

Curriculum Vitae

Mahdi Ayyari (PhD. of Phytochemistry)

Assistant Professor of Medicinal Plants

Department of Horticultural Science,

Tarbiat Modares University (TMU)

P.O.Box: 14115-336, Tehran, IRAN

Office Tel: +98-21- 48292093 Fax: +98-21-48292200

E-mail: m.ayyari@modares.ac.ir or mahdiayyari@gmail.com

Birthday: 05/26/1983 Marital Status: Married, one son



Educational Background

Ph.D.: Phytochemistry, Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, Tehran, Iran, 2008- 2013.

Supervisor: Prof. Dr. Peyman Salehi **Adviser:** Dr. Mahdi Moridi Farimani

Visiting Scholar: Phytochemistry and Natural Products Lab, Facoltà di Farmacia Dipartimento di Scienze del Farmaco, Università del Piemonte Orientale, Novara, Italy, 2012-2013

Under supervision: Prof. Dr. Giovanni Appendino

M.Sc.: Phytochemistry, Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, Tehran, Iran, 2006- 2008.

Supervisor: Prof. Dr. Peyman Salehi **Adviser:** Dr. Ali Sonboli

B.Sc.: Pure Chemistry, Department of Chemistry, Sharif University of Technology, Tehran, Iran, 2001- 2006.

Title of the PhD Thesis

- 1- Phytochemical and Biological Investigation of *Moringa peregrina*
- 2- Semisynthesis of Natural Products from Dehydroabietylamine and Zerumbone

Degree: Excellent

Title of the M.Sc. Thesis

1- Application of 1-octyl-3-methyl imidazolium tetrafluoroborate ionic liquid for the analysis of essential oil components of *Rosmarinus officinalis* L. by hydrodistillation- headspace solvent micro extraction

2- Phytochemical investigation of *Thymus persicus* and its antioxidant activity

Degree: 19.64

Honors and Achievements

- ❖ First ranked among my peers in M.Sc
- ❖ First ranked among my peers in comprehensive PhD exam

Research Publications

1. Giovanni Appendino, Alberto Minassi, Juan A. Collado, Federica Pollastro, Giuseppina Chianese, Orazio Taglialatela-Scafati, **Mahdi Ayyari**, Victor Garcia, and Eduardo Muñoz, The Thia-Michael Reactivity of Zerumbone and related Cross-Conjugated Dienones: Disentangling Stoichiometry, Regiochemistry and Addition Mode with the NMR-Based Cysteamine Assay, *European Journal of Organic Chemistry*, **2015**, 17, 3721–3726.
2. **Mahdi Ayyari**, Peyman Salehi, Samad Nejad Ebrahimi, Stefanie Zimmermann, Lena Portmann, R. Luise Krauth-Siegel, Marcel Kaiser, Reto Brun, Hassan Rezadoost, Shamsali Rezazadeh, Matthias Hamburger, Antitrypanosomal isothiocyanate and thiocarbamate glycosides from *Moringa peregrina* (Forssk.) Fiori, *Planta Medica*, **2014**, 80, 86–89.
3. Peyman Salehi, Narges Abedini, Ali Sonboli, Atousa Aliahmadi, **Mahdi Ayyari**, Chemical composition and antimicrobial activity of *Ajania semnanensis* essential oil in two growing stages, *Journal of Essential Oil Research*, **2015**, 27(2), 96-100.
4. Mehdi Ghasemi, Aghafakhr Mirlohi, **Mahdi Ayyari**, Abdolali Shojaeiyan, *Kelussia odoratissima* Mozaff. a rich source of essential fatty acids and phthalides, *Journal of HerbMed Pharmacology*, **2015**, 4(4), 115-120.
5. Farnoosh Fattahi, Abdolali Shojaeian, Hossein Askari, Hasanali NAghdibadi, **Mahdi Ayyari**, Ali Mokhtasi Bidgoli, Khavir Palazon, Quantification of hyoscyamine and scopolamine in aerial parts and roots of several *Hyoscyamus* spp. from Iran, **1394**, 56, 105-114.
6. M.H. Mirjalili, **M. Ayyari**, Z. Bakhtiar, M. Moridi Farimani, A. Sonboli, Quantification of betulinic, oleanolic and ursolic acids as medicinally important triterpenoids in some Thymus species from Iran, *Research Journal of Pharmacognosy (RJP)*, **2016**, 3(1), 23-28.
7. Abolfazl Alirezalou, Noorollah Ahmadi, Peyman Salehi, Ali Sonboli, **Mahdi Ayyari**, Hamid Hatami Maleki, Antioxidant capacity in different organs of Hawthorn (*Crataegus* spp.), *Journal of Food Research (Agricultural Science)*, **1394**, 25(2), 325-338. (In Persian).
8. Ziba Bakhtiar, Mohammad Hossein Mirjalili, Ali Sonboli, Mahdi Moridi Farimani, **Mahdi Ayyari**, In vitro propagation, genetic and phytochemical assessment of *Thymus persicus* – a medicinally important source of pentacyclic triterpenoids, *Biologia*, **2014**, 69(5), 594-603

