

CURRICULUM VITAE

Rania “Ahmad Azzam” Mousa Hamed

Pharmacy/Pharmacy

Al-Zaytoonah University of Jordan, Amman, Jordan

Phone: +962-6-4291511 (ext. 299)

Fax: +962-6-4291432

E-mail: rania.hamed@zuj.edu.jo



1. Personal Data

Date of Birth: Mar 10th, 1970

Nationality: Jordanian

2. Education

- Ph.D. (Pharmacy) 2011, University of Iowa, Iowa City, Iowa, USA
- M.Sc. (Clinical Chemistry) 2004, University of Scranton, Scranton, Pennsylvania, USA
- B.Sc. (Pharmacy) 1993, Jordan University of Science and Technology, Irbid, Jordan

3. Ph.D. Dissertation

Development of a physiologically relevant in vitro model system to study exhaled bioaerosols, University of Iowa, Iowa City, Iowa, USA

4. Employment

Academic Positions

- Professor, Faculty of Pharmacy, Al-Zaytoonah University of Jordan, Amman, Jordan, Oct 7th, 2021 – Present.
- Post-doctoral Fellow, College of Pharmacy, Texas A & M University, College Station-TX, USA, Sep 1st, 2019 – May 30th, 2020.
- Associate Professor, Faculty of Pharmacy, Al-Zaytoonah University of Jordan, Amman, Jordan, July 5th, 2017 – Oct 7th, 2021.
- Assistant Professor, Faculty of Pharmacy, Al-Zaytoonah University of Jordan, Amman, Jordan, Sep 2nd, 2011 – July 5th, 2017.

Administrative Positions

- Chairman of Department, Pharmacy, University, Al-Zaytoonah University of Jordan, Amman, Jordan, Oct 2013 – Oct 2017.



5. Research Interests

- 3D printing of pharmaceuticals
- Chemometric analysis as a quality control tool for pharmaceutical formulations
- Novel topical and oral controlled-release drug delivery systems
- Determining the key parameters of the dissolution media that predict the *in vivo* performance of poorly-soluble drugs.
- Bioaerosol formation and surface characterization of respiratory surfaces

6. Membership in Scientific Societies and Associations

- American Association for the Advancement of Science (AAAS), USA, 2019 – Present
- American Association of Pharmaceutical Scientists (AAPS), USA, 2011 – Present
- Jordan Pharmacists Association (JPA), Amman, Jordan, 1993 – Present
- Women in Science and Engineering
- Phi Lambda Upsilon (Honory Chemical Society)
- Who's Who Among Students in American Universities and Colleges
- Technical consultant, Jordan Food and Drug Administration (JFDA), Amman, Jordan; 2012-2013
- Member, Abstracts and Posters Selection Committee, the 14th Jordan Pharmaceutical Conference, Jordan Pharmacists Association, Amman, Jordan; 2012 and 2014
- Chair of American Association of Pharmaceutical Scientists (AAPS) Student Chapter 2009-2010
- Vice-chair of American Association of Pharmaceutical Scientists (AAPS) Student Chapter 2006-2009

7. Honors and Awards

- Best poster award, The 3rd Edition of Global Conference on Pharmaceutics and Drug Delivery Systems. Paris, France, June 2019.
- Division of Pharmaceutics and Translational Therapeutics Travel Award, University of Iowa-2010, 2008 & 2007.
- Women in Science and Engineering Travel Award, University of Iowa-2009.
- Executive Council of Graduate and Professional Student (ECGPS) Scholarly Presentation Award, University of Iowa-2009.
- Graduate Student Senate Travel Fund Award, University of Iowa-2008.
- American Association of Pharmaceutical Scientists (AAPS)-Travel Award 2007.

8. Fellowships and Scholarships

- Fulbright U.S. Post-doctoral Fellowship at Irma Lerma Rangel College of Pharmacy, Texas A & M University, Sep 1st, 2019 – May 30th, 2020.



