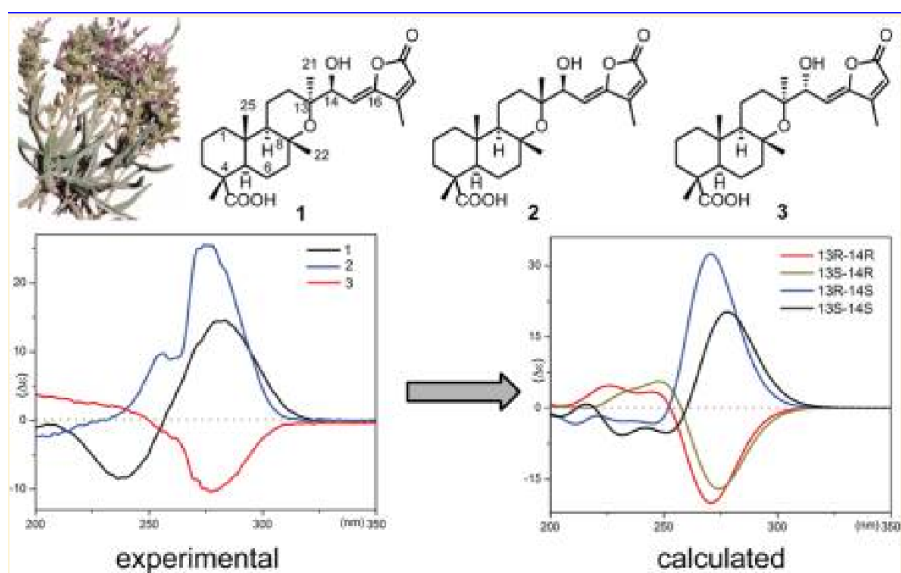
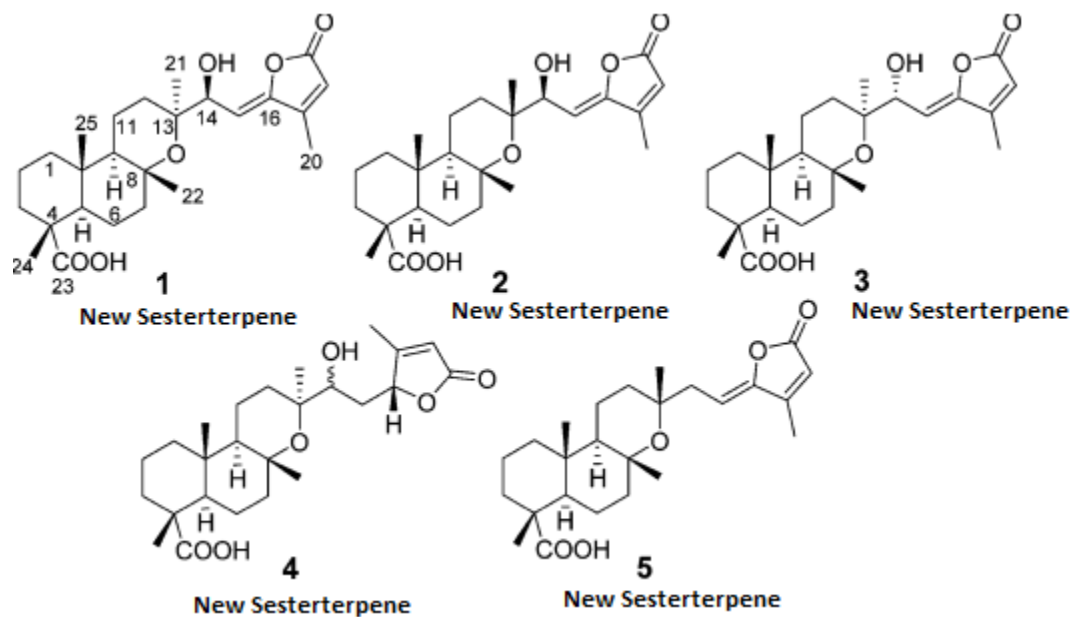
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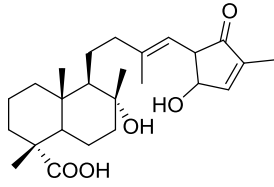
Among higher plants the genus *Salvia* is unusual, as it is the only genus in the Lamiaceae that produces sesterterpenes. In contrast to di- and triterpenoids, sesterterpenoids are rare in nature and have been reported most commonly in marine sponges and algae. So far, more than 134 species of *Salvia* have been phytochemically studied. Among them, sesterterpenes are reported only from 10 species. It is noteworthy that 8 species of them are in flora of Iran and four of them are endemic of Iran. Consequently, considering that these interesting and rare compounds were reported for the first time from Iranian species, this prompted us to undertake a systematic phytochemical investigation of members of this genus. In this thesis, the phytochemical investigation of four plant species *Salvia mirzayanii* Rech.f. & Esfand, *Salvia lachnocalyx* Hedge, *Salvia sharifii* Rech. f. & Esfand. (that these three plants are endemic of Iran) and *Teucrium stocksianum* Boiss. with the aim of isolation and identification of bioactive compounds were investigated phytochemically. Acetone extract of *S. mirzayanii*, chloroform extract of *S. lachnocalyx* and acetone extract of *S. sharifii* and *T. stocksianum* were analyzed for isolation of active compounds with chromatographic techniques. Isolated compounds which were identified with different techniques such as  $2D^1H$ -NMR and  $^{13}C$ -NMR includes 18 compounds from *S. mirzayanii*, 19 compounds from *S. lachnocalyx*, 9 compounds from *S. sharifii* and 10 compounds from *T. stocksianum*. All these compounds belong to the terpenoids (especially some new sesterterpenoids, one new nor-sesterterpenoid, some new sesquiterpenoids and one new nor-diterpenoid), flavonoids and steroids. Among the terpenoid compounds, of *S. mirzayanii* and *S. lachnocalyx* most of them were sesterterpenes, and some of them were new and they have not been reported previously. In continuing our research, the essential oil of *Salvia macilenta* Boiss. and *Froriepia subpinnata* (Ledeb.) Baill. that these two plants are also endemic of Iran, were investigated and the antibacterial and the antimycotic activities of these oils were also calculated against some bacterial and fungal strains.



