

# CURRICULUM VITA

*MARYAM AKHBARI*

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## **Biodata**

**Name:** Maryam Akhbari

**Date of Birth:** April 25, 1976

**Place of Birth:** Tehran, Iran

**Nationality:** Iranian

**Marital Status:** Married

## **EDUCATION**

**Ph.D. in Organic Chemistry, 1999-2003;** Faculty of Chemistry, Sharif University of Technology, Tehran, Iran.

**M.Sc. in Organic Chemistry, 1997-1999;** Department of Chemistry, Faculty of Science, University of Tehran, Tehran, Iran.

**B.Sc. in Applied Chemistry, 1993-1997;** Department of Chemistry, Faculty of Science, K.N.T University of Technology, Tehran, Iran.

## **Professional Data**

Head, Essential oil research institute, University of Kashan, 20017-present.

Director of administration, Saeedi Institute for Advanced Studies, University of Kashan, Iran. 2015-Present.

University of Kashan, assistant professor of organic chemistry, 2009 – present.

Islamic Azad University, assistant professor of organic chemistry, 2001-2009.

## **HONORS/AWARDS**

**2013: Distinguished researcher**, University of Kashan.

**2002 - Present:** A member of **Institute of National Elites of Iran.**

**2003:** Selected lecturer in National Conference of Teachers of Iranian Talented Students Center.

**2003:** The youngest Ph.D. graduate student at **Sharif University of Technology.**

**2002:** The selected student for AIEJ student exchange program by **Tokyo Institute of Technology.**

**1999:** Ranked first among 58 candidates in Ph.D. entrance exam, **Sharif University of Technology.**

**1999:** Ranked first among M.Sc. students of all branches of Chemistry, **Tehran University.**

**1997:** Ranked first among all B.Sc. graduate students of Chemistry, **K.N.T University of Technology**.

**1993:** The youngest B.Sc. student of **K.N.T University of Technology**.

**1993:** Ranked second among the students of Mathematics, **Shahid-Motahari High School** .

## **Professional Activities**

### **TEACHING EXPERIENCE**

#### ***Undergraduate Level***

- 1- General Chemistry I.
- 2- Organic Chemistry I, II&III .
- 3- Laboratories of Organic Chemistry I &II .
- 4- Organic Chemistry (and laboratory) for Chemical Engineering Students
- 5- Organic Chemistry (and laboratory) for Biological science Students
- 6- Systematic Isolation and Identification of Organic Compounds
- 7- Spectroscopy of Organic Compounds
- 8- Studying Chemistry Texts and Literature

#### ***Postgraduate Level***

- 1- Advanced organic chemistry
- 2- Heterocyclic Chemistry
- 3- Physico-chemical control of essential oils and natural products, and the laboratory (For students of phytochemistry)
- 4- Identification of natural products (For students of phytochemistry)

**Research area:** Phytochemistry, Biological activity of organic compounds, Organic synthesis.

**Area of Interest:** Organic and Bioorganic reaction mechanisms

## PUBLICATIONS

### *A) Papers*

- 1- "A novel one-pot synthesis of tetrasubstituted imidazoles under solvent-free conditions and microwave irradiation" *Tetrahedron Letters*. **2003**, 44(8), 1709–1711. (Third author)
- 2- "Oxidation of aromatic amines by iodic acid" *Monatsh. Chem.* **2003**, 134, 1561. (Second author)
- 3- "A novel and simple solvent free method for nucleophilic aromatic substitution" *Synth. Commun.* **2004**, 34(15), 2783. (Second author)
- 4- "A new one-pot solvent free synthesis of diethyl 3,3-thiodipropenoate" *J. Sulfur Chem.* **2004**, 25 (2-3), 95. (Second author)
- 5- "Oxidation of alcohols with 4-amino pyridinium chlorochromate" *Monatsh. Chem.* **2004**, 135, 793. (Second author)
- 6- "Efficient solvent free oxidation of phenols" *Russ. J. Org. Chem.* **2005**, 41, 935. (Second author)
- 7- "Solid phase regeneration of carbonyl compounds" *Lett. Org. Chem.* **2006**, 3, 121. (Second author)
- 8- "Comparative study of composition and biological activities of SDE prepared essential oils from flowers and fruits of two *Hypericum*

