

Dina El-Sabawi, PhD

Professor of Pharmaceutical Technology
Department of Pharmaceutics and Pharmaceutical Technology
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Employment:

2019 - present: The University of Jordan, School of Pharmacy, Amman, 11942, Jordan.

Description: Professor of Pharmaceutical Technology at the Department of Pharmaceutics and Pharmaceutical Technology.

2019 - present: Assistant Dean for Field Training Affairs, School of Pharmacy, The University of Jordan

2014 - 2019: The University of Jordan, School of Pharmacy, Amman, 11942, Jordan.

Description: Associate Professor of Pharmaceutical Technology at the Department of Pharmaceutics and Pharmaceutical Technology.

2006 - 2014: The University of Jordan, School of Pharmacy, Amman, 11942, Jordan.

Description: Assistant Professor of Pharmaceutical Technology at the Department of Pharmaceutics and Pharmaceutical Technology.

2002 - 2004: University of Bath, Department of Pharmacy and Pharmacology, Claverton Down, BA2 7AY, Bath, United Kingdom.

Description: Teaching assistant, research assistant and laboratory demonstrator at various courses such as Physicochemical Properties of Drugs, Medicines Design, Pharmaceutics and Physical Pharmacy.

1999 - 2001: University of Isira, Faculty of Pharmacy, Amman, Jordan.

Description: Teaching and research assistant at various courses such as Pharmaceutical Organic Chemistry, Pharmaceutics, Industrial Pharmacy and Physical Pharmacy.

Education:

2001 - 2005: University of Bath, Department of Pharmacy and Pharmacology, Claverton Down, BA2 7AY, Bath, United Kingdom.

Course: Doctor of Philosophy in Pharmacy (Major in Pharmaceutical Technology and Physical Pharmacy).

Title of Thesis: Novel Surface Engineering of Carrier Particles for Dry Powder Inhalation Formulations.

Theme: My PhD investigated the influence of the surface characteristics of commercial grade excipient particles on the inter-particulate interactions of drug-carrier particles in dry powder inhalation formulations. A novel temperature controlled surface etching process was developed and is now patented in the UK to controllably modify the physicochemical properties of commercial α -lactose monohydrate particles. A direct correlation was established between the qualitative characterisation of the surface morphology of treated lactose excipient particles and the quantitative *in vitro* deposition profile of the respirable fraction of the model drug that was employed throughout the study.

1994 -1999: University of Petra, Faculty of Pharmacy, Amman, Jordan.
Bachelor of Science in Pharmacy.

Scientific Publications:***Journal Publications***

Hamdan, I.I., **El-Sabawi, D.**, Darwish, R., Dahabiyeh, L.A. (2021).

Preparation, characterization and antimicrobial assessment of selected ciprofloxacin salts. *Acta Pharmaceutica*. **71**, 365-382.

Hamdan, I.I., **El-Sabawi, D.**, Tverdokhle, N.M., Lantushenko, A.O., Evstigneev, M.P., Abu-Dahab, R. (2020). Studies on potential interaction between cinacalcet hydrochloride and diclofenac sodium. *Biophysical Chemistry*. **266**

Tarawneh R.T., Mansour R.S.H, **El-Sabawi, D.**, Hamdan I.I. (2020). Preparation and Physiochemical Characterization of Atorvastatin Choline Salt and its Potential for Transdermal Permeation. *Jordan Journal of Pharmaceutical Sciences*. **13**

Al-dmour, N., Abu-Dahab, R., Evstigneev, M., Kostjukov, V., **El-Sabawi, D.**, Hamdan I.I. (2019). Interaction of pseudoephedrine and azithromycin with losartan: Spectroscopic, dissolution and permeation studies. *Spectrochimica Acta Part A: Molecular and Biomolecular Spectroscopy*. **221**, 1-10.

El-Sabawi, D., Abu-Dahab, R., Al-Bakri, A.G., Hamdan, I.I. (2019). Studies on the Interaction between ciprofloxacin hydrochloride and diclofenac sodium. *Tropical Journal of Pharmaceutical Research*. **18**, 377-384.

El-Sabawi, D., Abu-Dahab, R., Zalloum, W.A., Ijbara, F., Hamdan, I.I. (2019). The effect of ferrous ions, calcium ions and citric acid on absorption of ciprofloxacin across caco-2cells: practical and structural approach. *Drug Development and Industrial Pharmacy*. **45**, 292-303.

