Thamer A Omar
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As a motivated, skilled, and independent individual, I have taken on several responsibilities throughout my life. I have a bachelor's degree in Pharmaceutical Sciences, a master's degree in Pharmaceutics, and a PhD in Pharmaceutical Sciences. My master's and Ph.D. degrees were in drug formulation, dosage form design, and pharmaceutical manufacturing. During my PhD, I worked on a variety of pharmaceutical projects, including drug formulation, manufacturing, and analytical characterization of drugs and dosage forms. This inspires me to complete my academic career as a postdoctoral associate in the same major at Rutgers University/USA. As a result, I have a strong and diverse background in drug formulation, characterization, dosage form design, and pharmaceutical unit operations.

Education

Rutgers-The State University of New Jersey **Piscataway, USA**
Post-doctoral Associate at Engineering Research Center (ERC) Feb.2021-Nov 2022
Advisor (Prof. Fernando Muzzio and Prof. Benjamin Glasser)

Rutgers-The State University of New Jersey Piscataway, USA
Academic Trainee at Engineering Research Center (ERC) Oct. 2019-Feb.2021
Advisor (Prof. Fernando Muzzio and Prof. Benjamin Glasser)

Rutgers-The State University of New Jersey Piscataway, USA
PhD in Pharmaceutical Sciences Sept. 2013-Oct.2019
GPA: 4/4
Thesis: "IMPREGNATION OF ACTIVE PHARMACEUTICAL INGREDIENTS INTO POROUS CARRIERS"
Advisor (Prof. Fernando Muzzio)

Baghdad University Baghdad, Iraq
Master in Pharmaceutics Sept 2004-Sept 2007
Thesis: "Preparation and in Vitro Evaluation of chitosan-alginate Beads for Modified Release of Cephalexin"
Advisors: Rehab Abduljabbar and Balkis Ahmad

Mosul University Mosul, Iraq
BSc in Pharmaceutical Sciences Sept 1996-July 2001

Skills

-UV-Visible spectroscopy	-Powder X-ray Diffraction (PXRD)
- Near Infra-Red	-Dissolution Apparatus
-Laser Diffraction	-Raman Spectroscopy
-High Performance Liquid Chromatography (HPLC)	-Fluidized Bed Granualtor (Miniglatt)
-Feeders (K-tron)	-FT4 Rheometer
- Fluidized Bed Granualtor (GPCG-2)	-Glatt Blender (GPCG-70)
-Tablet Press (Presster)	-Humidity Analyzer
- Friability tester	-Hardness tester
-Hot Melt Extruder (HME)	-Atomic Absorption Spectroscopy

Work Experience

1-Senior Lecturer at University of Mosul-College of Pharmacy (December2022-present)

- Instructing fourth-year students in Industrial Pharmacy I and Industrial Pharmacy II classes

- Teaching Dosage Form Deign course to 5th year students.
- Teaching drug and dosage development course to graduate students.

2-Engineering Research Center for Structured Organic Particulate System (ERC-SOPS)/ Rutgers University

Post-doctoral Associate (Feb 21-November 2022)

Continuous Impregnation of Drugs into Porous Carriers

- Exploring the ability of Glatt Continuous Blender to load APIs into porous carriers.
- Studying the best conditions to achieving high drug load using Glatt Continuous Blender

Continuous Drying Process

- Exploring the ability of different devices such as Fluidized Bed and Twin-Screw Granulator to continuously dry Pharmaceutical Products.

Melt Coating/ Granulation using a twin screw or hot melt extruder with low melting point binder (Thermofischer)

- Preparation of granules using a low melting binder
- Characterizing the granules' properties, which included particle size distribution, and the dissolution behavior.
- Compacting these granules into tablets and characterizing these tablets

Wet or Melt Coating/ Granulation Using a twin screw (Steer-Life)

- Preparation of melt coated granules by melting a low melting point drug (as binder)
- Preparation of wet coated granules by spraying a surfactant solution into the drug (as binder)
- Characterizing the granules' properties, which included particle size distribution and the dissolution behavior.
- Compacting these granules into tablets and characterizing these tablets

Using Atomic Absorption Spectroscopy to Determine the API in Tablets

- Preparation of standard solutions for calibration model
- Preparation of samples by grinding the tablets and dissolving the resulting powders in a suitable solvent
- Measuring the Samples and determine the drugs amount in each sample.