9. Peyman Salehi, **Mahdi Ayyari**, Morteza Bararjanian, Samad Nejad Ebrahimi, Atousa Aliahmadi. Synthesis, Antibacterial and Antioxidant Activity of Novel 2,3-Dihydroquinazolin-4(1*H*)-one Derivatives of Dehydroabietylamine Diterpene, *Journal of the Iranian Chemical Society*, **2014**, *11*, 607-613.
10. Mohammad Ali Esmaeili, Ali Sonboli, **Mahdi Ayyari**, Antioxidant and protective properties of six *Tanacetum* species against hydrogen peroxide-induced oxidative stress in K562 cell line: a comparative study, *Food Chemistry*, **2010**, *121*, 148
11. Safiollah Raiisi, Farsad Nadjaf, Javad Hadian, Mohammad Reza Kanani, **Mahdi Ayyari**, Autecological and phytochemical studies of *Kelussia odoratissima* Mozaff. an endangered ethnomedicinal plant of Iran, *Journal of Biologically Active Products from Nature*, **2013**, *3*, 285-294.
12. Ali mohammadkhanizade, Jalal zaringhalam, Ali sonboli, **Mahdi Ayyari**, Homa Manaheji, Role of hydroalcoholic and chloroformic extracts of *Salvia candidissima* on hyperalgesia and edema during adjuvant-induced arthritis, *Koomesh: Journal of Semnan University of Medical Sciences*, **2014**, *16*(2), 239-245.
13. **Mahdi Ayyari**, Peyman Salehi, Shamsali Rezazadeh, Atousa Aliahmadi, Chemical Composition and Antibacterial Activity of Essential Oil from the *Moringa peregrina* (Forssk.) Fiori, *Journal of essential oil and bearing plants*, 14 Oct **2013** (Accepted).
14. Akbar Esmaeili, Leila Moaf, Shamsali Rezazadeh, **Mahdi Ayyari**, Antioxidant and Antibacterial Activity of Various Extracts of *Malcolmia Africana* (L.) R. Br, *Zahedan Journal of Research in Medical Sciences*, 7 Jan **2012** (online).
15. A. Pourjavadi, **M. Ayyari**, M.S. Amini-Fazl, Taguchi optimized synthesis of collagen-g-poly (acrylic acid)/kaolin composite superabsorbent hydrogel, *European Polymer Journal*, **2008**, *44*, 1209.
16. A. Pourjavadi, M. S Amini-Fazl, **M. Ayyari** , Optimization of Synthetic Conditions CMC -g-poly (acrylic acid)/ Celite composite superabsorbent by Taguchi Method And determination of its absorbency under load, *eXPRESS Polymer Letters*, **2007**, *1*(8), 488.

Published abstracts: (in English)

5th National Congress of Medicinal Plants, Isfahan, Iran, 2016. (Posters)

1. The first steps towards domestication and utilization of *eryngium* species: germination approach
2. Comparison the chemical composition of essential oil from fresh and dried *plectranthus amboinicus* L.
3. Ionic liquid assisted extraction of diosgenin from fenugreek (*Trigonella foenum-graecum* L.)
4. Ionic liquid assisted extraction of trigonelline from fenugreek (*Trigonella foenum-graecum* L.)
5. Effects of *crataegus pentagyna* on the electrophysiological properties of cardiomyocytes derived from lqts3-ipsc
6. Antifungal activity of some plant extracts against a plant pathogen macrophomina phaseolina (Tassi) Goid.
7. A computer vision system and computational intelligence techniques for color-based saffron quality characterization
8. Quantification of pentacyclic triterpenoids in some thymus species from Iran

9. Optimized techniques for mitotic studies in holy thistle (*Cnicus benedictus* L.)
10. Cytogenetic study of *cnicus benedictus* as a medicinal plant

4th National Congress of Medicinal Plants, Tehran, Iran, 2015.