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- The Office of Research and Sponsored Programs at The University of Toledo, Visiting Faculty Researcher Program, Aug 1st – 31st 2017 (\$5,000).
- Daniel Turnberg Travel Fellowships, Visiting Research Fellow, School of Pharmacy, the University of Manchester, Aug 1st – Sep 10th 2016 (€3,500).
- Mobility grant funded by EU-JordanNet II European, Visiting Research Fellow, School of Pharmacy, Queen's University Belfast, Aug 9th – Sep 20th 2015 (€2,600).
- Division of Pharmaceutics and Translational Therapeutics Dissertation Fellowship, The University of Iowa – 2010.
- Graduate College Summer Fellowship, The University of Iowa – 2010.
- Executive Council of Graduate and Professional Student (ECGPS) Research Grant, The University of Iowa – 2010.
- Division of Pharmaceutics John L. Lach Memorial Scholarship, The University of Iowa – 2007.

9. Teaching Experience

• *Graduate Courses*

- Advanced Pharmaceutical Technology/Graduate level (3 credit hours)
- Biostatistics and Applications/Graduate level (3 credit hours)

• *Undergraduate Courses*

- Pharmaceutics I: Physical Pharmacy (3 credit hours)
- Pharmaceutics II: Routes of administration and pharmaceutical dosage forms (2 credit hours)
- Pharmacoeconomics (2 credit hours)
- Physical Pharmacy Laboratory (1 credit hour)
- Pharmaceutical Calculations (1 credit hour)
- Practical Industrial Pharmacy Laboratory II (1 credit hour)
- Pharmaceutics Laboratory (1 credit hour)
- Pharmaceutical Technology Laboratory (1 credit hour)

10. Supervision of Graduate Research

1. Heba Al Hadidi (Aug 2021-present)

Thesis: Development and characterization of minoxidil nanosuspension-loaded dissolved microneedles for hair regrowth

2. Rawaa Obeid (Aug 2021-present)

Thesis: Development and characterization of anticancer model drug conjugated to biosynthesized zinc oxide nanoparticles loaded into different topical skin formulations

3. Ali Al-Shammari (Aug 2021-Feb 2022)

Thesis: Development of magnetic gel containing iron-oxide nanoparticles loaded with cisplatin. (Co-advised with Dr. Rana Abu-Huwaij).

4. Ebtihal Abu Hamdeh (Aug 2021-present)



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Thesis: Investigation of the *in vitro* release profile of carvedilol and evaluation of the chemical and physical stabilities of a new oral carvedilol microemulsion-loaded oleogel. (Co-advised with Dr. Kamal Sweidan).

5. Maimoneh Abed (May 2021-Feb 2022)

Thesis: Green development of transdermal patches using eco-friendly coated iron-oxide nanoparticles loaded doxorubicin. (Co-advised with Dr. Rana Abu-Huwajj).

6. Walaa' AbuAta (Feb 2021-Aug 2022)

Thesis: Development and optimization of ciprofloxacin HCl nanoemulsion-loaded two bigels: A comparative study

7. Braa' Jehad (Feb 2021-Aug 2022)

Thesis: Dissolved microneedles combined with nanoemulsion for dermal delivery of anti-wrinkle agent

8. Kamar Magamseh (Feb 2021-present)

Thesis: Preparation and characterization of green hydrogels using orange peels

9. Rolla Al Shalabi (Nov 2020-May 2021)

Thesis: Preparation of eco-friendly coated magnetic iron oxide nanoparticles using Spinacia oleracea leaves and studying their anticancer activity (Co-advised with Rana Abu-Huwajj)

10. Amani Abu Kwaik (Aug 2019-March 2021)

Thesis: Preparation and characterization of ibuprofen and metronidazole in situ microgel for the treatment of periodontitis. (Co-advised with Dr. Rana Obeidat).

11. Bayan Seder (Nov 2018-Aug 2019)

Thesis: Development and characterization of different formulations of controlled-release lipid-based delivery systems of carvedilol.

12. Duaa' Omar (Nov 2018-Aug 2019)

Thesis: Co-delivery of riboflavin immediate-release granules and topiramate extended-release pellets: Toward reducing the frequency of migraine attack.

