Mohammad Mahmoudian

Residence: Turin, Italy***,***

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Contact Number:

Current Position*: Postdoctoral researcher,* INSTITUTO DI CANCIOLO, IRCC, CANDIOLO, TO, Italy (July 2023-presence)

1. Educational Background

- **Ph.D. in Pharmaceutical Nanotechnology** (2013-2019), Tabriz University of Medical Sciences, Iran
- ***Short-term research opportunity at University of Alberta, Edmonton, Canada*** (Six-months, 2018)
- **Master of Science in Medical Nanotechnology** (2010-2013), Islamic Azad University of Tehran, Iran
- **Bachelor's degree in Radiology** (2002-2006), Tabriz University of Medical Sciences, Iran

2. Research Background

- ***Postdoctoral Researcher*** (IRCC, Candiolo, Italy, July 2023-present)***, research area;*** Cancer cell exosomes and tumor-associated macrophage polarization
- ***Co-investigator (2020-2023): international collaboration between Tabriz University of Medical Sciences(Tabriz, Iran) and University of Turin (Italy), Projects:***

  - *Investigation the potential of the novel positive cyclodextrin-based nanosponges for mRNA delivery in vivo/ in vitro*
  - *Investigation the blood circulation time and adjuvant property of PEGylatedand non-PEGylated cyclodextrin nanosponges in mice follow I.V. injection*
  - *Investigation of the in-vivo/ex-vivo anti-coagulation effect of cyclodextrin-based nanosponges*
  - *Investigation the enhancement effect of six anti-inflammation drugs free and complexed with cyclodextrin-based nanosponges in mice gout model*
  - *Plasmid-based gene delivery using positive cyclodextrin-based nanosponges in 2D/3D spheroid cell culture models*
  - *Investigation of the pharmacokinetic parameters of orally-delivered Kynurenic acid in mice model*
  - *Investigation of the in vitro/in vitro anti-cancer effects of the nisin free and complexed with the cyclodextrin-based nanosponges*
  - *Anti-bacterial effects of the nisin free and complexed with the cyclodextrin-based nanosponges*

❖ ***Research Assistant (2018-2023): Faculty of Pharmacy, Tabriz University of Medical Sciences, Iran, selected Projects;***

- Investigation of the in-vitro and in-vivo ani-cancer effects of the mRNA-loaded Synthesized Positive Charge β-Cyclodextrin-nanosponges against melanoma cancer **(Co-investigator)**
- Investigating multi-biological task applications of Cyclodextrin based Nanosponges by focusing on the In-vivo experiments (**Co-investigator)**
- Preparation and Intestinal permeability studies on Valsartan Nano-emulsions and Solid Lipid Nanoparticles (**Co-investigator**, Pharm. D thesis)
- Isolation, characterization, and cytotoxicity investigation of the exosomes secreted by doxorubicin primed cells (**advisor**, Pharm. D thesis, Faculty of pharmacy, Tabriz University of Medical Sciences)
- Isolation, characterization, and cytotoxicity investigation of the exosomes secreted by doxorubicin-loaded cyclodextrin nanosponges primed cells(**advisor**, Pharm. D thesis, Faculty of pharmacy, Tabriz University of Medical Sciences)
- Fabrication of Cyclodextrin Nanosponges for Nisin and Metronidazole Delivery and Evaluation of their Antibacterial Properties against Helicobacter pylori (**advisor**, Pharm. D thesis, Faculty of pharmacy, Tabriz University of Medical Sciences)
- Solid lipid nanoparticles (SLN) of Gliclazide: formulation and evaluation of Intestinal perfusion with Single-pass intestinal perfusion method (**advisor**, Pharm. D thesis, Faculty of pharmacy, Tabriz University of Medical Sciences)
- Evaluation of intestinal permeability of nifedipine cyclodextrin based nanosponges using single pass intestinal perfusion method (**advisor**, Pharm. D thesis, Faculty of pharmacy, Tabriz University of Medical Sciences)

