

Curriculum Vitae

Dr Muhammad Afzal M Pharm, PhD

Professor

**Department of Pharmaceutical Sciences,
Pharmacy Program, Batterjee Medical College, Jed-
dah 21442, Saudi Arabia.**

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AJ&hl=th](https://scholar.google.com/citations?user=OmIcbagAAA&hl=th)

[Afzal, Muhammad - Author details - Scopus Preview](#)

Broad Area of Research:

Drug discovery and development, anticancer drug discoveries, neuropharmacology, and endocrinology

CAREER OBJECTIVE:

To work in an innovative and challenging atmosphere that provides me ample opportunity for learning and growth and to carve a niche in whatever I undertake and utilize my efficiency at my best to fulfill the organization's requirements.

AREA OF INTEREST:

Research cum Academics



QUALIFICATIONS:

The world education services (WES) accredited Academic qualifications.
Registered Pharmacist in Uttar Pradesh Pharmacy Council Reg. No. 50848.
Qualified IELTS (International English language testing system) with 6 bands overall, test delivered at IDP Centre (Aljouf University, Sakaka, Saudi Arabia), (4th December 2021).

Course/ Degree	College/University	Passing Year
Ph.D. (Pharmacology)	Pacific Academy of Higher Education and Research University, Udaipur	2014
M. Pharm. (Pharmacology)	S. K. Patel College of Pharma. Edu.& Research.(S.K.P.C.P.E.R.) Ganpat University, Kherva. Mehsana.	2009
B. Pharm.	HNB Garhwal University (A Central University), Shrinagar, Uttarakhand.	2007
H.S.C.	UP Board Allahabad	2002
S.S.C.	UP Board Allahabad	2000

Achievements:

- Recipient of premium residency of Kingdom of Saudi Arabia through special talent research program in 2024.
- Employee of the Month award at Batterjee medical College for month of December 2025 (1000SAR)
- Listed in top 2% scientists of the world by Stanford/Elsevier for the year 2024.
- Have been selected once for Post-Doctoral Research at Institute of Post Graduate Studies (USM), Malaysia, for TWAS scheme.
- Research excellence award 2017, Deanship of Scientific Research, Jouf university-KSA
- Research excellence award 2018, Deanship of Scientific Research, Jouf university-KSA
- Distinguished Researcher for the year 2021-2022 at Jouf University-KSA.

Patents:

1. Indian Patent on "Extraction and isolation of novel cardioprotective ursolic acid stearyl glucoside from the leaves of Lantana camara Linn." Official Journals of the Patent Office, Application No.273/DEL/2013 A, Issue no. 34/2014, Page no. 32197.
2. USA Patent entitled "Metal nanoparticle medicine with a mixture of natural ligands for the treatment of obesity" (Co-Investigator), Patent No. US 11, 219,605 B1
3. USA patent entitled "Environment friendly green synthesis method based natural bioactive functional catechin and gingerol loaded nanomedicine for the management of obesity" (Co-Investigator), Patent No. US 11, 129,797 B1.
4. USA patent entitled "Method to make a noble metal nanoparticle for the treatment of obesity" (Co-Investigator), Patent No. US 11, 234, 940 B1.
5. USA patent on "Carbon nanomedicine with natural ligand for the treatment of Obesity" patent No. US 11, 311, 492 B1.
6. USA patent on "chemotherapeutic self nano emulsifying drug delivery system and uses" US 11,57,690 B1