Hamdan, I.I., Kasabri, V.N., Al-Hiari, Y.M., **El-Sabawi, D.**, Zalloum, H. (2019). Pancreatic lipase inhibitory activity of selected pharmaceutical agents. *Acta Pharmaceutica*. **69**, 1-16.

Hamdan, I.I., **El-Sabawi, D.**, Abu-Dahab, R. (2018). Solubility of gliclazide and ion-molecular interactions with aminopropanol in aqueous solutions. *Russian Journal of Physical Chemistry A*. **92**, 84-92.

Thiab, S.H., Hamdan, I.I., **El-Sabawi, D.**, Al-Nadaf, A.H. (2016). Effect of loratadine on the dissolution and bioavailability of gliclazide from its hydroxypropyl- β -cyclodextrin complex. *Journal of Inclusion Phenomena and Macrocyclic Chemistry*. **85**, 203-216.

Abu Hammad, A.M., Hamdan, I., **El-Sabawi, D.** (2016). Assessment of the pharmacopoeial analytical methodologies in the dissolution test of enteric coated lansoprazole preparations. *Dissolution Technologies*. **23**, 22-28.

Alshamaileh, E., Al-Sulaibi, M., Al-Khawaldeh, A., Almatarneh, M.H., **El-Sabawi, D.**, Al-Rawajfeh, A. (2016). Current status of nanotechnology in Jordan. *World Journal of Science, Technology and Sustainable Development*. **13**, 66-81.

Hamdan, I., **El-Sabawi, D.**, Abdel Jalil, M. (2016). Potential interaction between zinc ions and a cyclodextrin-based diclofenac formulation. *Drug Development and Industrial Pharmacy*. **42**, 418-428.

El-Sabawi, D., Hamdan, I. (2014). Improvement of dissolution rate of gliclazide through sodium salt formation. *Dissolution Technologies*. **21**, 49-55.

Abu-Dahab, R., Khalil, E., Khair, A., **El-Sabawi, D.**, Hamdan, I. (2014). Antiproliferative activity of selected non-steroidal anti-inflammatory agents: Role of iron complexes. *Jordan Journal of Pharmaceutical Sciences*. **7**, 49-66.

El-Sabawi, D., Abbasi, S., Alja'fari, S., Hamdan, I. (2013). Pharmaceutical evaluation of glibenclamide products available in the Jordanian market. *African Journal of Pharmacy and Pharmacology*. **7**, 1464-1470.

El-Sabawi, D., Hamdan, I., Haj-Ali, D. (2012). Capillary electrophoresis with electrokinetic injection simplifies the dissolution testing of amoxicillin capsules. *Journal of Liquid Chromatography & Related Technologies*. **35**, 573-589.

El-Sabawi, D., Price, R., Edge, S., Young, P.M. (2006). Novel temperature controlled surface dissolution of excipient particles for carrier based dry powder inhaler formulations. *Drug Development and Industrial Pharmacy*. **32**, 243-251.

El-Sabawi, D., Edge, S., Price, R., Young, P.M. (2006). Continued investigations into the influence of loaded dose on the performance of dry powder inhalers: Surface smoothing effects. *Drug Development and Industrial Pharmacy*. **32**, 1135-1138.

Young, P. M., Edge, S., Traini, D., Jones, M.D., Price, R., **El-Sabawi, D.**, Urry, C., Smith, C. (2005). The influence of dose on the performance of dry powder inhalation systems. *International Journal of Pharmaceutics*. **296**, 26-33.

Conference Proceedings

Dina El-Sabawi, Robert Price. Investigation into the Influence of Storage Conditions on Particulate Interactions in Carrier-Based Dry Powder Inhaler Formulations. The 4th International Conference of the Royal Medical Services. Amman, Jordan. 2008. (Speaker).

Dina El-Sabawi, Bashar T'aani. Bioequivalence of Grandfather Products, Combination Products and OTC Products. The First JAPM Bioequivalence Conference, *Regulations and Debates*. Amman, Jordan. 2008. (Speaker).

D. El-Sabawi, P.M. Young, S. Edge, R. Price. Investigation into the influence of storage conditions on the inhalation properties of novel surface etched lactose carriers for DPI formulations. AAPS (American Association of Pharmaceutical Scientists) Annual Meeting and Exposition. Nashville, Tennessee. USA. AAPS, 2005. (Poster Presentation).

