Dr. MOHAMMAD H. EL-DAKDOUKI

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EDUCATION

- Associate Professor, Beirut Arab University, Debbieh, Lebanon, 2015-present.
- Assistant Professor, Beirut Arab University, Debbieh, Lebanon, 2012-2015.
- Research Assistant Professor, Michigan State University, East Lansing, MI, 2011-2012.
- Post-Doctoral fellow, Michigan State University, East Lansing, MI, 2009- 2011.
- PhD, Medicinal and Biological Chemistry, University of Toledo, Toledo, OH, December 2009.
- MS, Organic Chemistry, American University of Beirut, Beirut, Lebanon, June 2004.
- BS, Chemistry, Lebanese University, Beirut, Lebanon, June 2001.

HIGHLIGHTS

- Applied the principles of Green Chemistry to address environmental issues.
- Diverse and interdisciplinary line of research that encompasses pharmaceutical sciences, medicinal chemistry, nanotechnology, biomaterials, targeted therapy, natural products, analytical chemistry, environmental sciences, organic and inorganic synthesis.
- Extensive experience in designing and conducting *in vitro* and *in vivo* biological studies (Cell culture, anticancer, antiinflammatory, antibacterial, antioxidant, anti-Alzheimer's, bioimaging, molecular biology).
- Demonstrated experimental and theoretical knowledge in materials science.
- Hands-on experience in analytical instruments necessary for chemical structure elucidation (NMR, IR, MS, GC/MS, GPC, HPLC, UV-vis spectroscopy, fluorescence, photoluminescence), and nanoparticles characterization (Thermal gravimetric analysis (TGA), dynamic light scattering (DLS), zeta potential measurements, transmission electron microscopy (TEM), scanning electron microscopy (SEM), Energy Dispersive X-Ray Analysis (EDX), X-ray diffraction (XRD), Atomic absorption, Inductively coupled plasma mass spectrometry (ICP-MS), etc.).
- Hands-on experience in molecular imaging techniques such as confocal microscopy, fluorescence microscopy, bioluminescence, magnetic particle imaging (MPI), magnetic resonance imaging (MRI), flow cytometry.
- Profound teaching experience in different fields of chemistry at the undergraduate and graduate levels.
- Established leadership skills and management of teams.
- Proven experience in designing and developing new chemistry programs at the undergraduate and graduate levels.

RESEARCH EXPERIENCE AND INTERESTS

2012-present, Assistant (2012-2015) and Associate (2015-present) Professor of Chemistry, Beirut Arab University, Lebanon

- Design and development of nanoparticles as drug delivery systems.
- Synthesis of novel organic and inorganic compounds.
- Development of contrast agents for clinical imaging modalities.
- Green synthesis of nanomaterials for biomedical and environmental applications.
- Preparation of 'Host-Guest' inclusion complexes for bioactive molecules.
- Phytochemical and biological analysis of bioactive natural products.
- Development of analytical methods for validation of clinical products.
- Deployment of biopolymers and natural products as effective corrosion inhibitors.

Summers of 2013 and 2014, Visiting Scholar, Michigan State University, MI, USA, with Prof. Xuefei Huang

- Synthesized peptide analogues for the prevention of Alzheimer's disease.
- Evaluated the *in vivo* cytotoxic effects of drug-loaded nanoparticles using optical imaging.

2009-2012, Postdoctoral Fellow and Research Assistant Professor, Michigan State University, MI, USA, with Prof. Xuefei Huang

- Designed and synthesized glyco-nanoparticles as potential 'Theranostic' agents for cancer treatment and diagnosis.
- Exploited biopolymers for drug modification and targeting.
- Developed novel nanoparticles for the selective detection of early atherosclerotic plaques.
- Succeeded in the synthesis of magnetic nanoparticles with high cell labeling efficiency.
- Gained experience in maintaining cell culture and molecular biology experiments, as well as in handling animal models (mice and rabbits).
- Utilized techniques such as magnetic resonance imaging (MRI), bioluminescence, light microscopy, confocal imaging, and flow cytometry to evaluate the interactions between multifunctional targeted imaging agents and diseases.