- species from Kashan, central Iran" *Nat. Prod. Res.* **2012**, 26(3), 193-202. (First and corresponding author)
- 9- "Composition of essential oil and biological activity of extracts of *Viola odorata* L. from central Iran". **2012**, *Nat. Prod. Res.* 26(802), 802-809. (First and corresponding author)
- 10- "Comparative study on antioxidant activities of different extracts and composition of the oil extracted by n-hexane from Iranian *Vitex pseudo-negundo*". **2012**, *Nat. Prod. Res.* (Second and corresponding author)
- 11- Study of free radical scavenging activity of water and ethanol extract of *Artemisia sieberi* Besser **2012**, *Applied biology* (In Persian). (First and corresponding author)
- 12- Investigation of the relationship between free radical scavenging activity and inhibition of lipid peroxidation of *Artemisia dracunculus* L., **2012**, *Applied Biology* (In Persian). (First and corresponding author)
- 13- Investigation of anthocyanin contents and cytotoxic activity for different extracts of fruit peel of *Solanum melongena* L., **2013**, *Qom medical science university journal* (In Persian). (First and corresponding author)
- 14- Volatile fraction composition and biological activities of the leaves bark and fruits of *Caucasian wingnut* from Iran, **2013**, *Journal of Essential Oil Research*. (First and corresponding author)
- 15- Investigation of free radical scavenging from *Mentha longifolia* L., **2012**, *Applied Biology* (In Persian). (First and corresponding author)
- 16- Effect of different essential oil extraction methods on quality and quantity of two species of *Ziziphora* L., **2013**, *Herbal medicines* (In Persian). (Second author)

- 17- Comparative Study of Antioxidant Activity of Extracts and Essential Oil Composition of *Artemisia absinthium* L. Prepared by Two Different Methods. **2014**, *Journal of Essential Oil, Bearing plants*. (First author)
- 18- Comparative Study of Antioxidant Activity of Different Extracts and Essential Oil Compositions Obtained from *Artemisia Sieberi* Besser. using Two Different Methods. **2014**, *Oriental J. Chem.* (Second author)
- 19- SDE-prepared Oil Analysis and Evaluation of Antioxidant and Antibacterial Potentials of *Varthemia persica* DC. **2014**, *Pharmaceutical sciences*. (First author)
- 20- Investigation of chemical components of essential oil and antioxidant and antimicrobial activity of the extracted oil from *Mentha longifolia* L., **2015**, *New Cellular and Molecular Biotechnology Journal*. (In Persian). (Accepted, First author)
- 21- Comparative study of hypericin contents and biological activity of *Hypericum perforatum* L. from different regions of Iran. **2015**, *Journal of Gorgan University of Medical Sciences*. (In Persian). (Accepted, First and corresponding author)
- 22- Evaluation of variation in chemical components and biological activity of *Pterocarya fraxinifolia* Lam. stems at different developmental stages. **2015**, *Journal of Medicinal Plants*. (Submitted, First author).
- 23- Bioactive coumarins from the roots and fruits of *Ferulago trifida* Boiss., an endemic species to Iran, **2017**, *Natural product research*. (Sixthauthor).
- 24- Composition of the oily compounds, phytochemical screening and biological activity of different aerial parts of *Smirnovia turkestanica* Bunge., **2017**, *Natural product research*(First author).