11. Genetic, phytochemical and morphological evaluation of hawthorn (*Crataegus* spp.) Grown in Iran, (**Oral presentation** by Dr. Alirezalu).
12. Quantification of seven phenolic compounds in *Crataegus azarolus* var. aronia fruits, leaves and flowers by HPLC (Poster).
13. Antibacterial activity of isolated compounds from *Moringa peregrine* (Poster).
14. Artecanin a sesquiterpene lactone from the aerial part of *Ajania semnanensis* sonboli (Poster).
15. Cytotoxicity of novel 2, 3-dihydroquinazolin-4(1h)-one derivatives of dehydroabietylamine diterpene against k562 and hl60 cancer cell line (Poster).
16. Essential oil composition of three ecotypes of *Kelussia odoratissima* mozaff. (Poster).
17. Comparative *kelussia odoratissima* essential oils obtained from the various parts of the clevenger-type apparatus (Poster).
18. Comparative analysis of the phthalide components of *kelussia odoratissima* mozaff. using hydrodistillation and HS-SPME techniques (Poster).
19. Comparison the effects of antibiotic and medicinal plants, on immune system, blood biochemical parameters, microbial population and performance of broilers (Poster).

3rd National Congress of Medicinal Plants, Mashad, Iran, 2014

20. Antitrypanosomal isothiocyanate and thiocarbamate glycosides from *Moringa peregrina* (**Oral presentation**)
21. Chemical composition and antimicrobial activity of *Ajania semnanensis* essential oil in two growing stages, (Poster).
22. Phenolic acids extract of *prosopis farcta*: composition identification by HPLC, biologically activities investigation (Poster).

2nd National Congress of Medicinal Plants, Tehran, Iran, 2013

23. Recent Advances in Semi-Synthesis of Natural Compounds, (**Oral presentation** by Prof. Salehi).
24. Cell Suspension Culture Establishment of *Thymus Persicus* for the Production of Medicinally Important Triterpenoids, (**Oral presentation** by Dr. Mirjalili).
25. *In vitro* callus induction and production of antitumor triterpenoids in callus culture of *salvia sahendica*, (Poster).
26. *In vitro* radical scavenging activity of *Zataria multiflora* accessions in relation to their rosmarinic acid content, (Poster).
27. Variability in concentration of phenolic acid derivatives among wild *Zataria multiflora* accessions from Iran.

28. Determination and quantification of pentacyclic triterpenoids in wild mature and *in vitro* regenerates of *Thymus persicus*: a comparative study, (Poster).
29. HPLC Determination of Phenolic Acids In Four *Salvia* Species With Their Antioxidant Activities, (Poster).

1st National Congress of Medicinal Plants, Kish Island, 2012

30. HPLC analysis of phenolic acids in aerial parts and root of *Thymus persicus*, (Poster)
31. Essential oil composition of different plant parts of *kelussia Odoratissima* mozaff. From Iran, (Poster)

Research Projects

1. HPLC analysis of phenolic acids in aerial parts and root of *Thymus persicus*, Research and Technology Council of Shahid Beheshti University, Contract No. 600/1126, Aug 2012.
2. Investigation the effect of herbal Immunosupport drug in comparison with similar compounds on immune system, intestinal morphology and microflora and performance of broiler chickens, Tarbiat Modares University, 2014.
3. Optimization of anticancer drug ursolic acid production in cell suspension culture of *Thymus persicus*, Iran National Science Fundation, 92013885, Coworker of executive: Dr. Mirjalili, 2014 (Ongoing).
4. In vitro study of cardiac pharmacological effects of indigenous Iranian *Crataegus* species using cardiomyocytes derived from Catecholaminergic Polymorphic Ventricular Tachycardia-specific induced pluripotent stem cells, Royan Institute, 2014 (Ongoing).
5. Investigation of active components of *Centella asiatica* (L.) Urban. in different growth stages to evaluate the production of wound healing drug, Islamic Azad University, 2015 (Ongoing).
6. Screening of herbal extracts in beta cell regeneration using transgene ins^{GFP.NTR} zebrafish model, Royan Institute, 2014 (Ongoing).
7. Antiarrhythmic Effects of Some Iranian native *Crataegus* Species Extract on LQTS3-induced pluripotent stem cell-derived cardiomyocytes, Royan Institute, 2015 (Ongoing).