7. USA patent on “Injectable drug delivery implant composition and method of use” US 2023/0017509 A1
8. USA patent on “Injectable drug delivery implant composition and method of use thereof” US 2023/US11 590 071 B1
9. Electronic NMR Spectroscopy Device for Characterizing Natural Extracts, UK Design Patent (Design number: 6410113) 30/12/2024
10. UK Design patent, Portable Pharmaceutical Device for Detection of Real-Time Impurity of Drugs, Design number 6397822, Grant Date 18/10/2024.
11. Indian patent office ; Compact transdermal drug delivery device for hormone replacement therapy, Design number 425672-001, grant date 15/10/2024.
12. An Ergonomic Inhaler for the treatment of Asthma, Design Number 6389420, Grant date 16/09/2024.
13. UK Design Patent “An AI Based smart and portable device used for detection of diabetic neuropath”, UK design patent Number 6387945, Grant Date 09/09/2024
14. Indian Design Patent ‘Wireless implantable bioelectric device for management of chronic pain, Indian Design Patent Number 423321-001, Grant Date 30/08/2024
15. UK design Patent “An automated Insulin Delivery Pen for improved diabetic management”, UK Design Patent Number 6382942, Grant date 13/08/2024
16. Canadian Intellectual property office ; The role of Natural products in development of new anticancer drugs, Registration Number 1215830. 20/07/2024

SCIENTIFIC EXPERTISE:

- Well versed with the use of analytical instruments and techniques like UV, Biochemistry semi-auto analyzer, Fully automated Hematoanalyzer, western blot analyzer, RT-PCR, ELISA reader, cooling centrifuge, Power lab & Biopac. Colon, Uterus, Anococcus, Tracheal chain, Thoracic aorta etc.) and in establishment of mechanism of action of drugs.

- Familiar well with the application and usage of Langendroff's assembly.
- Expert in Animal handling (Rat, mice, Guinea pigs, rabbits) familiar with different routes of drug administrations in experimental animals.
- Adroit in various animal models like Asthma, Diabetes, Anti-convulsion, Analgesics and anti-inflammatory, Hypertension, Ulcer, Urolithiasis, Inflammatory bowel disease, Renal ischemia reperfusion, Cardiovascular disease and cancers.
- Appreciable understanding of the concepts related to Intellectual Property Management and Regulatory Affairs & applications of Biostatistics in health sciences.

EXPERIENCES: 14 years teaching and research

- Working as Professor at Department of Pharmaceutical Sciences, Pharmacy Program, Batterjee Medical College, Jeddah 21442, Saudi Arabia.
- As External Examiner for Post graduate (M.Sc.) and PhD thesis For the Research Scholars at Department of Biochemistry, Faculty of Science, King Abdulaziz University, Jeddah-KSA.
- Research Coordinator Pharmacy Program Batterjee Medical College, Jeddah Saudi Arabia.
- Worked as Professor at Department of Pharmacology, Himalayan Institute of Pharmacy and Research, Dehradun and delivered Physiology, Pathophysiology, Anatomy and Pharmacology to Post graduate and Under graduate Pharmacy students.
- Program coordinator of Post Graduate (M. Pharm) Courses at Himalayan Institute of Pharmacy and Research, Dehradun.
- Worked as an Associate Professor at College of Pharmacy, Metro Group of Colleges, Greater NOIDA.
- Worked as an Associate Professor at Glocal School of Pharmacy, The Glocal University, and Saharanpur.
- Worked as an Assistant Professor at College of Pharmacy, Jouf University, KSA. and delivered Physiology, Pathophysiology, Anatomy and Pharmacology to Pharmacy students and Pharmacology to Physical therapy and Nursing students in College of Applied Medical Sciences.
- Consultant to Vice Rector for graduate studies and Deanship of Scientific Research for Scientific Research
- Member Scientific Committee at Department level.
- Member Scientific Committee at College level.