3. Awards & Conferences

- V International Summer School on Cyclodextrins (September 2022, Ascea, Italy)
- Scholarship awarded from Islamic Republic of Iran Ministry of Health and Medical Education for short-term research opportunity at Faculty of Pharmacy, University of Alberta, Edmonton, Canada (2017)

4. Skills

- **Animal studies**: animal handling and anesthesia; animal surgery; Melanoma mice cancer model; animal gavage; Fibrosis rat model; Gout mice model; in vivo rat intestinal permeability study

- **Cell biology:** 3D multicellular spheroid culture, conventional 2D cell culture, MTT assay, LDH assay, Flow cytometry, Fluorescence microscopy
- **Pharmaceutical Nanotechnology:** Preparation and characterization of Lipidic/polymeric Nano drug delivery systems, HPLC, UV-spectrophotometry, FT-IR, DSC, DLS
- **Protein biology:** Western blot, Immunoprecipitation, BCA assay, Bradford's assay
- **Gene biology:** Lentivirus Production/Packaging, gene transduction/transfection, Plasmid transformation and extraction, Nanoparticle-based gene delivery, RT-qPCR , Gel retardation assay
- **Medical imaging:** Radiology, Computed tomography scan (CT scan), Cone Beam CT (CBCT)
- **General computer knowledge**

5. Professional experiences

- Radiology technician (2010-2018), Shohada Orthopedic Hospital, Tabriz University of Medical Sciences, Iran

6. References

Marco Arese (Associate Professor of Biochemistry), Department of Oncology**,** University of Turin – School of Medicine, CANDIOLO CANCER INSTITUTE**,** Strada Provinciale 142, Km. 3.95, 10060 Candiolo (Torino), Italy.Tel. 39-011-9933846 Fax 39-11-9933524

Raimar Loebenberg (Professor, CANADA), Director, Drug Development and Innovation Centre Faculty of Pharmacy and Pharmaceutical Sciences, University of Alberta, 11361 – 87 Avenue, Room 3-142-K Edmonton, AB T6G 2E1, E-mail: raimar@ualberta.ca Phone: 780 492 1255, Fax: 780 492 1217

Parvin Zakeri-Milani (Professor,IRAN), Faculty of Pharmacy, Tabriz University of Medical Sciences, Tabriz, Iran. 51664, E-mail: pzakeri@tbzmed.ac.ir Phone: +98 (41) 3339-2593 Fax: +98 (41) 3334-4798

7. Publications

1. RNA aptamer-mediated gene therapy of prostate cancer: lessons from the past and future directions ***Co-first author & Co-Coauthor,*** Marco Arese, **Mohammad Mahmoudiana**, Federico Bussolino, Expert Opinion on Drug Delivery, 2023, IF= 6,6

2. Intratumoural Delivery of mRNA Loaded on a Cationic Hyper-Branched Cyclodextrin-Based Polymer Induced an Anti-Tumour Immunological Response in Melanoma, Yousef

Khazaei Monfared, **Mohammad Mahmoudian**, Parvin Zakeri-Milani, Claudio Cecone, Tomoya Hayashi, Ken J Ishii, João Conde, Adrián Matencio, Francesco Trotta, Cancers (2023), IF=5,2

3. Interaction of M2 macrophages with hepatocellular carcinoma co-culture system in the presence of doxorubicin-loaded nanoparticles,***First author;*** Mohammad Mahmoudian, Afshin Namdar, Parvin Zakeri-Milani, Hadi Valizadeh, Shokrollah Elahi, Ahmed M. Darwesh, John M. Seubert, Arno G. Siraki, Wilson H. Roa, Nadia B. Chacra and Raimar Löbenberg, Journal of Drug Delivery Science and Technology, 2022,IF= 5

4. ***Hyper-branched cationic cyclodextrin polymers for improve the plasmid transfections in 2D and 3D spheroid cells***,***Co-first author***; Yousef Khazaei Monfared, Mohammad Mahmoudian, Claudio Cecone, Fabrizio Caldera, Sanya Hayati, Hamid Reza Heidari, Reza Rahbarghazei, Parvin Zakeri-Milani, Adrián Matencio, Francesco Trotta, 2022, Pharmaceutics, IF= 5,4