2004-2009, Graduate Research Assistant, Center for Drug Design and Development, University of Toledo, Toledo, OH with Prof. Paul W. Erhardt

- Designed and synthesized novel anthrapyrazole analogues as potential anticancer prodrug candidates for the treatment of hypoxic cancer cells.
- Developed solution-phase procedure to synthesize gram quantities of a novel peptidomimetic analogue.
- Developed a scale-up process for the multigram total synthesis of (+)- and (-)-glyceollin I in quantities for *in vivo* biological investigations.
- Succeeded in process development and preparation of novel perfluorinated adducts as ultrasound contrast agents for breast cancer diagnosis.
- Designed and synthesized novel C-7 and C-10 Taxol® analogues that avoid multidrug resistance for the treatment of prostate and breast cancers.

2002-2004, Graduate Assistant, American University of Beirut, Beirut, Lebanon, with Prof. Makhlouf Haddadin

- Designed and synthesized 2*H*-Indazoles as anticancer agents using the Davis-Beirut reaction.
- Elucidated mechanistic pathway for the regioselective substitution of 2*H*-indazoles.

TEACHING EXPERIENCE

- **Beirut Arab University**:
  Undergraduate program (2012-present): Medicinal Chemistry; Bioorganic Chemistry; Organic Chemistry With Biological Emphasis; Pharmaceutical Organic Chemistry; Spectroscopic Analysis of Chemical Compounds; General Chemistry; Organic Chemistry (for Chemistry majors); Industrial Organic Chemistry; Physical Organic Chemistry.
  Graduate program (2012-present): Chemistry of Nanomaterials and Bioconjugates; Organic Chemistry of Drug Design and Development; Diseases and Natural Products; Research Techniques; Advanced Analytical Chemistry; Advanced Instrumental Analysis; Advanced Organic Chemistry; Advanced Organic Reactions.
- Profound experience with online teaching software and platforms (Moodle, Zoom, Teams, etc.).
- Supervised numerous graduate students (Masters and PhD), 2012-present.
- Served as defense committee member for dissertations at BAU and national universities.
- Teaching assistant, Advanced Organic Chemistry Lab, Department of Medicinal and Biological Chemistry, College of Pharmacy, University of Toledo, USA, 2004-2006.
- Teaching assistant, General and Organic Chemistry Labs, Department of Chemistry, American University of Beirut, Lebanon, 2002-2004.

ADMINISTRATIVE EXPERIENCE

- Head of the Chemistry Department, Faculty of Science, BAU, September 2023-present.
- Member of the Department of Chemistry Programs Development Committee, 2015-present.
- Director of the Specialized Lab for Analysis of Chemical Compounds, BAU, 2017-present.
- Member of the Faculty of Science council, BAU, 2014-present.
- Member of the Faculty of Science Community Service committee, BAU, 2016-present.
- Member of the Research committee at the Faculty of Science, BAU, 2015-present.
- Member of the Steering committee for the Continuous Education Center, BAU, 2014-2015.
- Member of BAU Research committee, BAU, 2014-2017 and 2021-present.
- Member of BAU Strategy Action Plan committee, BAU, 2013-2018.

FUNDING

- Funding agency: National Council for Scientific Research (CNRS), Lebanon
  Title: Development of multifunctional magnetic nanoparticles for the selective detection of β-amyloid plaques in Alzheimer's disease
  PI: Mohammad H. El-Dakdouki
  Co-PI: Xuefei Huang, Michigan State University
  01/09/2013 – 31/08/2015
  Award amount to PI: ~ $ 20,000

- Funding agency: Beirut Arab University
  Title: Synthesis, characterization, and antioxidant activity of DCQ and DCQ-loaded nanoparticles
  PI: Mohammad H. El-Dakdouki
  Co-PI: Dr. Karim Raafat, Faculty of Pharmacy, BAU