13. Yasmeen Al-Adhami: (Feb 2018-Jan 2019)

Thesis: Ibuprofen nanoemulsion-based in situ gel for periodontitis

14. Haitham Emran: (Feb 2018-May 2019)

Thesis: Development of dual release pellets of celecoxib

15. Hala Qawwas (Oct 2017-Aug 2018)

Thesis: Controlled-release formulations of carvedilol-loaded oleogels.

16. Sabrine AlNadi (Mar 2017-Jan 2018)

Thesis: Dissolution behavior of the poorly soluble weak acid drug valsartan upon entry in the small intestine.

17. Ahmad Farhan (Mar 2017-present)

Thesis: Nanoemulsion-based oleogel formulation of lidocaine for transdermal delivery

18. Ala'a Abu Rezaq (Oct 2015-Jan 2017)

Thesis: Development and optimization of hydrogel, oleogels and bigels as topical drug delivery systems for periodontitis.

19. Reem AlJanabi (Mar 2015-Mar 2016)

Thesis: The effect of pH and ionic strength of the dissolution media on the rate of Quetiapine Fumarate release from polymeric matrix tablets.

20. Marwa Basel (Oct 2014-Sep 2015)



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Thesis: Development and optimization of diclofenac diethylamine nanoemulsion-based gel formulation.

21. Ali Al-Samydai (Oct 2014-May 2015)

Thesis: The effect of polymer type, ratio, and viscosity grade on the *in vitro* release of quetiapine fumarate, a BCS class II drug, from a controlled release matrix tablets.

22. Areej Awadallah (Mar 2014-Dec 2014)

Thesis: Determining the key parameters of the physiologically relevant dissolution media that control the rate of dissolution of BCS class II drugs along the GI tract to better predict the *in vivo* performance.

11. Grants

- ***Scientific Research Support Funds (SRSF) at Ministry of Higher Education and Scientific Research, Amman, Jordan***
Nanoemulsion– and Gold Nanoparticles–Loaded Diclofenac Diethylamine in Bigels: Development, Rheological Characterization, and *In vitro* and *Ex vivo* Release Studies, Funded 2018 (14,079 JD)/ Principle Investigator.
- ***Abdul Hamid Shoman Fund to support scientific research, Amman, Jordan***
Gold Nanorods Loaded into Gels: Colloidal Stability, Rheological Properties, Photothermal Properties and Penetration extent into Excised Human Skin, Funded 2017 (15,000 JD)/Co-investigator.
- ***Deanship of Scientific Research, Al-Zaytoonah University of Jordan***
Surface Properties of Nanoformulation Design for Transdermal Delivery Systems, Funded 2017 (35,500 JD)/Principle Investigator.
- ***Deanship of Scientific Research, Al-Zaytoonah University of Jordan***
Project: Interaction of Gold Nanorods-Gel Composite with Human Skin Hair Follicles: The Colloidal Stability and Preferential Targeting, Funded 2017 (23,000 JD)/Coinvestigator.
- ***Scientific Research Support Funds (SRSF) at Ministry of Higher Education and Scientific Research, Amman, Jordan***
The efficiency of using oleogels and bigels in treating periodontitis in an *in vitro* host-parasite interaction model, Funded 2017 (74,000 JD)/Co-Investigator.
- ***Deanship of Scientific Research, Al-Zaytoonah University of Jordan***
Nanoemulsion-based gel formulation for topical drug delivery systems, Funded 2013 (97,170 JD)/Principle Investigator.
- ***Executive Council of Graduate and Professional Student (ECGPS) Research Grant, The University of Iowa***
Investigating the effect of salts on the surface viscoelastic properties of the upper respiratory tract: Towards developing simple aerosols to halt airborne disease transmission, Funded 2010

12. Patents

N/A

13. Membership of Committees



- **National and International**

1. Member, Abstracts and Posters Selection Committee, Jordan Pharmaceutical Conference, Jordan Pharmacists Association, Amman, Jordan; 1993-Present
2. Member, Volunteer Poster Abstract Screener, American Association of Pharmaceutical Scientists (PharmSci 360 AAPS), USA; 2011-present
3. Technical consultant, Jordan Food and Drug Administration (JFDA), Amman, Jordan; 2012-2013