5. ***Nisin*** **delivery** ***by nanosponges increases its anti-cancer activity against in vivo melanoma model***,***Co-first author***; Yousef Khazaei Monfared, Mohammad Mahmoudian, Claudio Cecone, Fabrizio Caldera, Parvin Zakeri-Milani, Adrián Matencio, Francesco Trotta, 2022, Journal of Drug Delivery Science and Technology, 2022, IF= 5

6. ***Oral delivery of solid lipid nanoparticles: underlining the physicochemical characteristics and physiological condition affecting the lipolysis rate***. ***First author;*** M Mahmoudian, S Maleki Dizaj, S Salatin, R Löbenberg, M Saadat, Expert Opinion on Drug Delivery, 2021, IF= 6,6

7. ***Bortezomib-loaded lipidic-nano drug delivery systems; formulation, therapeutic efficacy, and pharmacokinetics***. ***First author;*** M Mahmoudian, H Valizadeh, R Löbenberg, P Zakeri-Milani, Journal of Microencapsulation, 38 (3), 192-202, 2021, IF= 3,9

8. ***Enhancement of the intestinal absorption of bortezomib by selfnanoemulsifying drug delivery system***.***First author;*** M Mahmoudian, H Valizadeh, R Löbenberg, P Zakeri-Milani, Pharmaceutical development and technology, 25 (3), 351-358, 2020, IF=3,4

9. ***Investigating intestinal permeability of bortezomib using a validated HPLC-UV method.***

First author; M Mahmoudian, P Zakeri-Milani, H Valizadeh, Drug research, 69 (03), 130-135, 2019, IF=

10. ***Bortezomib-loaded solid lipid nanoparticles: preparation, characterization, and intestinal permeability investigation***. ***First author;*** M Mahmoudian, H Valizadeh, P Zakeri-Milani, Drug development and industrial pharmacy 44 (10), 1598-1605, 2018, IF=3,4

11. ***Natural low-and high-density lipoproteins as mighty bio-nanocarriers for anticancer drug delivery***. ***Co-first author***; M Mahmoudian, S Salatin, AY Khosroushahi, Cancer chemotherapy and pharmacology 82 (3), 371-382, IF=3

12. ***Oral Supplementation Of Solvent-Free Kynurenic Acid/Cyclodextrin Nanosponges Complexes Increased Its Bioavailability*** Yousef Khazaei Monfared, Alberto Rubin Pedrazzo, **Mohammad Mahmoudian**, Fabrizio Caldera, Parvin Zakeri-Milani, Hadi Valizadeh, Roberta Cavalli, Adrián Matencio, Francesco Trotta, Colloids and Surfaces B: Biointerfaces,2022, IF=5,8

13. Hyper-Branched Cyclodextrin-Based Polymers as Anticoagulant Agents: In Vitro and In Vivo Studies Yousef Khazaei Monfared, **Mohammad Mahmoudian**, Gjylije Hoti, Daniel Mihai Bisericaru, Fabrizio Caldera, Roberta Cavalli, Parvin Zakeri-Milani, Adrián Matencio, Francesco Trotta, Bioengineering, 2022, IF=4,6

14. ***Cyclodextrin based nanosponges as perse antimicrobial agent increases the activity of natural antimicrobial peptide nisin*****,** Yousef Khazaei Monfared, **Mohammad Mahmoudian**, Gjylije Hoti, Fabrizio Caldera, Jose Manuel Lopez Nicolas, Parvin Zakeri-Milani, Adrián Matencio, Francesco Trotta, Pharmaceutics, IF=5,4

15. ***Stabilization and Anticancer Enhancing Activity of the Peptide Nisin by Cyclodextrin-Based Nanosponges against Colon and Breast Cancer Cells***, Yousef Khazaei Monfared, **Mohammad Mahmoudian**, Claudio Cecone, Fabrizio Caldera, Parvin Zakeri-Milani, Adrián Matencio, Francesco Trotta, 2022, Polymers, IF= 5

