

**PROFESSIONAL APPOINTMENT:**

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**June 2025 – Present**

**Assistant Professor**, Department of Pharmaceutical Control, Faculty of Pharmacy, Urmia University of Medical Sciences, West Azerbaijan, Iran

**Research Focus**

- Development and validation of analytical methods (HPLC-UV, LC-MS, qPCR) in compliance with ICH guidelines for detection and quantification of impurities in pharmaceuticals and biopharmaceuticals
- Dry powder inhaler (DPI) formulation and evaluation
- Biological matrix sample preparation
- Protein separation and purification techniques

**Teaching Experience**

**Course Instructor: Pharmaceutical Microbiology & Quality Control (BSc/MSc)**

- Designed and delivered course modules covering:
  - Microbial limit testing (USP) for solid and liquid dosage forms
  - GMP compliance in sterile manufacturing, including ISO 14644 cleanroom standards
  - Sterilization validation, aseptic processing, and regulatory requirements (WHO/ICH cGMP)
  - Physicochemical quality evaluation based on USP standards (e.g., content uniformity, dissolution testing)

**Laboratory Instructor: Advanced Pharmaceutical Analysis**

- Trained students in:
  - Endotoxin detection using the Limulus Amebocyte Lysate (LAL) test
  - Bioburden testing
  - HPLC operation and pharmaceutical analysis

**Practical Training**

- Designed and conducted a practical course for pharmacy students on **extemporaneous compounding**, including preparation of semi-solid dosage forms and aqueous solutions

## EDUCATION

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Sep 2017 – Sep 2024

**Doctor of Philosophy in Quality Control  
of Pharmaceutical & Cosmetic Products**

*Tabriz University of Medical Sciences, East Azerbaijan*

**Thesis:** Investigating the drug-excipient compatibility and physicochemical stability of powders produced by spray dry, freeze dry, and tubular mixer

**Summary:**

I conducted an in-depth study on drug-excipient interactions for salbutamol and formoterol in dry powder inhalation (DPI) formulations. Additionally, I developed and analyzed various celecoxib formulations to enhance solubility. This research enabled me to gain proficiency in particle production techniques, including tubular mixing, spray drying, and freeze drying. I also utilized advanced analytical tools such as LC-MS, HPLC, FTIR, DSC, SEM, NGI, and XRD.

Notably, I successfully developed and validated an HPLC method for salbutamol analysis. I identified and tracked adduct compounds resulting from the Maillard reaction in formoterol and salbutamol DPIs, and discovered the interaction of lactose and leucine as a co-carrier in DPIs. My research culminated in three ISI publications and a congressional presentation.

- **Cumulative Grade Point Average (GPA):** 18.05/20
- **Average:** 90%

Sep 2011 – Sep 2017

**Doctor of Pharmacy**

*Tabriz University of Medical Sciences, East Azerbaijan*

**Thesis:** Development of Human Serum Albumin removal kit using solvent mixtures

**Summary:**

First, I evaluated the impact of different solvent mixtures on plasma protein precipitation to develop a new method for the specific separation of albumin from plasma. Then, I developed a method for albumin removal to facilitate biomarker discovery, as albumin—the predominant protein in plasma—often masks other plasma components, including biomarkers, thereby complicating diagnostic applications.

This project provided me with the opportunity to gain skills in experimental design, drafting standard operating procedures (SOPs), SDS-PAGE, the Bradford Assay, Response Surface Methodology, size exclusion chromatography, troubleshooting, and problem-solving. I also had the chance to present this work at three different congresses as a poster.

- **Cumulative Grade Point Average (GPA):** 16.32/20
- **Average:** 81%

## **PROFESSIONAL EXPERIENCES**

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**Oct 2024 – June 2025**

**Pharmacist (full time)**

*Tabriz University of Medical Sciences, East Azerbaijan*

**Role Description:** As a pharmacist, I educate patients on how to take their medications as prescribed, communicate with physicians to ensure accurate dispensing, and guide patients to appropriate over-the-counter medications. I also inform patients about potential side effects, drug and food interactions, and contraindications, and provide information on associated risks for special conditions (e.g., pregnancy, kidney or liver issues).

**Jul 2023 – June 2025**

**Pharmacist (part time)**

*Dr. Esmaeilpour, Tabriz, East Azerbaijan*

**Jan 2020 – Oct 2024**

**Pharmacist (part time)**

*Faculty of Pharmacy, Tabriz University of Medical Sciences, East Azerbaijan*

**Oct 2017 – Jul 2024**

**Teaching Associate**

*Faculty of Pharmacy, Tabriz University of Medical Sciences, East Azerbaijan*

**Role Description:** I assisted professors in teaching both practical and theoretical courses on the physicochemical control of drugs and microbial control of drugs. The curriculum included various United States Pharmacopeia (USP) tests such as assays, content uniformity, dissolution, stability testing, and analytical method validation, microbial limit testing for non-sterile products, bacterial gram staining, and bioassay tests for antibiotics. Additionally, I supported students in conducting their research projects. Furthermore, I conducted internship courses, including extemporaneous preparation workshops, evaluation of anti-hyperpigmentation products workshops, chemotherapy drug prescription workshops, and served as a preceptor for undergraduate pharmacy students.