Published abstracts: (in Persian)

Medicinal Plant National Congress, Sari, 2011

1. Chemical composition and antimicrobial activity of rich in isothiocyanates essential oil of *Moringa peregrina* (Forssk.) Fiori, (Poster).
 2. Antioxidant and antimicrobial activity of *Ajania semnanensis* and isolation of 3 flavonoids from chloroform extract (Poster).
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Teaching Courses

- ❖ 2014 to now: *Plant Biochemistry* (PhD student), Department of Horticultural Science, Tarbiat Modares University, Tehran, Iran
 - ❖ 2014 to now: Plant Growth Regulators (MSc student, with Prof. Arzani), Department of Horticultural Science, Tarbiat Modares University, Tehran, Iran
 - ❖ 2015 to now: Physiology of Medicinal Plants (MSc students with Dr. Shojaeian) Department of Horticultural Science, Tarbiat Modares University, Tehran, Iran
 - ❖ 2015 to now: Plant Hormones and culture differentiation (MSc students with Dr. Soltani) Department of Plant Biotechnology, Tarbiat Modares University, Tehran, Iran
 - ❖ 2015: Secondary metabolites in the cell culture and micropropagation (MSc student, with Dr. Babaei), Department of Horticultural Science, Tarbiat Modares University, Tehran, Iran.
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Teaching Workshop

- ❖ 2012: Gas Chromatography (GC) Workshop; Food, Drugs and Natural Products Department, Measurement Unit Laboratory, Sharif University of Technology
 - ❖ 2012: High Performance Liquid Chromatography (HPLC) Workshop; Food, Drugs and Natural Products Department, Measurement Unit Laboratory, Sharif University of Technology
 - ❖ 2011: Endnote Reference Manager Software Workshop; Food, Drugs and Natural Products Department, Measurement Unit Laboratory, Sharif University of Technology and Shahid Beheshti University
 - ❖ 2015: Endnote Reference Manager Software Workshop; Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran.
 - ❖ 2016: Scientific writing; Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran.
 - ❖ 2016: Essential oil analysis and interpretation, Faculty of Agriculture, Tarbiat Modares University, Tehran, Iran
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Attending Workshop

- ❖ 2006: Natural products separation and identification, Research Institute for Islamic and Complementary Medicine, Tehran, Iran

- ❖ 2008: Nanotechnology in Liquid Chromatography and Mass Spectrometry, Iran polymer and petrochemical Institute
 - ❖ 2009: Good Laboratory Practice (GLP), New Technologies and Energy Engineering, Shahid Beheshti University
 - ❖ 2010: Ultra Pressure Liquid Chromatography (UPLC) Workshop, Behan Co, Shahid Beheshti University
 - ❖ 2010: Scientific Writing Workshop, ACECR, Tehran
 - ❖ 2011: Preparative HPLC for isolation of natural products, YMC Co., Shimi Tajzie Sina, Tehran
 - ❖ 2012: Chiral and Preparative HPLC in natural products, Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, Tehran
 - ❖ 2013: Application of medicinal plants in cosmetic industries, Shahid Beheshti University, Tehran
 - ❖ 2015: Natural cream and ointment preparation workshop, Research Institute of Forests and Rangelands, Tehran
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Research Area

- ❖ Bioactive natural products
- ❖ Secondary metabolites and chemistry of natural compounds
- ❖ Drug discovery and development using stem cells
- ❖ Stem cells and natural product toxicity
- ❖ Drug discovery using zebrafish in vivo
- ❖ Bioassay guided fractionation
- ❖ Extraction, separation, isolation and structure elucidation of natural products
- ❖ Essential oil extraction and analysis
- ❖ Natural smokes in traditional remedies
- ❖ Medicinal plants research and their activities
- ❖ Chromatography, analytical and preparative
- ❖ Semisynthesis on some natural product and study on their biological activities
- ❖ Glucosinolate derivatives compounds, especially isothiocyanate and thiocarbamate
- ❖ Quantification of compounds with the HPLC and GC

- ❖ Microextraction, SPME, LPME
 - ❖ Ionic liquids and their effect in natural product analysis
 - ❖ Column Chromatography and Vacuum Liquid Chromatography
 - ❖ NMR Spectroscopy
 - ❖ Superabsorbent hydrogel polymers
 - ❖ Iranian Traditional Medicine
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Laboratory Research Skills