01/06/2014-30/05/2016
Award amount to PI: $ 3,000

- Funding agency: Research Project Arab Research & Innovation Co-Funded Alliances
  Title: Development of Ecological and Bio-sourced Nanotechnologies through the Valorization of Plants and Waste for Water Treatment in the Arab World: Innovations Towards a Sustainable Aquatic Future
  PI (Lebanon Team): **Mohammad H. El-Dakdouki**
  Duration: 2 years

AWARDS

- Fulbright Visiting Scholar program, 2022-2023 (USA Department of State).
- Erasmus+ Staff Mobility program, Sapienza University of Rome, March 2025 (European Union).
- Robert N. Whiteford Memorial Scholarship, University of Toledo, 2008.
- ACS Travel award, 31th National Medicinal Chemistry Symposium 2008, University of Pittsburgh, June 2008.
- Travel award, BioOhio 2008 Annual Conference, Dublin, Ohio, October 2008.
- MAGSS Travel award, 41th Mid Atlantic Graduate Students Symposium in Medicinal Chemistry, Wayne State University, Detroit, July 2008.

AFFILIATION AND COMMUNITY SERVICE

- Member of the Municipality of Barja, Chouf, 2016-present.
- Member of the Iklim Al Kharroub Environmental Emergency Committee, 2024.
- Mobarat El Oloum, National Association for Science and Research, Judge.
- Lebanese Association for Advanced Research (LAAS), Judge.
- American Chemical Society, member, 2005-present.
- Beirut Arab University, Scientific Research Committee, 2013-present.
- Beirut Arab University, Continuing Education Steering Committee, 2013-present.
- Volunteer Judge at the Northwest Ohio District Science Day held at the University of Toledo, Spring 2006, Spring 2007, and Spring 2008.
- Volunteer Judge at the Notre Dame Junior Academy Science Fair, Toledo, Ohio, January 2008.

PUBLICATIONS

1. Rammal, M., Kataya, G., Badran, A., Yazbek, L., Haidar, S., Hassan, K.H., Hijazi, A., Meouche, W., Bechelany, M., El-Dakdouki, M.H. Biochar Derived from Citronella and Oregano Waste Residues for Removal of Organic Dyes and Soil Amendment. *Current Research in Green and Sustainable Chemistry*, **2024**, 9, 100443.
2. Hijazi., B., Faraj, M., Mhanna, R., El-Dakdouki, M.H. Biosynthesis of silver nanoparticles as a reliable alternative for the catalytic degradation of organic dyes and antibacterial applications. *Current Research in Green and Sustainable Chemistry*, **2024**, 8, Article 100408.
3. Kassem Agha, M., Maatouk, B., Mhanna, R., El-Dakdouki, M.H. Biosynthesis of silver nanoparticles using *Actinidia deliciosa* peel extract: Optimization, characterization, and catalytic activity for methylene blue dye degradation. *Journal of Nanomaterials*, **2024**, Article ID 8813109.