D. El-Sabawi, P.M. Young, S. Edge and R. Price. Novel temperature controlled surface etching of excipient particles: Investigation into the influence of storage conditions on inhalation properties of surface etched DPI formulations. ISAM (International Society for Aerosols in Medicine). Perth, Australia. ISAM, 2005. (Poster Presentation).

D. El-Sabawi, P.M. Young, S. Edge, R. Price. Modification of the Morphology of Lactose Carriers for DPI Formulations: A Novel Temperature Controlled Surface Etching Process. DDL (Drug Delivery to the Lungs 15). London, UK. The Aerosol Society: DDL, 2004. (Speaker).

D. El-Sabawi, P.M. Young, S. Edge, R. Price. Modification of lactose carriers for dry powder inhalers using novel temperature controlled surface etching. RDD (Respiratory Drug Delivery IX). Palm Springs, California. USA. RDD 2004. (Poster Presentation).

D. El-Sabawi, P.M. Young, S. Edge, R. Price. Novel Temperature Controlled Surface Etching of Excipient Particles for Carrier Based DPI Formulations. DDL (Drug Delivery to the Lungs 14). London, UK. The Aerosol Society: DDL, 2003. (Poster Presentation).

D. El-Sabawi, P.M. Young, S. Edge, R. Price. Novel Temperature Controlled Surface Etching of Excipient Particles for Carrier Based DPI Formulations. AAPS (American Association of Pharmaceutical Scientists) Annual Meeting and Exposition. Salt Lake City, Utah. USA. AAPS, 2003. (Poster Presentation).

Taught courses at the School of Pharmacy / The University of Jordan since September 2006:

- Physicochemical Principles of Pharmacy, 2 credit hour course, 1st year undergraduate Pharmacy and PharmD students.

- Pharmaceutical Calculations and Compounding of Dosage Forms, 2 credit hour course, 2nd year undergraduate Pharmacy and PharmD students.
- Pharmaceutical Technology II, 2 credit hour course, 3rd year undergraduate Pharmacy students.
- Seminar in Pharmaceutics and Pharmaceutical Technology. 1 credit hour course, 5th year undergraduate Pharmacy and PharmD students.
- Pharmaceutical Calculations and Compounding of Dosage Forms Practical, 1 credit hour, 2nd year undergraduate Pharmacy and PharmD students.
- Physical Pharmacy Practical, 1 credit hour, 2nd year undergraduate Pharmacy students.
- Pharmaceutical Technology I Practical, 1 credit hour course, 3rd year undergraduate Pharmacy students.
- Pharmaceutical Technology II Practical, 1 credit hour course, 3rd year undergraduate Pharmacy students.
- Advanced Physical Pharmacy course for postgraduate MSc. students.

Internal examiner of the following Pharmaceutical Sciences MSc. dissertations at the School of Pharmacy / The University of Jordan:

- Rana Al-Sukhun. Preparation, Characterization and Formulation Potential of Berberine-Carrageenan Complex, 2021.
- Amal Al-Khawaja. Preparation, characterization and evaluation of new losartan salts with organic amines and their evaluation for transdermal absorption, 2020.
- Nagham Al-Dhmour. Effects of selected basic drugs on dissolution and permeation of losartan, 2018.

- Samaa Abdullah. Development of a sustained release suspension formulation for amproxol with raft formation property, 2016.
- Dua'a Farah. Effect of organic anions on the intestinal absorption of metformin HCl, 2016.
- Bilal Rimawe. Evaluation of mixed matrices of chitosan and fatty acids filled into hard gelatin capsules as sustained release hydrodynamically balanced systems, 2015.
- Alaa Abu Hammad. Evaluation of Lansoprazole preparations available in the Jordanian market: comparing USP versus BP methodology, 2014.
- Riyam Maraqa. Casein drug beads: the effect of ionic cross-linking and plasticizer presense, 2007.
- Ebtesam Al-Hawmdeh. Development and evaluation of sustained release suspensions of antiepileptic for pediatric applications, 2007.
- Ehab Alshamleh. Investigation on chitosan new derivatives as carriers for insulin delivery, 2008.
- Reema Al-Otoum. Preparation of novel matrices based on composites of alginate/small molecule carboxylic acid derivatives via ionotropic crosslinking with zinc (II) and their evaluation as sustained release formulations using methylene blue as loaded drug model, 2008.