2- Engineering Research Center for Structured Organic Particulate System (ERC-SOPS)/ Rutgers University

ACADEMIC TRAINEE (Oct 2019-Feb2021)

Melt Granulation Using a twin-screw granulator

- Preparation of granules by melting the drug alone in a twin screw or hot melt extruder
- Studying the factors affecting on the granules' properties such as rotation speed, temperature, and feeding rate
- Characterizing the granules' properties, which included particle size distribution, Hausner's ratio, particle shape, and the dissolution behavior
- Compacting these granules into tablets and characterizing these tablets

Segregation of binary pharmaceutical blends during the manufacturing using a newly designed equipment

- Mixing two pharmaceutical powders, which have different physicochemical properties
- Studying the content uniformity of these blends using UV spectroscopy, HPLC, and Near Infra-Red (NIR)

3- PHD STUDENT

Effects of Process and Design Parameters on Granule Size Distribution in a Continuous High Shear Granulation Process

- Preparation of granules by a continuous wet granulation using a high shear blender (GCG-70 Blender)

- Studying the factors affecting on granules properties such as blender rotation speed, S/L ration, blade configuration, and nozzle position on the properties of the granules

Impregnation of Acetaminophen into a Mesoporous Carrier in a Fluidized Bed: Impact of Solvent and Loading

- Investigating the applicability of a Fluidized Bed to impregnate APIs onto porous carriers.
- Studying the effects of different solvents and various drug loading on the properties of impregnated products.

Continuous Impregnation of API into Porous Carriers

- Exploring the ability of Glatt Continuous Blender and Glatt Continuous Fluidized bed to load APIs into porous carriers.
- Evaluating which continuous impregnation process can yield comparable, if not better, product as the batch impregnated product.

Co-impregnation of Ibuprofen and Chlorpheniramin into Neusilin Using a Fluidized Bed Dryer (Minglatt)

- Checking the amenability of using FB dryer to impregnate two drugs into one porous carrier.
- Studying the amorphization and distribution of two drugs into one porous carrier.

Prediction of dissolution profiles in sustained release tablets by non-destructive near infrared spectroscopy

- Predicting dissolution profiles and compositions of directly compressed tablets using near infrared spectroscopy (NIR).

Studying the microstructure of tablets

- Cut the Zinc Sulphate Tablets by different methods
- Studying the microstructure of these tablets using Raman imaging, and EDS-Scanning Electron Microscopy (EDS-SEM)
- Analyzing and comparing the data

Baghdad University-Master in Pharmaceutics

Formulation and Invitro Evaluation of Chitosan-Alginate Beads to modify the release of Cephalexin

- Preparation of beads by ionotropic gelation and studying factors affecting on drug loading and drug release profile

Mosul University-Master in Pharmaceutics

Chemical and biopharmaceutical assay of different brands of Frusemide tablets, Iraqi Journal of Pharmacy

- Evaluating frusemide tablets, which were obtained from different generic companies and available in Iraqi market

Positions and Honors

- Pharmacist - Al Salam Hospital-Mosul, Iraq (2001-2002)
- Instructor - Pharmacognosy lab – College of Pharmacy-University of Mosul, Iraq (2003-2004)
- Supervisor of undergrad students – Nineveh Drug Industry (NDI)-Mosul- Iraq (2003-2011)
- Instructor of Physical Pharmacy I, Pharmaceutical Technology I & II and Industrial Pharmacy I & II - College of Pharmacy, University of Mosul, Iraq (2007-20012)
- Instructor -Pharmaceutical Unit Operations-PHARM UNIT OP (155: 546: 01)-Rutgers, the State University of New Jersey (Spring 2016)
- Instructor - Pharmaceutical Unit Operations-PHARM UNIT OP (155: 546: 01)-Rutgers, the State University of New Jersey (Spring 2018)
- Instructor - Pharmaceutical Unit Operations-PHARM UNIT OP (155: 546: 01)-Rutgers, the state university of New Jersey (Spring 2022)
- Academic Trainee (2019-2021)
- Post-doctoral Associate (2021-2022)