4. Hamze, Z., Faraj, M., Mhanna, R., Younes, G., El-Dakdouki, M.H. Green synthesis of silver nanoparticles by *Citrus aurantium* peels extract as sustainable inhibitor to attenuate acid corrosion of mild steel. *Journal of Bio- and Tribo-Corrosion*, **2024**, 10, 56.
5. Mansour, R., Halwani, J., Mina, S., El-Dakdouki, M.H. Seasonal assessment of surface water and sediments pollution in Rachiine River, Northern Lebanon, using multivariate statistical analysis. *Heliyon*, **2024**, 10, e39016.
6. Massoud, R.; Bouaziz, M.; Abdallah, H.; Zeiz, A.; Flamini, G.; El-Dakdouki, M.H. Comparative Study on the Chemical Composition and Biological Activities of the Essential Oils of *Lavandula angustifolia* and *Lavandula x intermedia* cultivated in Lebanon. *ACS Omega*, **2024**, 9, 30244−30255.
7. Rammal, M., Khreiss, S., Badran, A., Mezher, M., Bechelany, M., Haidar, C., Khalil, M.I., Baydoun, E., El-Dakdouki, M.H. Antibacterial and Antifungal Activities of *Cimbopogon winterianus* and *Origanum syriacum* Extracts and Essential Oils against Uropathogenic Bacteria and Foodborne Fungal Isolates. *Foods*, **2024**, 13, 1684.
8. Mansour, R.; El-Dakdouki, M.H.; Mina, S. Phylogenetic group distribution and antibiotic resistance of *Escherichia coli* isolates in aquatic environments of a highly populated area. AIMS Microbiology, **2024**, 10, 2, 340-362.
9. Rammal, M., Badran, A., Haidar, C.; Sabbah, A., Bechelany, M., Awada, M., Haidar Hassan, K., El-Dakdouki, M.H., Raad, M.T. *Cymbopogon winterianus* (Java Citronella plant): A multi-faceted approach for food preservation, insecticidal effects, and bread application. *Foods*, **2024**, 13, 803.
10. Kilo, M.; Saad, I.; Younes, G.; El-Dakdouki, M.H. Corrosion inhibition of carbon steel in acidic solutions using *Phaseolus vulgaris* L. extract as a green inhibitor. *Moroccan Journal of Chemistry*, **2024**, 12, 473-492.
11. Zeiz, A.; Chayya, Z.; Kassem, Z.; Hijazi, A.; Khawaja, G.; El-Dakdouki, M.H. Synthesis of ruthenium complexes and assessing their anticancer and antibacterial effects. *Farmacia*, **2024**, 71, 1129-1142.
12. Zeiz, A.; Kawtharani, R.; Elmasri, M.; Khawaja, G.; Hamade, E.; Ayoub, A.J.; Abrari, M.; El-Dakdouki, M.H. Molecular properties prediction, Anticancer and Anti-inflammatory Activities of Some Pyrimido[1,2-b]pyridazin-2-one derivatives. *Bioimpacts*, **2024**, 14(2): 27688.
13. Taleb, B.; Jahjah, R.; Cornu, D.; Bechelany, M.; Al Ajami, M.; Kataya, G.; Hijazi, A.; El-Dakdouki, M.H. Exploring Hydrogen Sources in Catalytic Transfer Hydrogenation: A Review of Unsaturated Compound Reduction. Molecules, **2023**, 8(22), 7541.
14. Abi Saad, R.; Younes, G.; El-Dakdouki, M.H.; Oweini, R. Molybdenium versus tungsten based polyoxometalates for highly effective methylene blue removal. BAU *Journal of Science and Technology*, **2023**, 5, Article 8.
15. El Makdah, M.H.; El Ghouch, N.; El-Dakdouki, M.H.; Awad, R.; Matar, M. Structural, electrical and mechanical properties of the $(NdFeO_3)x/(CuTl)$-1223 superconductor phase. *Applied Physics A*, **2023**, 129, Article number: 265.
16. El Makdah, M.H.; El Ghouch, N.; El-Dakdouki, M.H.; Awad, R.; Matar, M. Synthesis, characterization, and Vickers microhardness for $(YIG)_x$/(Bi,Pb)-2223 superconducting phase. *Ceramics International*, **2023**, 49, 22400-22422.
17. Karneeb, S.; Baydoun, S.; Nasser, H.; Arnold-Apostolides, N.; El-Dakdouki, M.H. Chemical composition, antioxidant, and hemolytic activities of sage (*Salvia fruticosa* Miller) cultivated in Lebanon. *BAU Journal of Science and Technology*, **2023**, 4, Article 3.
18. Anas, M.; El Makdah, M.H.; El-Dakdouki, M.H.; Awad, R.; Hassan, M.S. Investigation of physical properties of (nano-SmIG)/(Bi, Pb)-2212 phase. *Journal of Low Temperature Physics*, **2023**, 213, 191–214.