**Oct 2017- Oct 2018**

**Lecturer**

*Faculty of Pharmacy, Ardabil University of Medical Sciences*

**Role Description:** My responsibilities included teaching both practical and theoretical courses on the physicochemical control of drugs. The curriculum covered various United States Pharmacopeia (USP) tests, including assays, content uniformity, dissolution, stability testing, and analytical method validation.

**Oct 2019 – Mar 2022**

**Main project collaborator in PharmD thesis**

*Faculty of pharmacy, Tabriz University of Medical Sciences, East Azerbaijan*

Aiesheh Gholizadeh-Hashjin, Pharm D, PhD.  
Faculty of Pharmacy, Urmia University of Medical Sciences, Urmia, West Azerbaijan  
Mobile: +989141973049, E-mail: Aieshe\_pharma@yahoo.com, gholizadeh.a@umsu.ac.ir

**Role Description:** I supervised two PharmD students through their thesis projects, guiding them from study design and experimental execution to thesis writing and manuscript preparation. The projects were as follows:

1. Investigation of the possibility of presence and the correlation between endotoxin test results and residual DNA in sterile water for injection based on Real-Time PCR assay
2. Evaluation of bacterial DNA contamination in recombinant GCSF by Real-Time PCR

### Reviewer in scientific journals and a congress

- ✓ Journal of Pharmaceutical Sciences
- ✓ Journal of pharmaceutical bulletin
- ✓ BioImpact journal
- ✓ 25<sup>th</sup> National Annual Congress & 11<sup>th</sup> International Annual Research and Technology Congress of Medical Sciences Students, 5-7 September 2024 Urmia, West Azerbaijan

### RESEARCH EXPERIENCE

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<b>Nov 2022 – May 2024</b>	<b>Compatibility study of formoterol fumarate-lactose dry powder inhalation formulations: Spray drying, physical mixture and commercial DPIs;</b> Drug Applied Research Center, <i>Tabriz University of Medical Sciences</i> . Student Research Committee, <i>Tabriz University of Medical Sciences</i> .
<b>Nov 2022– Jan 2024</b>	<b>Excipient–Excipient Interaction in Dry Powder Inhaler Formulation Prepared by Spray Drying;</b> Drug Applied Research Center, <i>Tabriz University of Medical Sciences</i> . Student Research Committee, <i>Tabriz University of Medical Sciences</i> .
<b>Apr 2021 – Jun 2022</b>	<b>Problem-solving approach for salbutamol analysis by HPLC during pharmaceutical assay</b> Drug Applied Research Center, <i>Tabriz University of Medical Sciences</i> . Student Research Committee, <i>Tabriz University of Medical Sciences</i> .
<b>Nov 2021 – Mar 2022</b>	<b>Investigation of the possibility of presence and the correlation between endotoxin test results and residual DNA in sterile water for injection based on real-time PCR assay</b> Faculty of pharmacy, <i>Tabriz University of Medical Sciences</i> . Student Research Committee, <i>Tabriz University of Medical Sciences</i> .
<b>Jul 2019 – May 2021</b>	<b>Direct quantitative detection of host cell residual DNA in recombinant Filgrastim by qPCR;</b> Faculty of pharmacy, <i>Tabriz University of Medical Sciences</i> . Student Research Committee, <i>Tabriz University of Medical Sciences</i> .

Aug 2018 – Mar 2019

**Evaluation of Pharmaceutical Compatibility between Acarbose and Common Excipients Used in the Development of Controlled Release Formulations;**

Faculty of pharmacy, *Tabriz University of Medical Sciences*.

Student Research Committee, *Tabriz University of Medical Sciences*.

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## SKILLS AND COMPETENCIES

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- DNA and protein Extractions
- Electrophoresis (SDS-PAGE & agarose gel)
- PCR and q-PCR
- Spectroscopy (UV, FTIR, MS)
- Some experience in doing DSC, SEM, XRD
- Statistical quality control (SQL)
- Liquid and solid culture of bacteria
- Microbial limit test
- Experience in a PC2 facility, with proficiency in BSC operation, aseptic technique, and handling of RG2 materials
- Primer designing
- Endotoxin test (LAL test)
- Chromatographic methods (thin layer, size exclusion, HPLC)
- Dry powder production technique such as spray dry, freeze dry and tubular mixer
- Study designing
- Troubleshooting
- Manuscript writing (Original and review)
- Some statistical analysis
- Refractometry
- Polarimetry
- Titrations
  
- **IT:** Minitab, Quantity one, Endnote, Chems sketch, Grams AI, Photoshop, Microsoft office (word, excel, PowerPoint)
  
- **Languages:**
  - Azerbaijani Turkish (Mother tongue)
  - Persian (native)
  - English: proficient
  - French: beginner
  - Arabic: beginner

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## PUBLICATIONS

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**Gholizadeh-Hashjin A**, Monajjemzadeh F, Ghafourian T, Hamishehkar H, Nokhodchi A. Compatibility study of formoterol fumarate-lactose dry powder inhalation formulations: Spray drying, physical mixture and commercial DPIs. *Journal of Drug Delivery Science and Technology*. 2024;95:105538.