Other Experience and Professional Membership

- 2001-present Registered Pharmacist, Iraq
- 2015-2018 Member, American Association of Pharmaceutical Sciences (AAPS)
- 2018-2019 Member, Controlled Release Society (CRS)
- 2019-present Reviewer, Journal of Pharmaceutical Innovation (more than 20 manuscripts have been reviewed)

- 2020-present Abstract Reviewer for Controlled Release Society Annual Meeting
- 2021-present Reviewer, Egyptian Journal of Chemistry
- 2021-present Reviewer, Rasayan Journal of Chemistry
- 2020-present Reviewer, Iraqi Journal of Pharmacy
- 2022-present Peer Reviewer, Advanced Powder Technology

Patents

- FJ Muzzio, BJ Glasser, **TA Omar,** Continuous Processes for Manufacturing Impregnated Porous Carriers and for Manufacturing Pharmaceuticals Containing Impregnated Porous Carriers, USA, US2020/065085, Filing Date: 15 December 2020, Publication Date: 24 June 2021
- Fernando J. Muzzio, Ivana Cotabarren, Shashwat Gupta, **Thamer A. Omar**, Qiushi Zhou, James Scicolone, Eric J. Sánchez-Rolon, Vipul Dave, George Oze, HIGH-DOSE COMPRESSIBLE DOSAGE FORMS MANUFACTURED BY SIMULTANEOUS MELT-COATING AND MELT-GRANULATION OF ACTIVE PHARMACEUTICAL INGREDIENTS, PCT_US22_76965_09_23_2022_IFW_PCT International Application (2021-120) (138369242.1)-C (2022)
- Fernando J. MUZZIO, Benjamin J. GLASSER, **Thamer A. OMAR**, Andres D. ROMAN-OSPINO, Gudrun BIRK, CONTINOUS IMPREGNATION OF ACTIVE PHARMACEUTICAL INGREDIENTS ONTO POROUS CARRIERS, PCT/US2022/033183, (2022)