19. Fayoumi, L.; El-Dakdouki, M.H. Chapter 16: Pelargonium Species and their Usage in the Middle East as Medicinal Herbs. In: Ancient and Traditional Foods, Plants, Herbs and Spices Used in the Middle East. Vinood Patel (ed.), Francis and Taylor. **2023**.
20. Fayoumi, L.; Khalil, M.; Ghareeb, D.; Chokr, A.; Mohamed Bouaziz, El-Dakdouki, M.H. Phytochemical constituents and therapeutic effects of the essential oil of rose geranium (Pelargonium hybrid) cultivated in Lebanon. *South African Journal of Botany*, **2022**, 147, 894-902.
21. Fayoumi, L.; Khalil, M.; Ghareeb, D.; El-Dakdouki, M.H. Chemical composition and therapeutic activity of Lebanese rose geranium (Pelargonium hybrid) extracts. *Farmacia*, **2022**, 70, 477-490.
22. Chayya, S.; Hijazi, A.; Daou, A.; Alaaeddine, A.; Sakr, M.; Younes, M.; El-Dakdouki, M.H. Palladium (II)-catalyzed selective reduction of 4'-(phenylethynyl)acetophenone in the presence of a formic acid-triethylamine mixture. *BAU Journal of Science and Technology*, **2022**, 4, Article 8.
23. Abi Saab, R.; Younes, G.; El-Dakdouki, M.H.; Al-Oweini, R. Vanadium-substituted polyoxomolybdates for methylene blue adsorption from aqueous solutions. *Journal of Cluster Science*. **2021**. https://doi.org/10.1007/s10876-021-02130-4.
24. Chayyaa, S.; El-Dakdouki, M.H.; Younes, G.; Ibrahim, G.; Hachem, A.; Alaaeddine, A.; Hijazi, A. Selective reduction of aromatic alkynes catalyzed by palladium with formic acid as the hydride source. *Current Organocatalysis*, **2021**, 8, 353-361.
25. Mohammad, G.; El-Dakdouki, M.H.; Abdallah, H.; Nasser, H.M.; Arnold-Apostolides, N. Antioxidative and hepatoprotective effects of *Rubus canescens* DC. growing wild in Lebanon. *Nat. Prod. J*. **2021**, 11, 44-56.
26. El Makdah, M.H.; El-Dakdouki, M.H.; Mhanna, R.; Al Boukhari, J.; Awad, R. Effects of neodymium substitution on the structural, optical, and magnetic properties of yttrium iron garnet nanoferrites. *Applied Physics A*, **2021**, 127, 304.
27. Chouker M.A.; Abdallah, H.; Zeiz, A; El-Dakdouki, M.H. Host-quest inclusion complex of quinoxaline-1,4-dioxide derivative with 2-hydroxypropyl-β-cyclodextrin: Preparation, characterization, and antibacterial activity. *J. Mol. Structure*, **2021**, 1235, 130273.
28. Kilo, M.; Rahal, H.T.; El-Dakdouki, M.H.; Abdel-Gaber, A.M. Study of the corrosion and inhibition mechanism for carbon steel and zinc alloys by an eco-friendly inhibitor in acidic solution. *Chem. Eng. Commun.*, **2020**, 1-10. , DOI: 10.1080/00986445.2020.1811239.
29. Jisr, N.; Younes, G.; Sukhn, C.; El-Dakdouki, M.H. Levels of heavy metals, total petroleum hydrocarbons, and microbial load in commercially valuable fish from the marine area of Tripoli, Lebanon. *Environ. Monit. Assess.*, **2020**, 192, 705. DOI: 10.1007/s10661-020-08672-w.
30. Assafiri, O.; El-Dakdouki, M.H.; Abdallah, H. Antibacterial effect and phytochemical analysis of the shoot system of *Rubus canescens* DC. growing in Lebanon. *BAU J. Sci. Tech.* **2020**, 2, Article 9.
31. Jisr, N.; Younes, G.; Sukhn, C.; El-Dakdouki, M.H. Length-weight relationships and relative condition factor of fish inhabiting the marine area of the Eastern Mediterranean city, Tripoli-Lebanon. *Egypt. J. Aqua. Res*. **2018**, 44, 299-305.
32. Jisr, N.; Younes, G.; Sukhn, C.; El-Dakdouki, M.H. Length-Length Relationships of Six Fish Species Collected from Fishing Area in the City of Tripoli, North of Lebanon. *BAU Journal: Health and Wellbeing*. **2018**, 1, 150-154.
33. Hossaini Nasr, S.; Tonson, A.; El-Dakdouki, M.H.; Zhu, D.C.; Agnew, D.; Wiseman, R.; Qian, C.; Huang X. Effects of Nanoprobe Morphology on Cellular Binding and Inflammatory Responses: Hyaluronan-Conjugated Magnetic Nanoworms for Magnetic Resonance Imaging of Atherosclerotic Plaques. *ACS Appl. Mater Interfaces*. **2018**, 10, 11495-11507.
34. El‑Dakdouki, M.H.; Daouk, N.; Abdallah, H. Synthesis and Characterization of a Series of Orthogonally Protected l-Carnosine Derivatives. *International Journal of Peptide Research and Therapeutics*. **2018**, https://doi.org/10.1007/s10989-018-9680-2.

