

Dr MUQDAD ALHIJJAJ

Assistant Professor of Pharmaceutics

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Professional summary:

Specialised pharmacist with good history of achievement in drug delivery and material characterisation. Motivated researcher and academic member (Assistant Professor) with strong organisational and prioritisation abilities. Areas of expertise include design of novel formulations, physicochemical characterisation and evaluation of dosage forms and drug delivery systems and developing new tools and methods for pharmaceutical applications.

Skills:

a) Processing and manufacturing

- Hot melt extrusion (HME)
- Injection moulding (IM)
- Electrohydrodynamic atomization (Electrospinning and electrospraying)
- Freeze drying
- FDM 3D printing
- Microfluidics
- Spin coating

b) Characterisation and evaluation

- Differential scanning calorimetry (DSC)
- Attenuated total reflectance Fourier transform infrared (ATR-FTIR)
- Scanning electron microscopy (SEM)
- High pressure liquid chromatography (HPLC)
- UV-visible spectrophotometry
- Dissolution evaluation
- Diffusion evaluation (Franz cell)
- Polarized light microscopy
- Powder X-ray diffraction (PXRD)
- Thermal gravimetric analysis (TGA)
- Differential vapour sorption analysis (DVS)
- X-ray micro-CT tomography
- Laser diffraction
- Dynamic light scattering (DLS)
- Thermal analysis by structural characterization (TASC)
- Rheology measurements
- Other dosage forms evaluation tests

c) Other skills

- Microsoft Word
- Microsoft Excel
- Microsoft Power point
- Table Curve
- SPSS
- ImageJ

Experience:

- 1) **Assistant Professor** (full time) ... College of Pharmacy/ University of Basrah/ Basrah/ Iraq...(December 2020 till now)
 - Teaching undergraduate students topics related to development of dosage forms and drug delivery systems.
 - Supervising postgraduate students.
 - Publishing research data.
 - Collaboration with other universities inside and outside Iraq.
- 2) **Lecturer** (full time) ... College of Pharmacy/ University of Basrah/ Basrah/ Iraq...(December 2017 to December 2020)
 - Teaching students the modules related to pharmaceutics.
 - Supervising research students.
 - Conducting pharmaceutical research.
 - Collaboration with the Quality Control Department in Basrah Health Directorate.
 - Collaboration with the local pharmaceutical industry.
 - Supporting the Syndicate of Pharmacists in Basrah Governorate.
- 3) **Postdoctoral researcher (senior research associate)** (full time) ... School of Pharmacy/ University of East Anglia/ Norwich/ UK...(October 2016 to August 2018)
 - Developing screening characterization technique for preformulation applications
 - Fabrication of core-shell nanoparticles for cancer targeting.
 - Design of standard protocols for pharmaceutical 3D printing.
 - Supervising project students.
 - Laboratory management.
- 4) **Associate tutor** (part time)School of Pharmacy/ University of East Anglia/ Norwich/ UK (April 2013-October 2016)
 - Preparing the requirements of experimental work including laboratory supplies and equipment.

- Following up the individual steps of the work to make the students achieving their experimental aims.
 - Explaining the applications of the experimental work to enhance their motivation.
 - Developing their experimental skills and training them to be successful scientists in the future.
 - Providing feedback to the module organizer.
 - Ensuring the fulfillment of safety procedures.
- 5) **Assistant lecturer** (full time) College of Pharmacy/ University of Basrah/ Basrah/ Iraq (April 2008-April 2013)
- Teaching undergraduate students modules related to pharmaceutical technology, industrial pharmacy and pharmaceutical calculations.
 - Development of teaching modules.
 - Participation in organizing scientific events.
- 6) **Hospital pharmacist** (full time)Iraqi Ministry of Health/Basrah Health Directorate/ Basrah/ Iraq (November 2002- November 2004)
- Dispensing medications patients after checking their prescriptions to minimize medical errors.
 - Advising medical team regarding the safe, effective and convenient use of medications.
 - Patient education.
 - Supervising pharmaceutical products purchase and storage.