Selected Peer-reviewed Publications

- Mus'ab M. Khalaf, Mahmood K. Oglah, and **Thamer A. Omar**, Chemical and biopharmaceutical assay of different brands of Frusemide tablets, Iraqi Journal of Pharmacy (IJP), no. (1) in 2011
- Preparation and in Vitro Evaluation of chitosan-alginate Beads for Modified Release of Cephalexin, Master Thesis, **Thamer A Omar**, Balkis Ahmad, and Rehab Abduljabbar (2007)
- Wei Meng, Sarang Oka, Xue Liu, **Thamer Omar**, Rohit Ramachandran & Fernando J. Muzzio, Effects of Process and Design Parameters on Granule Size Distribution in a Continuous High Shear Granulation Process, Journal of Pharmaceutical Innovation volume 12, 283–295 (2017)
- **TA Omar**, S Oka, FJ Muzzio, BJ Glasser, Manufacturing of Pharmaceuticals by Impregnation of an Active Pharmaceutical Ingredient onto a Mesoporous Carrier: Impact of Solvent and Loading, Journal of Pharmaceutical Innovation 14 (3), 194-205 (2018)
- Impregnation of Active Pharmaceutical Ingredients into Porous Carriers, **TA Omar**. PhD dissertation. Rutgers The State University of New Jersey, School of Graduate Studies (2019)
- Weiting Lyu, **Thamer Omar**, Harna Patel, David Rodriguez, Mario G Ferruzzi, Giulio M Pasinetti, James W Murrough, Fernando J Muzzio, James E Simon, Qingli Wu, Dissolution Study on Grape Polyphenol Hard Gelatin Capsule Dietary Supplements. Front Nutr. 2021; 8: 780260
- Ivana Cotabarren, **Thamer A. Omar**, Fernando J. Muzzio, Binder-free twin-screw melt granulation: An effective approach to manufacture high-dose API formulations, International Journal of Pharmaceutics 606, 1-21 (2021)
- Shashwat Gupta, **Thamer Omar**, Fernando J.Muzzio, SEM/EDX and Raman chemical imaging of pharmaceutical tablets: A comparison of tablet surface preparation and analysis methods. International Journal of Pharmaceutics Volume 611, 5 January 2022, 121331
- Hasan Aldewachi, Hiba R Tawfeeq, **Thamer A. Omar**. Investigating the flow behaviour of pharmaceutical blends using shear cell methodology. Int. J. Res. Pharm. Sci., 2022, 13(1), 42-49
- Shashwat Gupta, Benoît Igne, **Thamer Omar**, Andrés D Román-Ospino, Douglas Hausner, Fernando Muzzio, Multi-layer Raman chemical mapping to investigate the effect of API particle size and blending shear rate on API domain sizes in pharmaceutical tablets, International Journal of Pharmaceutics, Volume 624, 25 August 2022, 122052
- Hasan Aldewachi and **Thamer A. Omar**, Development of HPLC Method for Simultaneous Determination of Ibuprofen and Chlorpheniramine Maleate, Sci. Pharm. 2022, 90, 53
- Continuous Impregnation Processes, **TA Omar**, FJ Muzzio, Continuous Pharmaceutical Processing and Process Analytical Technology,2023, 167-178
- Continuous Processes for Manufacturing Impregnated Porous Carriers and for Manufacturing Pharmaceuticals Containing Impregnated Porous Carriers, FJ Muzzio, BJ Glasser, **TA Omar**, US Patent App., 2023, 17/756,738

- Continuous Impregnation Processes, **TA Omar**, FJ Muzzio, Continuous Pharmaceutical Processing and Process Analytical Technology, (2023) 167-178

Talks and Poster Presentation

- **Thamer Omar**, Plamen Grigorov, Liu Xue, Benjamin Glasser and Fernando Muzzio. Fluidized-Bed Impregnation of Pharmaceutical Active Ingredients into Porous Carriers. AIChE Nov 2014, Atlanta, Georgia
- **Thamer Omar**, Benjamin Glasser and Fernando Muzzio. Fluidized-Bed Impregnation of Acetaminophen into Neusilin. AAPS Oct 2015, Orlando, Florida
- **Thamer Omar**, Plamen Grigorov, Liu Xue, Benjamin Glasser and Fernando Muzzio. Impregnation of Pharmaceutical Active Ingredients into Porous Carriers: Effect of Porous Carrier. AAPS Nov 2016, Denver, Colorado
- Benjamin Glasser, Plamen I Grigorov, **Thamer Omar**, Fernando Muzzio. Novel Technologies to Improve the Bioavailability, Content Uniformity and Manufacturing of Pharmaceuticals. 8th World Congress on Particle Technology.AIChE April 2018, Orlando, Florida
- **Thamer A Omar**, Ivana Cotabarren, Fernando J. Muzzioa, Binder-free twin-screw melt granulation: An effective approach to manufacture high-dose API formulations. AIChE Annual Meeting Nov 2021, Boston, Massachusetts.
- Carlos A, Ortega-Zuniga, Andres D. Roman-Ospino, Shashwat Gupta, **Thamer Omar**, Pasaorn Pongkulapa, Justin Alder, Yukteshwar Baranwal, Fernando J. Muzzio, Real-time monitoring of “small” step changes in a low-dose formulation using Raman and NIR Spatially Resolved Spectroscopy, IFPAC, June 2022
- VIAVI Team: Lan Sun, Ed Gooding, Chang Hsiung, and Michael Klimek
  Rutgers Team: Carlos A, Ortega-Zuniga, **Thamer Omar**, Jingzhe Li, Shivangi Rakesh Patel, James Scicolone, Gerardo Callegari and Fernando Muzzio, Rolling PCA for Blend Monitoring and Endpoint Detection, IFPAC, June 2022