35. El-Dakdouki, M.H.; Hussein, A.S.; Abdallah, H.; Shatila, R.; Mouneimne, Y. Synthesis of novel 2*H*-indazole analogues via the Davis-Beirut reaction and conjugation onto magnetic nanoparticles. *Tetrahedron*. **2017**. 73, 5769-5777.
36. Hammud, H.H.; El-Dakdouki, M.H.; Sonji, N.; Sonji G.; Bouhadir, K.H. Interactions of some divalent metal ions with thymine and uracil thiosemicarbazide derivatives. *Nucleosides, Nucleotides and Nucleic Acids.* **2016**. 35, 259-276.
37. Thapa, R.; Galoforo, S.; Kandel, S.M.; El-Dakdouki, M.H.; Wilson, T.G.; Huang, X.; Roth, B.J.; Wilson, G.D. Radiosensitizing and hyperthermic properties of hyaluronan conjugated, dextran-coated ferric oxide nanoparticles: Implications for cancer stem cell therapy. *J. Nanomaterials*. **2015**, DOI:10.1155/2015/840594.
38. Vyas, D.; Lopez-Hisijos, N.; Gandhi, S.; El-Dakdouki, M.H.; Basson, M.D.; Walsh, M.F.; Huang, X.; Vyas, A.K.; Chaturvedi, L.S. Doxorubicin-Hyaluronan conjugated super-paramagnetic iron oxide nanoparticles (DOX-HA-SPION) enhanced cytoplasmic uptake of Doxorubicin and modulated apoptosis, IL-6 release and NF-kappaB activity in human MDA-MB-231 breast cancer cells. *J. Nanosci. Nanotechnol*. **2015**, 15, 6413–6422.
39. Dulaney, S.B.; Xu, Y.; Wang, P.; Tiruchinapally, G.; Wang, Z.; Kathawa, J.; El-Dakdouki, M.H.; Yang, B.; Liu, J.; Huang, X. Divergent synthesis of heparan sulfate oligosaccharides. *J. Org Chem*. **2015**, 80, 12265-12279.
40. El Haj Moussa, A.; Olama, Z.; Moussad, E; Kavunja, H.; El-Dakdouki, M.H. Characterization of Anuran Skin Peptides: An alternative to the classical therapeutic agents used for MDR pathogens. *Int. J. Microbio. Appl. Sci.* **2015**, 4.
41. El Haj Moussa, A.; El-Dakdouki, M.H.; Olama, Z.; Moussad, E. Antimicrobial effect of *Rana ridibunda* skin gland peptides against multidrug resistant pathogens. *Int. J. Microbio. Appl. Sci.* **2015**, 4, 62-74.
42. Hammud, H.H.; El-Dakdouki, M.H.; Sonji, N.; Bouhadir, K.H. Solvatochromic absorption and fluorescence studies of adenine, thymine, and uracil thio-derived acyclonucleosides. *Eur. J. Chem.* **2015**, 6, 325-336.
43. Borjac, J.; Dannaoui, R.; Saab, H.; El-Dakdouki, M.H.; El-Sibai, M.; Usta, J. Effect of Carboplatin and Methotrexate on Lipid Levels in the Plasma Membrane of MCF-7 Cells and their Association with Cell Motility. *Int. J. Biochem. Rev.* **2015**, 8, 1-12.
44. Hammud, H.H.; El-Dakdouki, M.H.; Sonji, N.; Sonji G.; Bouhadir, K.H. A novel multi-functional fluorescent probe for Cu^{2+}, Fe^{3+} and Ag^{+} based on a pyrimidine thiourea derivative. *Curr. Anal. Chem.* **2015**, 11, DOI: 10.2174/1573411011666150324231041.
45. El-Dakdouki, M.H.; Xia, J.; Zhu, D.C.; Kavunja, H.; Grieshaber, J.; O'Reilly, S.; McCormick, J.J.; Huang, H. Assessing the efficacy of colloidally stable nanoparticles loaded with doxorubicin *in vivo*. *ACS Appl. Mat. Inter*. **2014**, 6, 697-705.
46. El-Dakdouki, M.H.; El-boubbou, K.; Kamat, M.; Huang, R.; Abela, G.S.; Kiupel, M.; Zhu, D.C.; Huang, X. CD44 targeted magnetic glyconanoparticles for atherosclerotic plaque imaging. *Pharm. Res*. **2014**, 31, 1426-1437.
47. El-Dakdouki, M.H.; Kavunga, H.; Xia, J.; El-Boubbou, K.; Huang, X. Methods for magnetic nanoparticles synthesis and functionalization. *Chemistry of Bioconjugates: Synthesis, Characterization and Biomedical Applications*, Editor: Ravin Narain, Wiley & Sons, **2014**, 281-314.
48. El-Dakdouki, M.H.; Puré, E.; Huang, X. Development of drug-loaded nanoparticles for tumor targeting. Part 1: synthesis, characterization, and biological evaluation in 2D cell cultures. *Nanoscale*. **2013**, 5, 3895-3903.
49. El-Dakdouki, M.H.; Puré, E.; Huang, X. Development of drug loaded nanoparticles for tumor targeting. Part 2: enhancement of tumor penetration through receptor mediated transcytosis in 3D tumor models. *Nanoscale*. **2013**, 5, 3904-3911.

