

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.

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

Scientific and Professional Positions

- Assistant professor of organic chemistry, Essential Oil Research Institute, 2009 – present.
- Qc Manager, quality control/quality assurance laboratory (QCQA) for testing Essential Oils and Herbal Hydrolates, Iran National Standard Organization, 2016-present.
- Laboratory Chief, quality control/quality assurance laboratory (QCQA) for testing essential oils and herbal hydrolates, Iran National Standard Organization, 2016-2023.
- Head, Essential Oil Research Institute, University of Kashan, Iran. 2017- 2023.

- Director of administration, Saeedi Institute for Advanced Studies, University of Kashan, Iran. 2015-2020.
- Committee Head, ICRD-2020, The First International Conference of *Rosa damascena*, University of Kashan, Iran, October-2020.
- Committee Head, ICRD-2019, The First International Conference of *Rosa damascena*, University of Kashan, Iran, October-2019.
- Committee Head, ICRD-2018, The First International Conference of *Rosa damascena*, University of Kashan, Iran, October-2018.
- Committee Member, The First National Essential oil conference, University of Kashan, Iran, May-2016.
- Qom Branch, Islamic Azad University, assistant professor of organic chemistry, 2001- 2009.
- Committee Member, The First National Phytochemistry Conference, Chemistry Department, Qom Branch, Islamic Azad University, May-2008.

Honors/Awards

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

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

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

1998: Ranked first among the candidates in Ph.D. entrance exam, Isfahan University, Iran.

1998: Ranked first among the candidates in Ph.D. entrance exam, Shahid Beheshti University, Iran.

1998: Ranked first among 58 candidates in Ph.D. entrance exam, Sharif University of Technology, Iran.

1999: Ranked first among the candidates in Ph.D. entrance exam, Tarbiat Modarres University, Iran.

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

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

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

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

2002 - Present: Member of Institute of Iranian National Elites.

2013: The Selected Researcher of the University, University of Kashan, Iran.

2023: The Selected Industrial Project, Ministry of science, Research & Technology of Iran.

Teaching Experience

A) 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

B) Postgraduate Level

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

Research Area

Phytochemistry, Biological activity of organic compounds and natural products, Organic synthesis.

Area of Interest: Organic and Bioorganic reaction mechanisms

Publications

A) Journal Papers

- 1- S. Balalaei, M.M. Hashemi, M. Akhbari; "A novel one-pot synthesis of tetrasubstituted imidazoles under solvent-free conditions and microwave irradiation" *Tetrahedron Letters*. **2003**, 44(8), 1709–1711.
- 2- M.M. Hashemi, M. Akhbari; "Oxidation of aromatic amines by iodic acid" *Monatsh. Chem.* **2003**, 134, 1561.
- 3- M.M. Hashemi, M. Akhbari; "A novel and simple solvent free method for nucleophilic aromatic substitution" *Synth. Commun.* **2004**, 34(15), 2783.
- 4- M.M. Hashemi, M. Akhbari; "A new one-pot solvent free synthesis of diethyl 3,3-thiodipropenoate" *J. Sulfur Chem.* **2004**, 25 (2-3), 95.
- 5- M.M. Hashemi, D. Ghazanfari, M. Akhbari; "Oxidation of alcohols with 4-amino pyridinium chlorochromate" *Monatsh. Chem.* **2004**, 135, 793.

- 6- M.M. Hashemi, M. Akhbari; "Efficient solvent free oxidation of phenols" *Russ. J. Org. Chem.* **2005**, 41, 935.
- 7- M.M. Hashemi, M. Akhbari, Z. Karimi Jaberi; " Solid phase regeneration of carbonyl compounds by Oxidative Cleavage of Carbon-Nitrogen Double Bonds with Molecular Oxygen at Room Temperature; **2006**, 3, 121.
- 8- M. Akhbari, H. Batooli, M.R. Mozdianfard; "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.
- 9- M. Akhbari, H. Batooli, F. Jokar-Kashi; "Composition of essential oil and biological activity of extracts of *Viola odorata* L. from central Iran". **2012**, *Nat. Prod. Res.* 26(802), 802-809.
- 10- M.R. Mozdianfard, M. Akhbari, H. Batooli ; "Comparative study on antioxidant activities of different extracts and composition of the oil extracted by n-hexane from Iranian *Vitex pseudo-negundo*". **2012**, *Natural Products Research*.
- 11- M. Akhbari; MR. Delnavaz; S. Tavakoli; Volatile fraction composition and biological activities of the leaves bark and fruits of *Caucasian wingnut* from Iran, **2013**, *Journal of Essential Oil Research*.