- 25- Chemical composition and biological activities of the essential oils from different parts of *Ferulago trifida* Boiss., **2017**, *Journal of Essential Oil Research*(fourth author).
- 26- Variation in chemical components and biological activity of *Pterocarya fraxinifolia* Lam. stems at different developmental stages, **2017**, *Research Journal of Pharmacognosy*(First author).
- 27- Evaluation of Biological Activity and Analysis of Volatile Fraction from *Pterocarya fraxinifolia* in Vegetative Stage from Iran, **2017**, *Journal of Sciences*(First author).
- 28- Comparison of essential oil composition of *Pterocarya fraxinifolia* (Poir.) Spach. leaves in different phenology stages from Gilan province, **2017**, *Eco-Phytochemical Journal Of Medicinal Plants* (second author).
- 29-  $\text{TiCl}_2 \cdot 2\text{H}_2\text{O}$  catalyzed one-pot synthesis of highly functionalized tetrahydropiperidines and evaluation of their antimicrobial activities, **2016**, *HETEROCYCL COMMUN*(fourth author).
- 30- Identification of Volatile Components and Biological Properties of the extracts of aerial parts of *Pterocarya fraxinifolia* L, **2015**, *Biological Forum – An International Journal* (Third author).
- 31- Phytochemical constituents and biological activities of *Cleome iberica* DC., **2016**, *Natural product research*(fourth and corresponding author).
- 32- Constituents of flowers essential oils of *Smirnovia iranica* Sabeti from Iran, **2016**, *Advanced Herbal Medicine*(Third author).
- 33- Bioactive coumarins from the roots and fruits of *Ferulago trifida* Boiss., an endemic species to Iran, **2017**, *Natural product research*. (Sixthauthor).

- 34- Composition of the oily compounds, phytochemical screening and biological activity of different aerial parts of *Smirnovia turkestanica* Bunge., **2017**, *Natural product research* (First author).
- 35- Chemical composition and biological activities of the essential oils from different parts of *Ferulago trifida* Boiss., **2017**, *Journal of Essential Oil Research*(fourth author).
- 36- Variation in chemical components and biological activity of *Pterocarya fraxinifolia* Lam. stems at different developmental stages, **2017**, *Research Journal of Pharmacognosy*(First author).
- 37- Evaluation of Biological Activity and Analysis of Volatile Fraction from *Pterocarya fraxinifolia* in Vegetative Stage from Iran, **2017**, *Journal of Sciences* (First author).
- 38- Comparison of essential oil composition of *Pterocarya fraxinifolia* (Poir.) Spach. leaves in different phenology stages from Gilan province, **2017**, *Eco-Phytochemical Journal Of Medicinal Plants* (second author).

#### ***B) Conference papers***

- 1- Composition of essential oils and antibacterial activity of extract of flowers and fruits of *Hypericum perforatum* L. from central Iran. **2010**, *International Medicinal and Aromatic Plants. 2<sup>th</sup> Iranian Phytochemistry Seminar*.
- 2- Modifying  $\beta$ -carotene assay to evaluate antioxidant capacity in Aloe vera cream. **2010**, *International Medicinal and Aromatic Plants, 2<sup>th</sup> Iranian Phytochemistry Seminar*.
- 3- Antibacterial activity of extract of *Hypericum scabrum* L. flowers and fruits from Kashan, Iran. **2010**, *International Medicinal and Aromatic Plants ,2<sup>th</sup> Iranian Phytochemistry Seminar*.



- 4- Enhancement of free-radical scavenging activity in hydrating creams by addition of natural Aloe-vera extract, **2010**, *International Medicinal and Aromatic Plants, 2<sup>th</sup> Iranian Phytochemistry Seminar*.
- 5- Comparative study of antioxidant activity in leaves and stems for two species of Hypericum from central Iran. **2010**, *International Medicinal and Aromatic Plants, 2<sup>th</sup> Iranian Phytochemistry Seminar*.
- 6- Free-radical scavenging activity & volatile oil constituents from *Stachys spectabilis*. **2011**, *Iranian National conference*.
- 7- Diphenylpicrylhydrazyl inhibiting potential and volatile oil constituents from *Demavendiapastinacifolia*. **2011**, *Iranian National conference*.
- 8- "Radical scavenging property of *Pterocarya Fraxinifolia* L. methanol extract and constituents of the volatile oil". **2011**, *Iranian National conference*.
- 9- "Comparative study of solvent polarity effects on radical-scavenging activity of fractions obtained from column chromatography for *Pterocarya fraxinifolia* L., **2012**, *Iranian National conference*.
- 10- "Phytochemical analysis of *Pterocarya fraxinifolia* L. from Guilan". **2012**, *National conference*.
- 11- Cytotoxic and antimicrobial activity of *Achillea wilhelmsii* KOCH. **2012**, *Iranian National conference*.
- 12- Influence of soxhlet and percolation techniques on antimicrobial activity of extracts of a new endemic plant from juglandaceae family. 2012, Iranian National conference.
- 13- Cytotoxic activity of a new species of *Pterocarya* leaves and fruits from Iran. 2012, Iranian National conference.
- 14- Study of antimicrobial activity for essential oil of *Pterocarya fraxinifolia* L. from northern Iran. 2012, Iranian National conference.