50. Kouyoumdjian, H.; Zhu, D.; El-Dakdouki, M.H.; Lorenz, K.; Chen, J.; Li, W.; Huang, X. Glyconanoparticle aided detection of β-amyloid by magnetic resonance imaging and attenuation of β-amyloid induced cytotoxicity. *ACS Chem. Neurosci*. **2013**, 4, 575-584.
51. El-Dakdouki, M.H.; Zhu, D.C.; El-Boubbou, K.; Kamat, M.; Chen, J.; Li, W.; Huang, X. Development of multifunctional hyaluronan-coated nanoparticles for imaging and drug delivery to cancer cells. *Biomacromolecules*, **2012**, 13, 1144-1151.
52. El-Dakdouki, M.H.; Erhardt, P.W. Analogue-based drug discovery: More than just a practical approach toward obtaining new drugs. Microtubule stabilizers as a case in point. *Pure Appl. Chem.* **2012**, 84, 1479-1542. Lead article of July 2012 issue.
53. Yang, B.; Yoshida, K.; Yin, Z.; Dai, H.; Kavunja, H.; El-Dakdouki, M.H.; Sungsuwan, S.; Dulaney, S.B.; Huang, X. Chemical synthesis of a heparan sulfate glycopeptide: Syndecan-1. *Angwe. Chem. Int. Ed.* **2012**. 51, 10185-10189.
54. Avila, B.; El-Dakdouki, M.H.; Nazer, M.Z.; Harrison, J.G.; Tantillo, D.J.; Haddadin; M.J.; Kurth, M.J. Acid and base catalyzed Davis-Beirut reaction: Experimental and theoretical mechanistic studies and synthesis of novel 3-amino-2*H*-indazoles. *Tetrahedron Lett*. **2012**, *53*, 6475-6478.
55. Li, H.*; El-Dakdouki, M.H.*; Zhu, D.C.; Abela, G.S.; Huang, X. Synthesis of β-CD conjugated superparamagnetic iron oxide nanoparticles for selective binding and detection of cholesterol crystals. *Chem .Comm.***2012**, 48, 3385-3387. Equal contributions. This article was highlighted on the back cover of the issue.
56. El-Dakdouki, M.H.; Adamski, N.; Foster, L.; Hacker, M.; Erhardt, P.W. Synthesis of 9-aza-anthrapyrazole N-oxide analogues as potential anticancer prodrugs targeting hypoxic cancer cells, *J. Med. Chem.* **2011**, 54, 8224-8227.
57. Luniwal A.; Khupse, R.; Reese, M.; Liu, J.; El-Dakdouki, M.H.; Malik, N.; Fang, L.; Erhardt, P.W. Multigram synthesis of glyceollin I. *Org. Proc. Res. Devel.*, **2011**, 15, 1149–1162.
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59. Tiruchinapally, G.; Yin, Z.; El-Dakdouki, M.H.; Wang, Z.; Huang, X. Divergent heparin oligosaccharide synthesis with pre-installed sulfate esters. *Chem. Eur. J.* **2011**, 17, 10106-10112.
60. El-Dakdouki, M.H.; Huang, X. Biological applications of hyaluronic acid functionalized nanomaterials. In *Petite and Sweet: Glyco-nanotechnology as a bridge to new medicines*, Editors: Huang, X.; Barchi, J. American Chemical Society, **2011**, 181-213.
61. Xie, Z.H.; Tan, W-M.; Qin, A-H.; Dai, H.; Hou, X-T. El-Dakdouki, M.H. Clinical study of JueMing Hainan Holly Tea. *Chinese J. Exper. Trad. Med. Formulae*. **2011**, 17, 230-235.
62. El-Dakdouki, M.H.; Erhardt, P.W. Paclitaxel Analogs. In *Analogue-based Drug Discovery II*, Editors: Fischer, J.; Ganellin, C.R., Wiley-VCH Verlag GmbH & Co. KGaA, **2010**, 243-267.