- **University**

1. Member in the Accreditation Council for Pharmacy Education (ACPE) committee at Al-Zaytoonah University of Jordan; Amman, Jordan; 2018
2. Member of Foreign Relationships Office, Al-Zaytoonah University of Jordan, Amman, Jordan; 2017-2019
3. Member of Counseling Center and Community Services, Al-Zaytoonah University of Jordan, Amman, Jordan; 2017-2019
4. Member of Faculty Council; 2013-2019
5. Member of Curriculum and Learning Resources Committee; 2013-2018
6. Member of Post-Graduate Studies Committee; 2013-2019
7. Member, Quality Assurance Committee, Al-Zaytoonah University of Jordan; 2015-2016.
8. Member, Conference Organizing Committee, Al-Zaytoonah University of Jordan, Amman, Jordan, 2012-2019

14. Professional and Scientific Meetings

Scientific Meetings Organized

1. Al-Zaytoonah University of Jordan and University of Toledo Conference (ZTIPC 2022, 2019, 2017, 2015, 2012), Amman-Jordan.
2. Jordan Pharmacists Association, Amman, Jordan Conference; 2012 and 2014

Participation in Scientific meetings and proceedings

1. **R. Hamed**. Development and characterization of thermoresponsive *in situ* microgels for the ocular delivery of prednisolone. *International Pharmaceutical Conference 2022 (ZIPC2022)*, Amman, Jordan, Oct 2022.
2. R. Obeid, **R. Hamed**. Development and characterization of anticancer model drug conjugated to biosynthesized zinc oxide nanoparticles loaded into different topical skin formulations. *International Pharmaceutical Conference 2022 (ZIPC2022)*, Amman, Jordan, Oct 2022.
3. R. Abu Rayya, **R. Hamed**. Rheological, physicochemical properties, and stability studies of vitamin C loaded microneedles. *International Pharmaceutical Conference 2022 (ZIPC2022)*, Amman, Jordan, Oct 2022.
4. **R. Hamed**, A. AbuKwaik, R. Obeidat. Development of *in situ* microgels for the co-delivery of ibuprofen and metronidazole for the treatment of periodontitis.



- American Association of Pharmaceutical Scientists (AAPS) PharmSci 360, Philadelphia, PA, USA, Oct 2021.*
5. Controlled Release Society 2021 Virtual Annual Meeting July 25 - 29, 2021.
 6. **R. Hamed**, E. Mohammed, Z. Rahman, M. Khan. Chemometric assisted X-ray powder diffractometry method for crystalline Lopinavir quantification in 3D printlets manufactured by Selective Laser Sintering. *American Association of Pharmaceutical Scientists (AAPS) PharmSci 360, New Orleans, Louisiana, USA, Nov 2020.*
 7. D. W. Abu-Hassan, M. Y. Alkawareek, **R. Hamed**, F. Banat, S. Al-Muhtaseb. Host-parasite Interaction Model Using Bead-Grown Biofilms. *Federation of American Societies for Experimental Biology, Supplement: Experimental Biology 2020 Meeting Abstracts, 34 (S1), April 2020., 34 (S1), April 2020.*
 8. **R. Hamed**, Y. Al-Adhami, R. Abu-Huwaij. Microemulsion concentration influences the mechanical properties and drug release rate of ibuprofen in situ gels. *American Association of Pharmaceutical Scientists (AAPS) 2019 PharmSci 360, San Antonio, Texas, USA, Nov 2019.*
 9. Y. Al-Adhami, **R. Hamed**. Ibuprofen nanoemulsion *in situ* gel for mucosal adhesion in periodontitis. *Al-Zaytoonah University of Jordan and University of Toledo (ZTIPC 2019), Amman, Jordan, Nov, 2019.*
 10. **R. Hamed**, A. Farhan, R. Abu-Huwaij, N. Mahmoud. Lidocaine microemulsion-laden organogels as lipid-based systems for topical delivery. *The 3rd Edition of Global Conference on Pharmaceutics and Drug Delivery Systems, Paris, France, June 2019 [Best Poster Award].*
 11. A. Zaid Alkilani, **R. Hamed**. Fabrication and characterization of transdermal patch loaded with ascorbic acid. *The 3rd Edition of Global Conference on Pharmaceutics and Drug Delivery Systems, Paris, France, June 2019.*
 12. S. Alnadi and **R. Hamed**. Valsartan transfer behavior from the stomach to the small intestine using an *in vitro* transfer model. *Fourth Postgraduate Conference-Applied Science Private University, Amman, Jordan, Jan 2019.*
 13. Hala Al-Qawass and **R. Hamed**. Lipid-based delivery systems of carvedilol-loaded oleogels. *Fourth Postgraduate Conference-Applied Science Private University, Amman, Jordan, Jan 2019.*
 14. **R. Hamed** and S. Alnadi. Transfer behavior of the weakly acidic BCS class II valsartan from the stomach to the small intestine during fasted and fed states. *The 15th Annual European Pharma Congress, Frankfurt, Germany, May 2018.*
 15. **R. Hamed**. Development of hydrogels, oleogels and bigels as local drug delivery systems for periodontitis. *The First International Conference of the Faculty of Pharmacy, Mutah University, Dead Sea, Jordan, April 2018.*
 16. S. Alnadi and **R. Hamed**. Transfer Behavior of Valsartan from the Stomach to the Small Intestine Case Example of a Weakly Acidic BCS Class II Drug. *Al-Zaytoonah University of Jordan and University of Toledo (ZTIPC 2017), Amman, Jordan, Nov, 2017.*
 17. **R. Hamed**, A. Aburezeq. Development and optimization of oleogels and bigels as topical drug delivery systems for periodontitis. *6th FIP Pharmaceutical Sciences World Congress, Stockholm, Sweden, May 2017.*