Education:

- 1) **Postdoctoral researcher (Pharmacy/Pharmaceutics)** School of Pharmacy/ University of East Anglia/ Norwich/ UK... (Completed in August 2018)
- 2) **Ph.D. Pharmacy (Pharmaceutics)** School of Pharmacy/ University of East Anglia/ Norwich/ UK..... (Awarded in December 2017)
- 3) **M.Sc. Pharmacy (Pharmaceutics)**.....College of Pharmacy / University of Baghdad / Baghdad/ Iraq (Awarded in March 2008)
- 4) **B.Sc. Pharmacy**.....College of Pharmacy / University of Baghdad / Baghdad/ Iraq (Awarded in June 2002)

Publications:

- 1) Alhijjaj, M., Reading, M., Belton, P., Qi, S., 2015. Thermal Analysis by Structural Characterization as a Method for Assessing Heterogeneity in Complex Solid Pharmaceutical Dosage Forms. *Analytical Chemistry* 87, 10848-10855.
- 2) Alhijjaj, M., Bouman, J., Wellner, N., Belton, P., Qi, S., 2015. Creating Drug Solubilization Compartments via Phase Separation in Multicomponent Buccal Patches Prepared by Direct Hot Melt Extrusion– Injection Molding. *Molecular Pharmaceutics* 12, 4349-4362.
- 3) Alhijjaj, M., Yassin, S., Reading, M., Zeitler, J.A., Belton, P., Qi, S., 2017. Characterization of Heterogeneity and Spatial Distribution of Phases in Complex Solid Dispersions by Thermal Analysis by Structural Characterization and X-ray Micro Computed Tomography. *Pharmaceutical Research* 34, 971-989.
- 4) Alhijjaj, M., Belton, P., Qi, S., 2016. An investigation into the use of polymer blends to improve the printability of and regulate drug release from pharmaceutical solid dispersions prepared via fused deposition modeling (FDM) 3D printing. *European Journal of Pharmaceutics and Biopharmaceutics* 108, 111-125.
- 5) Alhijjaj, M., Belton, P., Qi, S., 2017. A multi-technique characterization of the stability of surfactant containing solid dispersion based buccal patches prepared by hot melt injection moulding. *International Journal of Pharmaceutics* 528, 547-562.
- 6) Reading, M., Qi, S., Alhijjaj, M., 2017. Local Thermal Analysis by Structural Characterization (TASC), in: Šesták, J., Hubík, P., Mareš, J.J. (Eds.), *Thermal Physics and Thermal Analysis: From Macro to Micro, Highlighting Thermodynamics, Kinetics and Nanomaterials*. Springer International Publishing, Cham, pp. 1-10.
- 7) Nasereddin, J. M.; Wellner, N.; Alhijjaj, M.; Belton, P.; Qi, S. Development of a Simple Mechanical Screening Method for Predicting the Feedability of a Pharmaceutical FDM 3D Printing Filament. *Pharmaceutical Research* 2018, 35, (8), 151.
- 8) Alhijjaj M, Belton P, Fábíán L, Wellner N, Reading M, Qi S. Novel Thermal Imaging Method for Rapid Screening of Drug–Polymer Miscibility for Solid Dispersion Based Formulation Development. *Molecular Pharmaceutics*. 2018;15(12):5625-36.
- 9) Alhijjaj M, Nasereddin J, Belton P, Qi S. Impact of Processing Parameters on the Quality of Pharmaceutical Solid Dosage Forms Produced by Fused Deposition Modeling (FDM). *Pharmaceutics* 2019;11:633.

- 10) Alhijaj M, Belton P, Fabian L, Reading M, Qi S. Automation Potential of a New, Rapid, Microscopy-Based Method for Screening Drug–Polymer Solubility. ACS Omega. 2020;5(20):11402-10.
- 11) Al-Zuhairy S, Kadhum W, Alhijaj M, Kadhim M, Al-Janabi A, Salman A, Sharifi H, Khadom A. Development and Evaluation of Biocompatible Topical Petrolatum-liquid Crystal Formulations with Enhanced Skin Permeation Properties. Journal of Oleo Science. 2022; 71(3): 459-468.
- 12) Kadhum W, See G, Alhijaj M, Kadhim M, Arce F, Al-Janabi A, Al-Rashidi R, Khadom A. Evaluation of the Skin Permeation-Enhancing Abilities of Newly Developed Water-Soluble Self-Assembled Liquid Crystal Formulations Based on Hexosomes. Crystals. 2022; 12(9): 1238-1250.
- 13) Kashmar, S.A.; Abou Assi, R.; Alhijaj, M.; Chan, S.Y. Development and Validation of a Simultaneous HPLC Stability-Indicating Method for Atorvastatin and Apigenin in a Novel SMEDDS Formulation Using Quality by Design (QbD) Approach. Processes 2025, 13, 2933. <https://doi.org/10.3390/pr13092933>

Academic Links:

Google Scholar:

https://scholar.google.com/citations?hl=en&user=a8AqEmMAAAAJ&view_op=list_works

Research Gate:

https://www.researchgate.net/profile/Muqdad_Alhijaj

Scopus

<https://www.scopus.com/authid/detail.uri?authorId=56946894300>

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