External examiner of the following Pharmaceutical Sciences MSc. Dissertation:

- Hussain Abdalkarem. Fluticasone propionate poly(esteramides) nanoaggregates for pulmonary drug delivery. (Faculty of Pharmacy – Isra University Amman, 2021).
- Hadeel Aburass. Development of date fruit nanoparticles and investigating its effect on *Pseudomonas aeruginosa* biofilm. (Faculty of Pharmacy – Isra University Amman, 2021).
- Manal Al-Bdareen. Oral protein delivery using polyelectrolyte eudragit E-carrageenan complexes and chitosan fatty acids / salts. (Faculty of Pharmacy – Isra University Amman, 2015).

Funded Research:

- Studying potential pharmacokinetic interactions between cinacalcet and selected drugs. Deanship of Academic Research, The University of Jordan. (April, 2017). Value of fund: 10000 JD.
- Effect of cyclodextrins on dissolution and absorption of ciprofloxacin-metal complexes. Deanship of Academic Research, The University of Jordan. (July, 2015). Value of fund: 12000 JD.
- Effect of cyclodextrins on the permeability of selected drugs. Deanship of Academic Research, The University of Jordan. (June, 2013). Value of fund: 8500 JD.
- The potential use of capillary electrophoresis as an analytical method to study dissolution of pharmaceutical tablets. Deanship of Academic Research, The University of Jordan. (October, 2009). Value of fund: 25000 JD.

Funded Fellowships:

Training visit to Department of Pharmacy and Pharmacology – University of Bath, United Kingdom funded by Erasmus staff mobility program (June, 2019).

Areas of Interest:

- Enhancing dissolution of drugs exhibiting poor aqueous solubility.
- Use of competing agents in increasing permeation of drugs exhibiting low bioavailability.
- Possible interactions in drug-cyclodextrin inclusion complexes.
- Drug-carrier particulate interactions in dry powder inhalation formulations.

Member of:

• **School of Pharmacy – The University of Jordan Committees:**

- Head of a departmental committee assigned for determining competencies, skills, intended learning outcomes and evaluation rubrics for Pharmaceutical Calculations and Compounding of Dosage Forms / Practical Course.
- Head of a departmental committee assigned for determining competencies, skills and intended learning outcomes for a group of theoretical / practical courses taught at the Department of Pharmaceutics and Pharmaceutical Technology as part of revisions of B.Sc. Pharmacy/Pharm D programs study plans.
- ACPE Student services and academic policies (criterion no. 12 of the self-study report submitted for ACPE accreditation).
- Evaluation and performance assessment follow-up: assessment of global students satisfaction (sub-committee of the quality and accreditation committee).
- Pharmacy field training.
- School exams.
- Scientific research.
- Students disciplinary and ethics.
- Students union elections.
- Conferences and seminars.
- Library resources.
- Assessment and Performance follow-up.

- The 15th Scientific Congress of the Association of Pharmacy Colleges in the Arab world & The 3rd International Conference of the School of Pharmacy / The University of Jordan.
 - Media and Public Relations Committee.
 - Editorial Committee.
 - Trips to Jordanian Pharmaceutical Companies Committee.

- **External committees:**
 - Registration of Sera and Vaccines committee at Jordan Food and Drug Administration (March 2012 – November 2020).
 - Institutional Review Board of Pharmaquest Jo drug evaluation and clinical studies research center (March 2011 till present).
 - Bioequivalence studies committee at Jordan Food and Drug Administration (July, 2007 – February, 2010).
 - The Aerosol Society. North Somerset, United Kingdom (2004).
 - Jordan Pharmaceutical Association. Amman, Jordan (1999 till present).

Attended Workshops and Conferences:

- MENA Biosimilars Training 2018 (Jordan Food and Drug Administration). Amman, Jordan, September 2018.
- Middle East Pediatric Summit: Sanofi Pasteur. Amman, Jordan, May 2018.
- Public Immunization in Jordan: Updates & Challenges workshop organized by Sanofi Pasteur, Amman, November 2017.
- Jordanian National Immunization Program: Bridging the Gaps, Amman, April 2017.