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18. **R. Hamed**, R. AlJanabi, A. Abbas, S Sunoqrot. The effect of the physiological parameters of the gastrointestinal fluid on quetiapine fumarate release from matrix tablets prepared using two different polymeric blends. *6th FIP Pharmaceutical Sciences World Congress*, Stockholm, Sweden, May 2017.
19. A. Abu Rezaq, **R. Hamed**, O. Tarawneh. Development and optimization of hydrogels, oleogels, and bigels as topical drug delivery systems for periodontitis. *ASU-Pharmacy Third Conference*, Amman, Jordan, Apr 2017.
20. **R. Hamed**. A novel approach to determine the rheological properties of the gel layer of swollen hydrophilic matrix tablets. *8th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems*, Madrid, Spain, March 2016.
21. **R. Hamed**. Simulating the surface tension of the gastrointestinal fluid to enhance the dissolution of the weakly basic BCS class II drugs. *8th International Conference and Exhibition on Pharmaceutics & Novel Drug Delivery Systems*, Madrid, Spain, March 2016.
22. R. AlJanabi & **R. Hamed**. The influence of the chemical properties of the dissolution medium on the rate of quetiapine fumarate release from HPMC and Compritol® HD5 ATO matrix tablets. *Applied Science University Second Symposium*, Amman, Jordan, Dec 2015.
23. R. AlJanabi & **R. Hamed**. The effect of pH and ionic strength of the dissolution media on the rate of Quetiapine Fumarate release from polymeric matrix tablets. *Al-Zytoonah University of Jordan and University of Toledo (ZTIPC 2015)*, Amman, Jordan, Oct 2015.
24. **R. Hamed**. Investigation of the rheological properties of the gel layer of swollen HPMC matrix tablets to better predict their *in vitro* release. *Al-Zaytoonah University of Jordan and University of Toledo (ZTIPC 2015)*, Amman, Jordan, Oct 2015.
25. **R. Hamed**. Comparative rheological studies of diclofenac diethylamine conventional gel, emulgel, and a nanoemulsion-based gel formulation. *American Association of Pharmaceutical Scientists (AAPS)*, San Diego, CA, USA, Nov 2014.
26. **R. Hamed**, Lina Hammad, Aiman Abbas. The effect of polymer type, ratio, and viscosity grade on the *in vitro* release of quetiapine fumarate, a BCS class II drug, from controlled release matrix tablets. *American Association of Pharmaceutical Scientists (AAPS)*, San Diego, CA, USA, Nov 2014.
27. **R. Hamed**. Comparative rheological studies of diclofenac diethylamine conventional gel, emulgel, and nanoemulsion-based gel. *Al-Zaytoonah University of Jordan*, Amman, Jordan, 2014.
28. **R. Hamed**, J. Fiegel. Surface rheological properties of surfactants adsorbed at an air-mucus interface. *International Pharmaceutical Federation's PSWC and the American Association of Pharmaceutical Scientists (AAPS) Annual Meeting*, New Orleans, LA, USA, Nov 2010.
29. **R. Hamed**, J. Fiegel. Investigating the interfacial rheological properties of surfactants adsorbed at an air-mucus interface of the upper respiratory tract (URT). *James F. Jakobsen Graduate Conference, University of Iowa*, Iowa City, IA, USA, 2010.



