
Curriculum vitae

NAME: Fadhel Ahmed Alomar

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POSITION TITLE: Associate professor, Pharmacology Department, College of Clinical Pharmacy, Imam Abdulrahman Bin Faisal University, Dammam, Saudi Arabian

Associate professor

INSTITUTION AND LOCATION	DEGREE	Completion Date MM/YYYY	FIELD OF STUDY
College of Pharmacy, King Saud University, Riyadh, Saudi Arabia	B.Sc.	5/1997	Pharmaceutical Sciences,
College of Pharmacy, King Saud University, Riyadh, Saudi Arabia	MSc	5/2005	Pharmacology and Toxicology
College of medicine, University of Nebraska Medical Center, Omaha, Nebraska, USA	Ph.D.	12/2014	pharmacology and experimental neuroscience Thesis title "Glyoxalase-1 gene transfer to prevent cerebral microvascular and neuronal dysfunctions in type 1 diabetes mellitus"
Pharmacology and Experimental Neuroscience, University of Nebraska Medical Center, Omaha, Nebraska, USA	Sabbatical leave	From 9/2021 to 9/2022	Molecular mechanisms of heart failure in HIV-1 infection using a humanized mouse model

A. Personal Statement

My research over the last 10 years has focused on better understanding the pathogenic microvascular dysfunctions in various diseases namely diabetes mellitus, HIV and COVID-19. In corporation with professor Keshore R. Bidasee, Pharmacology and Experimental Neuroscience, the University of Nebraska Medical Center, Omaha, Nebraska, USA, we optimized a wide array of biochemical, echocardiography, photoacoustic imaging, lipid bilayer (single channel), Ryanodine binding assay, Ca²⁺ imaging, molecular biology, immunohistochemistry, adeno-associated virus and animal approaches to investigate the pathogenesis of end-organ complications associated with diabetes mellitus including cognitive dysfunctions, cardiomyopathy, and kidney disease. Using transgenic mice, we also developed new research ideas to understand molecular mechanisms that contribute to diastolic heart failure and kidney impairment in patients living with HIV-1 infection (PLWH). Our data generated from this cutting-edge technique were instrumental in us obtaining a \$1.86 million grant from the National Institutes of Health (NIH) of which I am a Co-Investigator. Recently, we discovered a link between the cytotoxic glycolysis byproduct methylglyoxal and adverse clinical outcomes (mortality and morbidity) in the setting of SARS-CoV-2 infection with and without diabetes mellitus. The increase in methylglyoxal is arising from an increase in synthesis (glycolysis) and from a decrease in its degradation. In the future, we will evaluate whether drugs to lower methylglyoxal would blunt the development of heart failure, and kidney impairment in our humanized mouse model. This will pave the way for the development of new therapeutics to mitigate heart and kidney failure seen in diabetic patients and PLWH.

Recently Completed Research Support

1. Grant from the King Abdulaziz City for Science and Technology (KACST # 0007-070-01-20-5), From 06/2020- 02/2022
2. Grant from the Deanship of Scientific Research, Imam Abdulrahman Bin Faisal University (Covid19-2020- 012-Med) from 03/2021- 12/2021

Selected Presentation at international conferences

1. The 26 TH Scientific Conference of the Society on NeuroImmune Pharmacology (SNIP). Memphis, TN, USA, March, 2022
2. ADA National Meeting. San Francisco, USA June 2019
3. ADA National Meeting. Chicago, USA, June 2012
4. Experimental Biology Meeting. San Diego, CA, USA, April 2014
5. Redox Biology Center 2013 Retreat. Nebraska City, USA, April 2013
6. 10th International Symposium on Pharmacology of Cerebral Ischemia. Marburg, Germany, July 2013
7. XXIST International Symposium on Cerebral Blood Flow, Metabolism and Function and International Conference on Quantification of Brain Function with PET. Calgary, Alberta, Canada, July 2003.