PRESENTATIONS AT SCHOLARY MEETINGS (Presenter of talk or poster is listed first)

63. Marwa Rammal, Chaden Haidar, Ghenwa Kataya, Akram Hijazi, Lara Yazbek, Khodor Haidar, Mohammad H. El-Dakdouki. Biochar Valorization from Oregano and Citronella Residues: Impacts on Radish Growth and Methyl Orange Dye Removal. Food 2024 (MDPI). *Proceedings*, **2024**, 105(1), 119.

64. Mohammad H. El-Dakdouki, Chia-wei Yang, Fei Lui, Xuefei Huang. A Novel Chemically Modified Hyaluronan-Based Iron Oxide Nanoparticle for Enhanced Uptake by CD44 Expressing Cells and Selective Magnetic Particle Imaging. 18th Midwest Carbohydrate and Glycobiology Symposium, October 6-7, **2023**. Purdue University, Indiana, USA.
65. Nahid Chehade, Ghassan Younes, Marwa Faraj, Rami Mhanna, Mohammad H. El-Dakdouki. Kiwifruit peel extract-mediated synthesis of silver nanoparticles and assessment of its corrosion inhibition efficiency on mild steel in acidic medium. Fifth International Symposium, CIMEE23. September 21- 23, **2023**, Lebanon.
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