**Gholizadeh-Hashjin A**, Hamishehkar H, Monajjemzadeh F. Detection of Excipient–Excipient Interaction in Dry Powder Inhaler Formulation Prepared by Spray Drying. *Pharmaceutical Sciences*. 2024;3(2).

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Sajjadi S, **Gholizadeh-Hashjin A**, Shafizadeh F, Marefat S, Hamidi S, Farjami A. Advancing biomedicine with gel-based materials and composites: A comprehensive review. *Journal of Applied Polymer Science*. 2023: e54641

**Gholizadeh-Hashjin A**, Hamishehkar H, Monajjemzadeh F. Problem-solving approach for salbutamol analysis by HPLC during pharmaceutical assay. *Analytical Science and Technology*. 2022;35(5):189-96.

**Gholizadeh-Hashjin A**, Abedi N, Heidari HR, Lotfipour F. Direct quantitative detection of host cell residual DNA in recombinant Filgrastim by qPCR. *Analytical Biochemistry*. 2021;629:114296.

**Gholizadeh-Hashjin A**, Shabani M, Monajjemzadeh F. Evaluation of Pharmaceutical Compatibility between Acarbose and Common Excipients Used in the Development of Controlled Release Formulations. 2020;27(3):399- 406.

**Gholizadeh-Hashjin A**, Hallaj-Nezhadi S, Lotfipour F. Quality Control of Non-Sterile Drug Product According to United States' Pharmacopeia Instruction. 2019;13(5):321-45.

Fanak Fahimi, Reza Mosaed, Bita Shahrami, **Aiesheh Gholizadeh-Hashjin**, Hamidreza Masooduan, Zoleikha Remazani, **six-volume series EBT – Evidence Based Therapy, 2020, Etminan publisher (Book)**.

Fanak Fahimi, Mohammad Sistanizad, Reza Mosaed, Bita Shahrami, **Aiesheh Gholizadeh-Hashjin**, Golnaz Afzal, Ladan Ayazkhoo, Saghar barati, Elham poorheidar, Rezvan Hassanpoor, Effat Davoodi, Soheil Roshanzamiri, Mehrdad Shavandi, Ayda Forough, Neda Kazemian, Parisa Kianpoor, Farnoosh Masboogh, **Handbook of nonprescription drugs quick reference, 2024, Etminan publisher (Book (translation))**.

### **Conferences and workshops**

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- 25<sup>th</sup> National Annual Congress & 11<sup>th</sup> International Annual Research and Technology Congress of Medical Sciences Students, 5-7 September 2024 Urmia, West Azerbaijan **(as reviewer)**
- 25<sup>th</sup> National Annual Congress & 11<sup>th</sup> International Annual Research and Technology Congress of Medical Sciences Students, 5-7 September 2024 Urmia, West Azerbaijan **(as participant)**
- Scientific article reviewer training workshop 25-26 April 2024
- 24<sup>th</sup> National Annual Congress & 10<sup>th</sup> International Annual Research and Technology Congress of Medical Sciences Students, 4-6 October 2023 Tehran **(oral presentation)**
- Analytical method validation workshop, student research committee, Tabriz University of Medical sciences, February 2022
- MBTI held by Dr. Alireza Shiri in february 2021 (CPP approved practitioner)
- Common technical document, quality assessment of biopharmaceutical products workshop held by PersisgenPar Co, 1 January 2020

Aiesheh Gholizadeh-Hashjin, Pharm D, PhD.

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- Real-time PCR workshop held by student research committee, Tabriz university of medical sciences April 2019
- Primer design workshop held by student research committee, Tabriz university of medical sciences 6 March 2019
- 41<sup>th</sup> workshop of Sources and methods of providing information about drugs and poisons workshop held by Tehran university of medical sciences 8-9 december 2019
- GMP and clean room regulations workshop held by Tabriz Pharmaceutical Technology Incubator 18 July 2018
- Preparation of a drug file according to CTD workshop held by Tabriz Pharmaceutical Technology Incubator 8 February 2018
- 2<sup>nd</sup> international and 10<sup>th</sup> national biotechnology congress, held on 29 August – 1 september 2017, Karaj (**poster**)
- 14<sup>th</sup> pharmaceutical science congress held on 21-24 December 2015, Tehran, (**poster**)
- 18<sup>th</sup> pharmacy students seminar, held on 15-17 October 2014, Tabriz (**poster**)

#### **Achievements**

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- Chosen as a distinguished researcher by National Student Research Committee in 2024.
  - Awardee of Ministry of Health and Medical Education's tuition-waiver scholarship for Doctor of Philosophy in quality control of Pharmaceutical & Cosmetic products (2017).
  - Awardee of Ministry of Health and Medical Education's tuition-waiver scholarship for Doctor of Pharmacy (2011).
  - Ranked 1100 in university entrance exam out of 442000 participants, 2011.
  - Ranked first in chemistry Olympiad in Ardabil province.
  - Got admission into the National Organization for Development of Exceptional Talents school for high school (Highly competitive), 2010.
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