- 12- M. Akhbari, M.R. Haeri, M. Babaei; 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).
- 13- M. Akhbari; Z. Aghajani; B. Esmaeili; 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*.
- 14- M. Akhbari; Z. Aghajani; B. Esmaeili; Comparative Study of Antioxidant Activity of Different Extracts and Essential Oil Compositions Obtained from *Artemisia Sieberi* Besser. using Two Different Methods. **2014**, *Oriental Journal of Chemistry*.
- 15- M. Akhbari; MR. Delnavaz; M. Karimi, R. Almasi, S. Tavakoli; SDE-prepared Oil Analysis and Evaluation of Antioxidant and Antibacterial Potentials of *Varthemia persica* DC. **2014**, *Pharmaceutical sciences*.
- 16- M. Akhbari, M. Ebrahimian; 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).
- 17- M. Akhbari, S. Tavakoli, S.J. Hosseinizade, E.Vatankhah, A. Hajiakhoondi; Variation in chemical components and biological activity of *Pterocarya fraxinifolia* Lam. stems at different developmental stages; **2015**, *Journal of Medicinal Plants*.

- 18- Z. Aghajani, A. A. Engashteh-Vahed, M. Akhbari; Identification of volatile components and biological properties of the extracts of aerial parts of *Pterocarya fraxinifolia* L.; **2015**; *Biological Forum – An International Journal*; 7(1), 262-266.
- 19- M. Abbasi, S. M. Seyedi, H. Sadeghian, M. Akhbari, M. Enayat, A. Shiri; $\text{TiCl}_2 \cdot 2\text{H}_2\text{O}$ catalyzed one-pot synthesis of highly functionalized tetrahydropiperidines and evaluation of their antimicrobial activities, **2016**; *Heterocyclic communications*; 22(3), 117-121.
- 20- M. M. Farimani, M. Akhbari, E. Nazarianpoor, A. Rustaei; Phytochemical constituents and biological activities of *Cleome iberica* DC.; **2016**; *Natural product research*; 31(11), 1329-1332.
- 21- M. Ghavam, H. Azarivand, M. Akhbari, Constituents of essential oils from flowers of *Smirnovia iranica* Sabeti from Iran; **2016**; *Advanced Herbal Medicine*; 2(2), 36-39.
- 22- S. Tavakoli, M. R. Delnavazi, R. Hajiaghaei, F. Khalighi, M. Akhbari, A. Hajiakhoondi, N. Yasa; Bioactive coumarins from the roots and fruits of *Ferulago trifida* Boiss., an endemic species to Iran; **2017**, *Natural product research*; 2018; 32(22), 2724-2728.
- 23- S. Tavakoli, M. R. Delnavazi, M. Akhbari, R. Hajiaghaei, A. Hajiakhoondi, H. Hajimehdipour, F. Khalighi; Chemical Composition and biological activities of the essential oils from different parts of *Ferulago trifida* Boiss.; **2017**, *Journal of Essential Oil Research*; 29(5), 407-419.