- First International Congress of JFDA “Pharmaceutical Sector Opportunities and Future Vision, Amman, October 2016.
- The 4th International Conference of the School of Pharmacy- The University of Jordan. The 2nd Conference of the Association of Faculties of Pharmacy at Jordanian Universities, "Excellence in Pharmacy Education and Research: A quality approach." School of Pharmacy - The University of Jordan, Amman, October 2016. (Participant and Member of an organizing committee).
- Kerry technical seminar: "Providing Solutions to Formulation Challenges" organized by Tulip International, Amman, October 2015.
- Quality Assessment for Pharmaceuticals workshop organized by Jordan FDA and USAID, Amman, August 2015.
- The Complex Journey of a Vaccine workshop organized by Sanofi Pasteur, Amman, June 2015.
- Production Excellence workshop organized by the International Consultancy Services in partnership of I-Holland Ltd., Glatt GmbH, Korsch GmbH and Colorcon Ltd., Amman, October 2014.
- Jordan FDA vaccines workshop, organized by JFDA and GSK. October 2 & 3, 2013.
- The 15th Scientific Congress of the Association of Pharmacy Colleges in the Arab World & The 3rd International Conference of The School of Pharmacy, “Recent Trends and Advances in Pharmacy”, The University of Jordan, Amman, Jordan, October 2012. (Participant and Member of an organizing committee).
- Staff Development Workshops: held at The University of Jordan, Center for Educational Development (August 26-September 17, 2012), which included:
 - Designing Study Plans (6 hours).

- Teaching Design and Its Strategies (12 hours).
- Effective University Teaching Skills (12 hours).
- Academic Ethics (2 hours).

- Clinical investigation training program CITP, organized by JFDA. (Moderator), December 17, 2011.

- Competing globally in higher education: Developing measurable student learning outcomes and assessment tools June 19 & 20, 2011.

- The Second JAPM Bioequivalence Conference (Moderator) July 2009.

- Biologicals & Biosimilars Workshop, Dead Sea March 30, 2009.

- Facilitating Clinical Trials in MENA Region Conference October 23 & 24, 2008.

Attended workshops conducted by the Accreditation & Quality Assurance Center at The University of Jordan as part of Staff Development:

- Design of the National Qualification Program (October – 2016), 2 credit hours.

- Effective use of powerpoint in learning and scientific research (November – 2016), 1.5 credit hours.

- The importance of using social media in the process of teaching and learning (December – 2016), 1.5 credit hours.

- Applications of gold nano-crystals (December – 2016), 1.5 hours.

- Web of Science and EndNote training workshop. The University of Jordan Library (February – 2017), 2 credit hours.

- Performance based assessment of students learning (March – 2017), 2 credit hours.

- Development and analysis of exams by SPSS (March – 2017), 2 credit hours.
- Assessment of students learning using "Student Portfolio" (April – 2017), 2 credit hours.
- Modern trends in higher education: project based and flipped learning (May – 2017), 3 credit hours.
- Management of European projects, international marketing skills and global education, part of the workshops conducted by VTC European project / Erasmus (October – 2017), 3 credit hours.
- Program intended learning outcomes (October – 2017), 3 credit hours.
- Project based learning (December – 2017), 3 credit hours.
- Enhancing interactive learning via technology (December – 2017), 7 credit hours.
- Statistical analysis using SPSS (December – 2017), 10 credit hours.
- Increasing students participation through interactive learning (February – 2018), 3 credit hours.
- Exams construction and development (March – 2018), 3 credit hours.
- The use of digital platforms in teaching (April – 2018), 2 credit hours.
- How to develop learning contents/short videos using Camtasia Studio 9 (April – 2018), 3 credit hours.
- Ethics in teaching from a practical approach (May – 2018), 3 credit hours.
- Effective teaching/learning strategies (July – 2018), 3 credit hours.
- Assessment of students performance (July – 2018), 3 credit hours.

- Application of modern teaching strategies and the use of the learning gate (MethodsX) towards improving students learning (Erasmus project, July – 2018), 3 credit hours.
- The use of Advanced Moodle / E-learning in students teaching (July – 2018), 3 credit hours.
- Conductance of online exams by Moodle / E-learning (August – 2018), 3 credit hours.

Departmental workshops:

- "Matching Course ILOs to Program ILOs in Course Syllabus" Workshop, presented at The School of Pharmacy (November – 2017).
- "E-Learning" Workshop, presented at The School of Pharmacy (November – 2017).