30. **R. Hamed**, J. Fiegel. Development of a more physiologically-relevant mucus mimetic of the upper respiratory tract. *American Institute of Chemical Engineers (AIChE) Annual Meeting*, Nashville, TN, USA, Nov 2009.
31. **R. Hamed**, J. Fiegel. Evaluating the role of mucus physicochemical properties on bioaerosol formation in the lungs. *James F. Jakobsen Graduate Conference, University of Iowa*, Iowa City, IA, USA, 2009.
32. **R. Hamed** & J. Fiegel. Investigating the properties of lung mucus: Toward understanding the role of mucus physicochemical properties in bioaerosol formation. *The International Society for Aerosols in Medicine (ISAM)*, Monterey, CA, USA, May 2009.
33. **R. Hamed**, J. Fiegel. Evaluating the role of mucus physicochemical properties on bioaerosol formation in the lungs. *Pharmaceutics Graduate Student Research Meeting, Purdue University*, Lafayette, IN, USA, June 2009.
34. **R. Hamed**, J. Fiegel. Determining key factors that control the formation of pathogenic bioaerosols within the upper respiratory system. *James F. Jakobsen Graduate Conference, University of Iowa*, Iowa City, IA, USA, 2008.
35. **R. Hamed**, J. Fiegel. Bioaerosol formation from lung surfaces: Evaluating the role of mucus physicochemical properties. *American Association of Pharmaceutical Scientists (AAPS)*, Atlanta, GA, USA, Nov 2008.
36. **R. Hamed**, J. Fiegel. The role of mucus physicochemical properties in controlling bioaerosol formation within the upper respiratory tract. *Pharmaceutics Graduate Student Research Meeting, University of Michigan*, Ann Harbor, MI, USA, June 2008.
37. **R. Hamed**, J. Fiegel. Physiologically-relevant cough machine to study bioaerosol formation in the lungs. *American Association of Pharmaceutical Scientists (AAPS)*, San Diego, CA, USA, 2007.

15. Participation in or organization of curricular and/or extra-curricular activities

- The 4th MENA Regulatory Conference on Bioequivalence, Biowaivers, Bioanalysis and Dissolution, Amman, Jordan, 19/09/2022-20/09/2022.
- Workshop: Development of Biorisk Management (BRM) Curriculum for Jordanian Universities: BRM Curriculum Introduction and Integration, Royal Scientific Society, Amman, Jordan, 27/06/2022-28/06/2022.
- The experience of a Fulbrighter amid the Coronavirus pandemic: Rania Hamed (Jordan, 2019/20), published in Fulbrighter Digest, July 2020 (<https://fulbrighternetwork.com/news/300497>).
- Mentor in the Global Thinkers Forum Athena MENA Mentorship program, 31/05/2019-31/12/2019
- Evaluation of scientific posters in the ASU Pharmacy Fourth International Conference, Applied Science University (ASU), Amman, Jordan, 05/01/2019-06/01/2019
- Podium presentation in the 2nd Global Forum for Marketing of Halal Pharmaceuticals, Princess Sumaya University for Technology, Amman, Jordan, 05/12/2018



- Podium presentation in The First International Conference of the Faculty of Pharmacy Mutah University, Karak, Jordan 18/04/2018-19/04/2018