- 24- M. Akhbari*, S. Tavakoli, S. M. Hosseinizadeh, E. Vatankhah, A. Hajiakhoondi, M. Vazirian; Variation in chemical components and biological activity of *Pterocarya fraxinifolia* Lam. stems at different developmental stages; **2017**, *Research Journal of Pharmacognosy*; 4(3), 41-50.
- 25- M. Akhbari, S. Tavakoli, Z. Ghanbari, M. Dadgarnia, A. Mazoochi; Evaluation of Biological Activity and Analysis of Volatile Fraction from *Pterocarya fraxinifolia* in Vegetative Stage from Iran; **2017**, *Journal of Sciences*; 28(2), 119-126.
- 26- M. Akhbari, M. Yaghoobi, S. Hamed; Composition of the oily compounds, phytochemical screening and biological activity of different aerial parts of *Smirnovia turkestanica* Bunge.; **2018**, *Natural product research*; 32(22), 2697-2700.
- 27- M. Akhbari, F. Aghababaei, S. Hamed, Optimization of microwave assisted extraction of essential oils from Iranian *Rosmarinus officinalis* L. using RSM; **2018**; *Journal of Food Science and Technology*; 55(6), 2197–2207.
- 28- M. Akhbari, R. Kord, S. Jafari Nodooshan, S. Hamed, Analysis and evaluation of the antimicrobial and anticancer activities of the essential oil isolated from *Foeniculum vulgare* from Hamedan, Iran; **2019**; *Natural product research*; 33(11), 1629-1632.

- 29- S. Hamed, M. Akhbari, Z. Aghamiri; Optimization of the extraction of total phenols and anthocyanins from *Solanum melongena* L.using Placket-Burman factorial design; **2019**; *Journal of Food Science and Technology*; 13(4).
- 30- M. Akhbari, R. Hajiaghaei, R. Ghafarzadegan, M. Yaghoobi, S. Hamed; Process optimization for green synthesis of iron nanoparticles (FeNPs) using *Mentha piperita*; **2019**, *Journal of IET Nano-Biotechnology*.
- 31- A. Allahyari, S. Masoum*, M. Akhbari, S. Hamed, A. Mazoochi; Experimental design approach in optimization of some effective variables on quantity and quality extraction of essential oil from *Rosa damascena* Mill. **2021**; *Journal of the Iranian Chemical Society*.

B) Conference papers

- ***Number of National Conference papers:*** More than 50 papers.
- ***Number of International Conference papers:*** More than 30 papers.

C) Theses, Supervised/Advised

C-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).

C-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 phonological 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 tenuifolia* 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 damascene* 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 *Rosemarinus 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).
- 34- Isolation of some secondary metabolites of *Ziziphora tenuior* L., obtained via column chromatography and evaluation of their biological activity; **2018** (Supervisor).
- 35- Isolation of some compounds from *Pterocarya fraxinifolia* L., via column chromatography method as well as evaluation of their biological activity; **2018** (Supervisor).
- 36- Isolation and identification of molecular structure of some secondary metabolites of *Daphne Stapfii* Bornm Keissl. from polar fractions obtained via column chromatography; **2019** (Supervisor).

- 37- Analysis of essential oil composition of *Nigella arvensis* L. from two vegetation regions of Iran, obtained using different extraction methods; **2019** (Advisor).
- 38- Isolation and identification of molecular structure of some secondary metabolites of *Daphne Stapfii* Bornm Keissl., resulted from combining of the methods of high performance chromatography, column and plate chromatography and evaluation of their biological activity; **2020** (Supervisor).
- 39- Evaluation of anti-cancer and antimicrobial activity as well as phytochemical analysis of *stachys lavandulifolia* Vahl. **2020** (Supervisor).
- 40- Comparison of growth rate and induced biochemical parameters through nitrogen and sulfur doped quantum dots for two species of microalgae, *Chlorella vulgaris* and *Bracteo coccus* sp. under the normal conditions and salinity stress; **2021** (Supervisor).
- 41- In silico methods to identify effective anti-Alzheimer compounds of ethyl acetate extract from *Hesperis kurdica* F. Dvorák & Hadac and evaluation of biological activity as well as quantitative measurements of some secondary metabolites in *Anthemis lorestanica* Iranshahr via high performance liquid chromatography; **2022** (Supervisor).