16. ***The therapeutic benefits of intravenously administrated nanoparticles in stroke and age-related neurodegenerative diseases***. Mehdi Farhoudi, Saeed Sadigh-Eteghad, Javad Mahmoudi, Afsaneh Farjami, **Mohammad Mahmoudian**, Sara Salatin, Current Pharmaceutical Design, 2022, IF=3,1

17. ***Synthesis and preparation of vitamin A decorated butein-loaded solid lipid nanoparticles for liver fibrosis therapy in rats***, Somayeh Mahdinloo; Salar Hemmati; Hadi Valizadeh;

Mohammad Mahmoudian; Javad Mahmoudi; Leyla Roshangar; Muhammad Sarfraz,2022, International Journal of Pharmaceutics, IF=5,8

18. *Surface modification with cholesteryl acetyl carnitine, a novel cationic agent, elevates cancer cell uptake of the PEGylated liposomes*, Fahimeh Zahednezhad, Javid Shahbazi Mojarrad, Parvin Zakeri Milani, BehzadBaradaran, **Mohammad Mahmoudian**, Muhammad Sarfraz, Hadi Valizadeh, International Journal of Pharmaceutics, 2021, IF=5,8

19. *Safety and Toxicity Issues of Therapeutically Used Nanoparticles from the Oral Route.* F Lotfipour, S Shahi, A Farjami, S Salatin, **M Mahmoudian**, SM Dizaj, BioMed Research International, 2021,IF=3,2

20. *The Factors Determining the Skin Penetration and Cellular Uptake of Nanocarriers: New Hope for Clinical Development*. A Farjami, S Salatin, S Jafari, **M Mahmoudian**, M Jelvehgari, Current Pharmaceutical Design, 2021, IF=3.1

21. *Preparation and characterization of cyclodextrin nanosponges for bortezomib delivery*. S Allahyari, H Valizadeh, L Roshangar, **M Mahmoudian**, F Trotta, Fabrizio Caldera, Mitra Jelvehgari, Parvin Zakeri-Milani, Expert Opinion on Drug Delivery, 17 (12), 1807-1816, 2020, IF=6,6

22. *Self-assembled peptide nanoparticles for efficient delivery of methotrexate into cancer cells*. Parvin Zakeri-Milani, Ali Shirani, Ali Nokhodchi, Samad Mussa Farkhani, Samaneh Mohammadi, Javid Shahbazi Mojarrad, **Mohammad Mahmoudian**, Tooba Gholikhani, Masoud Farshbaf, Hadi Valizadeh, Drug development and industrial pharmacy 46 (4), 521-530, 2020

23. *Cell-penetrating peptide-surface modified liposomes to enhance the intestinal absorption of enoxaparin*, Hessam Rostamian, Hadi Valizadeh, **Mohammad Mahmoudian**, Ziba Islambulchilar, Parvin Zakeri-Milani, Pharmaceutical Sciences, 2021

24. *Acetyl carnitine modified Cisplatin liposomes elevate Macrophage and Cancer cells' uptake*,Fahimeh Zahednezhad, Parvin Zakeri-Milani, Javid Shahbazi Mojarrad, Muhammad Sarfraz, **Mohammad Mahmoudian**, Behzad Baradaran, Hadi Valizadeh, Journal of Drug Delivery Science and Technology, 2023, IF=5

25. Enhanced intracellular accumulation and cytotoxicity of bortezomib against liver cancer cells using N-stearyl lactobionamide surface modified solid lipid nanoparticles, Farid Mostafaei, Salar Hemmati, Hadi Valizadeh, **Mohammad Mahmoudian**, Muhammad Sarfraz, Mahdieh Abdi, Shukoofeh Torabi, Behzad Baradaran, Massoud Vosough, Parvin Zakeri-Milani, International Journal of Pharmaceutics, 2023, IF=6.5