- 15- Analysis of phytochemicals in methanol Extract of *Achillea wilhelmsii* KOCH. from Kashan. **2012**, *Iranian National conference*.
- 16- Essential oil composition and antioxidant activity of *Tanacetum pinnatum* Boiss. from Kashan. **2012**, *Iranian National conference*.
- 17- Antimicrobial Activity of Methanol Extract of *Ziziphora clinopodioides* L. from Qamsar-Kashan. **2012**, *Iranian National conference*.
- 18- Inhibition of lipid peroxidation ability of *Ziziphora tenuior* L. and *Ziziphoraclinopodioides* L.extract. **2012**, *Iranian National conference*.
- 19- Free-radical scavenging activity of Methanol Extract of *Ziziphoratenuior* L. and *Ziziphoraclinopodioides* L. from Qamsar. **2012**, *Iranian National conference*.
- 20- Qualitative phytochemical analysis and evaluation of phenolic contents of methanol extract from *Ziziphoratenuior* L., **2012**, *Iranian National conference*.
- 21- Cytotoxic activity of two species of *Ziziphora* from Qamsar. **2012**, *Iranian National conference*.
- 22- Essential oil composition & antioxidant activity of *Rheum ribes* L. from Ghamsar, Iran. **2011**, *Iranian National conference*.
- 23- Evaluation of total phenolic contents of two extracts of *Rheum ribes* L., **2012**, *Iranian National conference*.
- 24- Comparative study of biological activity of methanol extracts from roots and stems of *Rheum ribes* L., **2012**, *Iranian National conference*.

- 25- Antioxidant activity of methanol extract from aerial parts of *Sophora mollis* Backer from Kashan. **2013**, *Iranian National conference*.
- 26- Comparative study of total phenolic contents and antimicrobial activities for flowers, leaves and stems of *Sophora mollis* Backer. **2013**, *Iranian National conference*.
- 27- Chemical composition of stem essential oils of *Pterocarya fraxinifolia* L., **2013**, *Iranian National conference*.
- 28- Antioxidant activities of the bark of *Pterocarya fraxinifolia* L., **2013**, *Iranian National conference*.
- 29- Antibacterial activity of extracts of *Salvia ceratophylla* L. from Kashan. **2013**, *Iranian National conference*.
- 30- Analysis of the essential oil components of *Mentha aquatic* L. collected in Tehran province. **2013**, *Iranian National conference*.
- 31- Comparative study of antioxidant activity of polar and non-polar extracts from aerial parts of *Salvia ceratophylla* L., **2013**, *Iranian National conference*.
- 32- Evaluation of free radical scavenging activity of plant extracts and essential oil of *Mentha Aquatica* L., **2013**, *Iranian National conference*.
- 33- Inhibition of lipid peroxidation activity of different extracts of *Salvia ceratophylla* L. from Kashan. **2013**, *Iranian National conference*.
- 34- Evaluation of Gallic acid equivalent of phenolic compounds in *Moltikia coerulea* L. from Iran. **2012**, *Iranian National conference*.
- 35- Study of essential oil composition of *Tanacetum pinnatum* Boiss. extracted using different distillation methods. **2012**, *Iranian National conference*.