- 42- Investigation of antidiabetic effect of hydroalcoholic extract from *Eryngium billardieri* F.Delaroche on type 2 diabetic Wistar rat and evaluation of its components and biological properties ; **2022** (Supervisor).
- 43- Determination of hypericin content and some active components in the extract and essential oil of aerial parts from *Hypericum armenum* Jaub. & Spach and assessment of its biological activity; **2023** (Supervisor).

D) Books

D-1) Translation

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

D-2) Compiling

1- Book of Abstracts: *Rosa damascena* 2019, The First International Conference on *Rosa damascene*.

2- Book of Abstracts: *Rosa damascena* 2021, The First International Conference on *Rosa damascena*.

Projects

A) Academic Projects

1- Reduction of aldehydes using hydroquinones in the presence of zinc powder; **2008**, Sponsor: Qom Branch, Islamic Azad University, Iran.

2- Investigation of essential oil composition and biological activity of *Viola odorata* L. from Kashan; **2009**, Sponsor: Qom Branch, Islamic Azad University, Iran.

3- Investigation of essential oil composition and biological activity of *Pterocarya fraxinifolia* L. and *Hypericum scabrum* L.; **2011**, Sponsor: University of Kashan, Iran.

4- Optimization of anthocyanin extraction from fruit peels of eggplant; **2010**, Sponsor: Qom Branch, Islamic Azad University.

5- Study of solvent effect on anthocyanin content in the extract of *Solanum melongena* L. cultivated in Iran; **2012**, Sponsor: University of Kashan, Iran.

6- Investigation of microwave irradiation effect on extraction of hypericin from *Hypericum perforatum* L.; **2013**, Sponsor: University of Kashan, Iran.

B) *Industrial Projects*

1- Identification of active flavonoids from the extract of a *Nepata* plant species; Sponsor: Homa Natural products Co., Kashan, Iran; 2016, 1000 \$.

2- Isolation of some new flavonoids from a *Nepata* plant species using preparative HPLC; Sponsor: Homa Natural products Co., Kashan, Iran, 2016; 1200 \$.

3- Essential oil production industry: A new by-product from the waste; Sponsor: Tak-Gol Co. Qamsar, Iran, 2017; 3000 \$.

4- Setting up and operating of quality control/quality assurance laboratory for testing essential oils and herbal hydrolates, Iran National Standard Organization, 2018.

5- A novel total solution for waste management; Sponsor: SIAS, Kashan, Iran, 2020; 3500 \$.

6- Essential oil production industry: Setting Up the Wastewater Management Line, Tak-Gol Co. Qamsar, Iran. 2021; 6000 \$.

Patents

- 1- Microscale rapid antioxidant evaluation kit (Iranian Patents, Declaration No: 139350140003004800, **2014**).
- 2- Continues cold-steam distiller (Iranian Patents, Registration No: 84392, **2014**).

Standard Compiling

- 1- Essential oil of Savory (*Satureja hortensis* L.) -Specifications and test methods, **2016**, Iranian National Standard Organization: 21416.
- 2- *Willo aegyptica* distillate (*Salix aegyptica*) - Specifications and test methods, **2016**, Iranian National Standard Organization: 738.
- 3- Chamomil hydroglycolic extract specified for cosmetics and hygienic products - Specifications and test methods, **2017**, Iranian National Standard Organization: 21717.
- 4- Rosemary hydroglycolic extract specified for cosmetics and hygienic products - Specifications and test methods, **2017**, Iranian National Standard Organization: 21718.
- 5- Henna hydroglycolic extract specified for cosmetics and hygienic products - Specifications and test methods, **2017**, Iranian National Standard Organization: 21719.
- 6- *Zizyphus* hydroglycolic extract specified for cosmetics and hygienic products - Specifications and test methods, **2017**, Iranian National Standard Organization: 21720.

7- Ziziphora distillate (*Ziziphora tenuior* L.)- Specifications and test methods, **2017**, Iranian National Standard Organization: 21415.

8- Aromatic water and rose water, Determination of methanol and ethanol by gas chromatography method-Test method, **2017**, Iranian National Standard Organization: 22448.

9- Rose water– Specifications and test methods, **2022**, Iranian National Standard Organization: 5759.