16. Publications

1. **Hamed, R.**, Abu Kwiak, A, D., Al-Adhami, Y., Hammad, A. M., Obaidat, R., Abusara O, H., Abu Huwajj, R., 2022. *Microemulsions as lipid nanosystems loaded into thermoresponsive in situ microgels for local ocular delivery of prednisolone*. *Pharmaceutics*, 14(9):1975.
2. Al-Shalabi, R., Abu-Huwajj, R., **Hamed, R.**, Abbas, M, M., 2022. *The antimicrobial and the antiproliferative effect of human triple negative breast cancer cells using the greenly synthesized iron oxide nanoparticles*. *J. Drug Deliv. Sci. Technol.*,75(1):103642.
3. Alkilani, A., Nasereddin, J., **Hamed, R.**, Nimrawi, S., Hussein, G., Abo-Zour, H., Donnelly, F., 2022. *Beneath the skin: A review of current trends and future prospects of transdermal drug delivery system*. *Pharmaceutics*, 14(6):1152.
4. Obaidat, R., Abu Kwiak, A., **Hamed, R.**, 2022. *Development of combined therapy of metronidazole and ibuprofen using in situ microgels for the treatment of periodontitis*. *J. Drug Deliv. Sci. Technol.*, 71, 103314.
5. Obaidat, R., Abu Shameh, A., Aljarrah, M., **Hamed, R.**, 2022. *Preparation and evaluation of polyvinylpyrrolidone electrospun nanofiber patches of Pioglitazone for the Treatment of Atopic Dermatitis*. *AAPS PharmSciTech.*, 23 (51), 1-19.
6. Abu-Huwajj, R., Al-Assaf, S.F., **Hamed, R.**, 2021. *Recent exploration of nanoemulsions for drugs and cosmeceuticals delivery*. *J Cosmet Dermatol*. DOI: 10.1111/jocd.14704
7. **Hamed, R.**, Seder, B., Bardaweel, S., Qawwas, H., 2021. *Lipid-based formulations of microemulsion-loaded oleogels for the oral delivery of carvedilol*. *J. Dispers. Sci. Technol*. DOI: 10.1080/01932691.2021.1964987
8. **Hamed, R.**, Mohamed, M.E., Sediri, K., Khan, A.M., Rahman, Z., 2021. *Development of stable amorphous solid dispersion and quantification of crystalline fraction of lopinavir by spectroscopic-chemometric methods*. *Int. J. Pharm.*, 602, 120657.
9. Hammad, A.M., **Hamed, R.**, Al-Qerem, W.A., Bander, A., Hall, F.S., 2021. *Optimism bias, pessimism bias, magical beliefs, and conspiracy theory beliefs related to COVID-19 among the Jordanian population*. *Am. J. Trop. M. Hyg.*, 104 (5), 1661-1671.
10. **Hamed, R.**, Kamal, A., 2021. *Strength-dependent and strength-independent dissolution patterns of poorly-soluble drugs. Case example: valsartan*. *Pharm. Chem. J.* 54, 1227-1234.
11. Alkilani, A.Z., **Hamed, R.**, Hussein, G., Alnadi, S., 2021. *Nanoemulsion-based patch for the dermal delivery of ascorbic acid*. *J. Dispers. Sci. Technol*. DOI: 10.1080/01932691.2021.1880924
12. **Hamed, R.**, Mohamed, M.E., Rahman, Z, Khan, A.M., 2021. *3D-printing of lopinavir printlets by selective laser sintering and quantification of*