- ❖ **GC-MS** (Gas chromatography- Mass Spectrometry)
 - ❖ **GC-FID** (Gas chromatography- Flame Ionization Detector)
 - ❖ **IMS** (Ion Mobility spectrometry)
 - ❖ **HPLC** (High Performance Liquid Chromatography)
 - ❖ **Prep- HPLC** (Preparative High Performance Liquid Chromatography (Prep- HPLC)
 - ❖ **Flash Chromatography**
 - ❖ **HPTLC** (High Performance Thin Layer Chromatography)
 - ❖ **FTIR** (Fourier transform infrared spectroscopy)
 - ❖ **UV-vis spectrophotometer**
 - ❖ **Polarimetry**
 - ❖ **Powerwave Microplate spectrophotometer**
 - ❖ Synthesis and semisynthesis
 - ❖ Column chromatography
 - ❖ Vacuum Liquid chromatography
 - ❖ Thin Layer Chromatography
 - ❖ Preparative Thin Layer Chromatography
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Reviewer of Journals

- ❖ Natural product Research
- ❖ Pharmaceutical Biology
- ❖ Journal of Crop Protection
- ❖ Journal of Agricultural Science and Technology (JAST)
- ❖ Iranian Journal of Medicinal and Aromatic Plants

- ❖ Journal of Crop Improvement (Journal of Agriculture)
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Other Scientific and organizing works

- ❖ Manager of Bioactive Natural Product Group in Royan Institute for Stem Cell Biology and Technology (RI-SCBT)-2015 till now
 - ❖ Representative of Department of Horticultural Science in the Research Council of Faculty of Agriculture, Tarbiat modares University, October 2014 till now.
 - ❖ Organizing member of Faculty of Agriculture section in the Second Festival of Medicinal Plants, Natural Products and Traditional Medicine of Iran, 29 Sep-2 Oct 2014 Tehran.
 - ❖ Member of Organizing Committee for 1st to 5th National Congress of Medicinal Plants, 2012-2015 (In Kish Island-Tehran-Mashad- Tehran and Isfahan, Respectively)
 - ❖ Head of Food, Drugs and Natural Product Department, Laboratory measurement Unit, Sharif University of Technology, 2010-2012
 - ❖ Cooperation in audit of Phytochemistry, Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, 2012
 - ❖ Scientific member of Institute of Medicinal Plants, ACECR, 2010-2011
 - ❖ Holding of HPLC, GC and Endnote workshops, Sharif University of technology, 2011-2012
 - ❖ Essential oil Analysis of several plant species in academic and industrial projects.
 - ❖ Assay analysis of different plant extract for pharmaceutical companies.
 - ❖ Cooperation in Basic Science (Chemistry branch) Strategic Document, Shahid Beheshti University, 2012.
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Theoretical Courses were passed in M.Sc and PhD

Separation and Identification of Natural Products	Advance Analytical Chemistry
Advance in Mass Spectrometry	Plant Biochemistry
Pharmacognosy	Chemistry of Natural Products
Advance Organic Chemistry	Stereochemistry
	Plant Physiology

Other Skills

- ❖ Endnote Reference Manager
- ❖ Microsoft Office

- ❖ MestReNova software for the analysis of NMR files
 - ❖ Chem Office
 - ❖ Pharmacopeia
 - ❖ DMF preparation
 - ❖ Scientometry
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References

- ❖ **Prof. Dr. Peyman Salehi** (M.Sc. and PhD. Supervisor), Department of Phytochemistry, Medicinal Plants and Drugs Research Institute, Shahid Beheshti University, G. C., Evin, Tehran 1983963113, Iran.
Email: p-salehi@sbu.ac.ir
- ❖ **Prof. Dr. Giovanni Appendino**, Professor of Organic Chemistry, Facoltà di Farmacia Dipartimento di Scienze del Farmaco, Largo Donegani 2, 28100 Novara, Italy.
Email: appendino@pharm.unipmn.it
- ❖ **Prof. Dr. Hossein Baharvand**, Professor of Developmental Biology, Department of Stem Cells and Developmental Biology, Cell Science Research Center, Royan Institute for Stem Cell Biology and Technology, ACECR, Tehran, Iran
Email: baharvand@royaninstitute.org