- 36- Comparative study of free radical scavenging activity in methanol extract of *Moltikia coerulea* L. from two regions. **2013**, *Iranian national conference*.
- 37- Encapsulated essential oils, researches, economy, and trade. **2013**, *Iranian national conference*.
- 38- Investigation of relationship between hypericin contents and biological activity of *Hypericum perforatum* L. from different regions of Iran. **2015**, *Iranian national conference*.
- 39- Investigation of anthocyanin content and cytotoxic activity in different extracts of *Solanum melongena* L., **2015**, *Iranian national conference*.

#### ***D) Theses supervised***

##### ***D-1) Ph.D. Thesis:***

- 1- Investigation of phytochemical, cytogenetic and genetic characteristics of *Smirnovia iranica* L., **2013, Tehran University** (Supervisor).
- 2- Phytochemical investigation of *Nepeta menthoides* and evaluation of acetylcholine esterase inhibition activity. **2016, Tehran University** (Advisor).

##### ***D-2) M.Sc. Thesis:***

- 1- Isolation and partial characterization of indigenous moderate thermophilic bacteria, active in degrading polycyclic aromatic hydrocarbons, **2008** (Advisor).
- 2- Identification of essential oil composition and antioxidant properties of *Hypericum scabrum* L. and utilizing it as a reagent in oxidation-reduction reactions, **2009** (Supervisor).

- 3- Study of biological properties and isolation of active components from an Iranian endemic plant species (*Pterocarya fraxinifolia* L.) using column chromatography, **2010** (Supervisor).
- 4- Investigation of anti-corrosion and antioxidant properties of *Hypericum perforatum* L., **2011** (Supervisor).
- 5- Investigation of anti-corrosion and antioxidant properties of *Pterocarya fraxinifolia* L. on steel, copper and aluminium, **2011** (Supervisor).
- 6- Identification of essential oil composition and antioxidant properties of *Artemisia dracunculus* L., **2011** (advisor).
- 7- Study of effects of parameters on yield and biological properties extracts from two species of *Mentha*, extracted under microwave irradiation, **2011** (Supervisor).
- 8- Study of effects of parameters on yields and biological properties of extracts from different parts of two species of *Allium*, extracted under microwave irradiation, **2011** (Supervisor).
- 9- Evaluation of hypericin content in different parts of *Hypericum perforatum* L. and study of its effect on antioxidant activity of the plant, **2011** (Supervisor).
- 10- Design of new method to evaluate antioxidant activity of hydrating and *Aloe vera* cosmetic creams, **2012** (Supervisor).
- 11- Isolation of new compounds from *Pterocarya fraxinifolia* L. using column chromatography and structure identification via spectroscopic methods and comparative study of biological activity in phenological period, **2012** (Supervisor).
- 12- Study of quantitative and qualitative specifications of natural perfumes, extracted from *Rosa damascena* Mill and investigation

of environmental condition on it before and after harvesting, **2012** (Supervisor).

- 13- Design of a new apparatus of cold-vapor essential oil extraction and comparison of it with general methods for two endemic species from compositae family and investigation of phytochemical and biological properties of these plants, **2012** (supervisor).
- 14- Comparison of thermal methods with a novel method of cold-vapor essential oil extraction from *Ziziphora tenuior* and *Ziziphora clinopodioides* from Qamsar and investigation of phytochemical and biological properties of these plants, **2012** (supervisor).
- 15- Optimization of effective parameters in microwave assisted essential oil extraction from *Rosmarinus officinalis* via CCD method, **2013** (Supervisor).
- 16- Design of novel in-vitro assays to evaluate antioxidant activity of organic compounds, plant essential oils and extracts, **2013** (Supervisor).
- 17- Synthesis and investigation of in-vitro cytotoxicity of asymmetric bisbenzylidines and using them as standard of cytotoxicity of plant samples, **2013** (Supervisor).
- 18- Synthesis and investigation of in-vitro biological activity of symmetric bisbenzylidines and using them as standards of biological activity of herbal samples, **2013** (Supervisor).
- 19- Isolation and identification of molecular structure of some new compounds from *Cleome iberica* and evaluation of their anticancer activity on uterine cancer cells, **2013** (Supervisor).
- 20- Investigation of microwave irradiation effects on extraction yield and qualitative characteristics of natural products, extracted