- crystalline fraction by XRPD-chemometric models. Int. J. Pharm., 592, 120059.*
13. Abu-Rumman, A., Abu-Huwaij, R., **Hamed, R.**, 2022. *Development and in vitro appraisal of Soluplus® and/or Carbopol® 971 buccoadhesive patches releasing atorvastatin. J. Adhesion, 98(7), 915-933.*
 14. **Hamed, R.**, Mahmoud, N.N., Alnadi, S.H., Alkilani, A.Z., and Hussein, G., 2020. *Diclofenac diethylamine nanosystems-loaded bigels for topical delivery: development, rheological characterization, and release studies. Drug Dev. Ind. Pharm., 46 (10), 1705-1715.*
 15. **Hamed, R.**, Schenck, D.M., Fiegel, J., 2020. *Surface rheological properties alter aerosol formation from mucus mimetic surfaces. Soft Matter, 16, 7823-7834.*
 16. **Hamed, R.**, Alnadi, S., Awadallah, A., 2020. *The effect of enzymes and sodium lauryl sulfate on the surface tension of dissolution media: toward understanding the solubility and dissolution of carvedilol. AAPS PharmSciTech., 21 (146), 1-11.*
 17. Mahmoud, N., **Hamed, R.**, Khalil, E.A., 2020. *Colloidal stability and rheological properties of gold nanoparticle-loaded polymeric hydrogels: impact of nanoparticle's shape, surface modification, and concentration. Colloid Polym, Sci., 298, 989-999.*
 18. **Hamed, R.**, Kamal, A., Alkilani, A.Z., 2020. *Gelation and rheological characterization of Carbopol® in simulated gastrointestinal fluid of variable chemical properties. Pak. J. Pharm. Sci., 33 (3), 923-928.*
 19. **Hamed, R.**, Alnadi, S.H., 2020. *Drug release pattern of oral Dual-release pellets through the gastrointestinal tract: Case example of diclofenac sodium. Dissolut. Technol., 27 (2), 22-30.*
 20. **Hamed, R.**, Omran, H., 2019. *Development of dual-release pellets of the non-steroidal anti-inflammatory drug celecoxib. J. Drug Deliv. Sci. Technol., 55, 101419.*
 21. **Hamed, R.**, Al-Adhami, Y., Abu-Huwaij, R., 2019. *Concentration of a microemulsion influences the mechanical properties of ibuprofen in situ microgels. Int. J. Pharm., 570, 118684.*
 22. Tarawneh, O., Al-Assi, A, **Hamed, R.**, Sunoqrot, S., Hasan, L., Al-Sheikh, I., Al-Qirim, R., Alhusban, A., Naser, W., 2019. *Development and characterization of kcarrageenan platforms as periodontal intra-pocket films. Trop. J. Pharm. Res., 18 (9), 1791-1798.*
 23. Alkilani, A.Z, Alkalbani, R., Jaber, D., **Hamed, R.**, Hamad, I., Abumansour, H., Abu Assab, M., 2019. *Knowledge, attitude, practice and satisfaction of patients using analgesic patches in Jordan. Trop. J. Pharm. Res., 18(8), 1745-1753.*
 24. **Hamed, R.**, Farhan, F., Abu-Huwaij, R, Mahmoud, N., Kamal, A., 2019. *Lidocaine microemulsion-laden organogels as lipid-based systems for topical delivery. J. Pharm. Innov., 15, 521-534.*
 25. Abu-Huwaij, R., **Hamed, R.**, Daoud, E., Alkilani, A.Z., 2019. *Development and in vitro characterization of nanoemulsion-based buccal patches of valsartan. Acta Pol. Pharm., 76(2), 325-333.*



26. Mahmoud, N., Alhusban, A., Ali, J.I., Al-Bakri, A., **Hamed, R.**, Khalil, E., 2019. *Preferential accumulation of phospholipid-PEG and cholesterol- PEG decorated gold nanorods into human skin layers and their photothermal-based antibacterial activity.* Sci. Rep., 9 (5796), 1-15.
27. **Hamed, R.**, 2019. *Physiological parameters of the gastrointestinal fluid impact the dissolution behavior of the BCS class IIa drug valsartan.* Pharm. Dev. Technol., 23(10), 1168-1176.
28. **Hamed, R.**, Kamal, A., 2019. *Concentration profiles of carvedilol: A comparison between in vitro transfer model and dissolution testing.* J. Pharm. Innov., 14 (2), 123-131.
29. Alkilani A.Z., **Hamed, R.**, Al-Marabeha, S., Kamal, A., Abu-Huwajj, R., Hamad, I., 2018. *Nanoemulsion-based film formulation for transdermal delivery of carvedilol.* J. Drug Deliv. Sci. Technol., 46, 122-128.
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