Representative Publications; selected from over 35:

1. Aymen Alqurain* , **Fadhel A Alomar***, Murtada Hussain Albaharnah, Sumanah Hussain Alzayer, et al. The Prevalence of Polypharmacy and Hyper-Polypharmacy Among Middle-Aged vs Older Patients in Saudi Arabia: A Cross-sectional Study. **Front Pharmacol.** 2024 Feb; accepted. ***Correspondence:** Aymen Alqurain* and Fadhel A Alomar.
2. **Alomar FA**, Tian C, Bidasee SR, Venn ZL, Schroder E, Palermo NY, AlShabeeb M, Edagwa BJ, Payne JJ, Bidasee KR. HIV-Tat Exacerbates the Actions of Atazanavir, Efavirenz, and Ritonavir on Cardiac Ryanodine Receptor (RyR2). **Int J Mol Sci.** 2022 Dec 23;24(1):274. doi: 10.3390/ijms24010274.
3. Al-Mutairi AM, Alshabeeb MA, Abohelaika S, **Alomar FA**, Bidasee KR. Impact of telemedicine on glycemic control in type 2 diabetes mellitus during the COVID-19 lockdown period. **Front Endocrinol (Lausanne).** 2023 Feb 3;14:1068018.
4. **Fadhel A. Alomar** A Role for Methylglyoxal in COVID-19-induced Hyperglycemia and New-Onset of Diabetes Mellitus (DM), *European Review for Medical and Pharmacological Sciences.* 2022 Nov;26(21):8152-8171.
5. **Alomar FA**, Alshakhs MN, Abohelaika S, Almarzouk HM, Almualim M, Al-Ali AK, Al-Muhanna F, et al. Elevated plasma level of the glycolysis byproduct methylglyoxal on admission is an independent biomarker of mortality in ICU COVID-19 patients. **Sci Rep.** 2022 Jun 9;12(1):9510.
6. **Alomar FA**, Tian C, Dash PK, McMillan JM, Gendelman HE, Gorantla S, Bidasee KR. Efavirenz, atazanavir, and ritonavir disrupt sarcoplasmic reticulum Ca²⁺ homeostasis in skeletal muscles. **Antiviral Res.** 2021 Mar;187:104975. doi: 10.1016/j.antiviral.2020.104975. Epub 2021 Jan 13.
7. Dash PK, **Alomar FA**, Cox JL, McMillan J, Hackfort BT, Makarov E, Morsey B, Fox HS, Gendelman HE, Gorantla S, Bidasee KR. A Link Between Methylglyoxal and Heart Failure During HIV-1 Infection. **Front Cardiovasc Med.** 2021 Dec 14;8:792180. [Dash PK, and Alomar FA are equally contributed.](#)
8. Dash PK, **Alomar FA**, Hackfort BT, Su H, Conaway A, Poluektova LY, Gendelman HE, Gorantla S, Bidasee KR. HIV-1-Associated Left Ventricular Cardiac Dysfunction in Humanized Mice. **Sci Rep.** 2020 Jun 16;10(1):9746. [Dash PK, and Alomar FA are equally contributed.](#)
9. **Alomar FA**, Al-Rubaish A, Al-Muhanna F, Al-Ali AK, McMillan J, Singh J, Bidasee KR. Adeno-Associated Viral Transfer of Glyoxalase-1 Blunts Carbonyl and Oxidative Stresses in Hearts of Type 1 Diabetic Rats. **Antioxidants** (Basel). 2020 Jul 6;9(7):592.
10. **Alomar F**, Singh J, Jang HS, Rozanzki GJ, Shao CH, Padanilam BJ, Mayhan WG, Bidasee KR. Smooth muscle-generated methylglyoxal impairs endothelial cell-mediated vasodilatation of cerebral microvessels in type 1 diabetic rats. **Br J Pharmacol.** 2016 Dec;173(23):3307-3326.