- from *Hypericum scabrum* L. from Kurdistan, Iran, **2013** (Supervisor).
- 21- Synthesis of benzothiazole derivatives and comparative study of their antimicrobial effects, **2014** (Supervisor).
  - 22- Preparation of polymer shell microcapsules of *Rosa damascena* essential oil, **2014** (advisor).
  - 23- Optimization of effective parameters on qualitative and quantitative characteristics of *Rosa damascena* essential oil extraction, **2014** (Supervisor).
  - 24- Investigation of effects of some environmental stress on changing in essential oil composition of *Rosmarinus officinalis* L., **2014** (advisor).
  - 25- Nanocapsulation of flowers from *Rosa damascena* essential oil via SLN method and study of effective parameters on physical properties and amount of essential oil loading, **2014** (advisor).
  - 26- Nanocapsulation of *Mentha piperita* essential oil and feasibility study about using it as a flavor and antibacterial additive in dairy products, **2014** (Supervisor).
  - 27- Investigation of effects of parameters on yield and biological activity of essential oil and total extract from *Rosmarinus officinalis*, extracted using microwave irradiation in comparison with thermal condition, **2015** (Supervisor).
  - 28- Study of novel method of ultrasonic generated-steam distillation for extraction of volatile oil from *Mentha spicata* L., **2015** (Supervisor).
  - 29- Effect of microwave irradiation in the presence of microwave absorbers, on the qualitative and quantitative characteristics of

volatile oil extraction from *Foeniculum vulgare* Mill. and evaluation of its biological activity, **2016**(Supervisor).

- 30- Comparative study of green synthesis of silver nano-particles using *Allium akaka* and *Ficus carica* extracts and investigation of their antimicrobial activity, **2016**(Supervisor).
- 31- Optimization of iron nanoparticles synthetic method in the presence of *mentha piperita* L. extract, **2016**(Supervisor).
- 32- Investigation of effects of solvent polarity on chemical and biological characteristics of *Quercus Persica* extracts, **2016**(Supervisor).
- 33- Study of novel method of ultrasonic generated steam distillation for extraction of volatile oil from *Mentha spicata* L. **2016**(Supervisor).

#### ***E) Projects***

- 1- Reduction of aldehydes using hydroquinones in the presence of zinc powder, **2008**. Sponsor: Qom Branch, Islamic Azad University, Iran, 30,000,000 Rls.
- 2- Investigation of essential oil composition and biological activity of *Viola odorata* L. from Kashan. **2009**, Qom Branch, Islamic Azad University, Iran, 50,000,000 Rls.
- 3- Investigation of essential oil composition and biological activity of *Pterocarya fraxinifolia* L. and *Hypericum scabrum* L., **2011**, University of Kashan, Iran. 18,000,000 Rls.
- 4- Changing of ostrich oil smell. **2012**, Kamoo agro-industrial Co. 10,000,000 Rls.



### ***C) Patents***

- 1- Micro scale rapid antioxidant evaluation kit (Iranian Patents, DeclarationNo: 139350140003004800, **2014**)
- 2- Continues cold-steam distiller (Iranian Patents, Registration No: 84392, **2014**)

### ***D) Translation***

Heterocyclic Chemistry at a Glance, Written by: J. A. Joule, Published by: Wiley; Translated from English to Persian (2014), Daneshnegar publishing Co., Iran.

- 5- Study of solvent effect on anthocyanin content in the extract of *Solanum melongena* L. cultivated in Iran. **2012**, University of Kashan, Iran. 10,500,000 Rls.
- 6- Investigation of microwave irradiation effect on extraction of hypericin from *Hypericum perforatum* L., **2013**, University of Kashan, Iran. 12,000,000 Rls.
- 7- Analysis of active components from the extract of a *Nepata* plant species, Homa Natural products Co. Iran. **2016-2017**, 160,000,000 Rls.
- 8- Isolation of some new flavonoids from a *Nepata* plant species using preparative HPLC. Homa Natural products Co. Iran. **2016-2017**, 135,000,000 Rls.