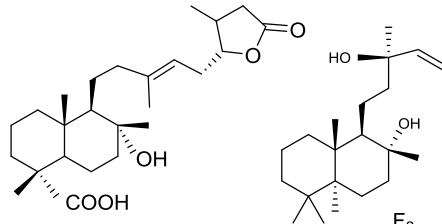




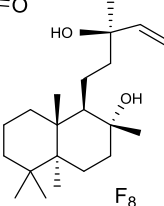




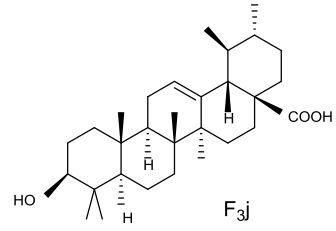
209  
New Sesterterpene



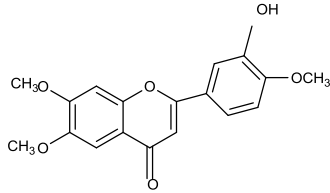
181  
Sesterterpene



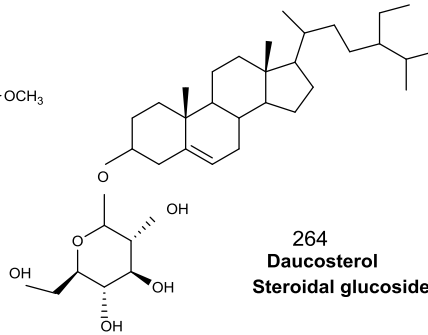
F<sub>8</sub>  
Diterpenoid  
(Sclareol)



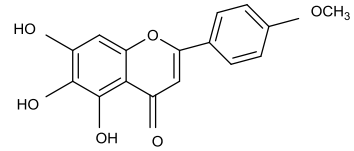
F<sub>3j</sub>  
Triterpenoid  
(Ursolic acid)



152p  
Flavonoid  
(Eupatorin)



264  
Daucosterol  
Steroidal glucoside



F<sub>14</sub>  
Flavonoid  
(Ladanein)