- **Scientific Research collaborations with International Universities of repute.**
- **Reviewer of Journals published from reputed publishing houses.**
- **Supervised undergraduate students for their undergraduate research projects at Jouf University, KSA.**
- **Academic supervisor of Pharmacy students for last three years.**
- **Member Academic supervision committee at college level in Jouf University, KSA**
- **Member Sports committee at College level Jouf university, KSA for one academic session 2017-2018.**
- **Member student affairs committee at College level Jouf University, KSA for one academic session 2017-2018.**
- **Member graduation Research project evaluation committee, at college level Jouf university, KSA for one academic session 2017-2018., 2019-2020**
- **Member Accreditation committee for Pharmacy Education, USA, 2020.**
- **Worked as an Assistant Professor for 2 years in Glocal School of Pharmacy, The Glocal University, and Saharanpur and delivered Physiology, Pharmacology, Pathology and biochemistry to D. Pharm students and Human anatomy and Physiology, Pathology, biochemistry and Pharmacology to B. Pharm students.**
- **Establishing faculty of Glocal School of Pharmacy.**
- **Worked as member examination committee at university level in Glocal University, Saharanpur.**
- **Worked as selection committee member at Glocal University, Saharanpur.**
- **Experienced with AICTE,PCI and UGC related works for approval.**
- **Worked & designed official website of Glocal School of Pharmacy independently.**
- **Experienced with the course curriculum design of Diploma, Under Graduate & Post graduate courses of Pharmacy.**
- **Scientist in charge of animal house facility at Glocal School of Pharmacy, The Glocal University, Saharanpur, India under supervision of IAEC chairman.**
- **Worked as an Assistant Professor and dealt with the subjects like Pathology, human anatomy and Physiology, Pharmacology and Pharmacotherapeutics for 1 year in GRD Institute of Management and Technology, Dehradun.**
- **Scientist in charge of animal house facility for one year at GRD Institute of Management and Technology, Dehradun.**

- Worked as Lecturer for at Himalayan Institute of Pharmacy & Research, Dehradun and delivered Pathology, Human anatomy and Physiology, Biochemistry and Pharmacology courses to B. Pharm students.
- Worked as visiting faculty for PG Pharmacology students in School of Pharmacy, Bharat Institute of Technology, Meerut, and dealt with the subjects like Basic Clinical Pharmacology and Therapeutics as well as Drug Screening Techniques
- Co-supervisor of 15 PG Pharmacology students for both preclinical and clinical studies in Uttarakhand Technical University, Dehradun, Uttarakhand, India.
- Worked as “Trainee” in SPEED LIFE SCIENCES INCL. At- Roorkee, Uttarakhand for 1 month
- Evaluator and Question Paper Expert at UG level (Pharmacy) for Different Universities (Glocal University, Saharanpur, SHIATS, Allahabad and UKTU, Dehradun, Jouf University-KSA).

Funded Research Projects:

S N	Title of the Project	Funding Agency	Duration	PI/Co-PI
1	In vivo Genotoxicity studies of a Novel PDE-4B inhibitor “Apremilast” in mice	Deanship of Scientific research, Jouf University	One year	PI
2	Therapeutic target for depression associated with neuroinflammation due to COVID-19: role of anandamide transporters in neuroinflammatory depression	Deanship of Scientific research, Jouf University	One year	Co-I
3	Molecular targets, Molecular diagnostics tests and therapeutic options for Corona virus Disease-2019	Deanship of Scientific research, Jouf University	One year	Co-I

4	Effect of fenugreek and black seed in fluctuating biochemical parameters in type 2 diabetic patients	General Programme, King Abdul Aziz University	One year	Co-I
5	<p>“Research Group”</p> <p>To explore and decipher the molecular mechanism of Non communicable diseases (NCDs) and to discover & evaluate potential pharmacological agents in the treatment of NCDs</p>	Deputyship for research and innovation, Ministry of education, Saudi Arabia	One Year	PI
	<p>(i) 6-Shogaol Attenuates Traumatic Brain Injury-Induced Anxiety/Depression-like Behavior via Inhibition of Oxidative Stress-Influenced Expressions of Inflammatory Mediators TNF-α, IL-1β, and BDNF: Insight into the Mechanism</p>			
	<p>(ii) Methanolic extract of Cucumis melo attenuates ethylene glycol-induced nephrolithiasis in Wistar rats</p>			
	<p>(iii) Boswellic Acid Attenuates Scopolamine-Induced Neurotoxicity and Dementia in Rats: Possible Mechanism of Action</p>			
	<p>(iv) 6-shogaol attenuated Ethylene glycol and aluminium chloride induced urolithiasis and renal injuries in rodents</p>			

	(v) Chitosan-ethyl cellulose microspheres of domperidone for nasal delivery: Preparation, in-vitro characterization, in-vivo study for pharmacokinetic evaluation and bioavailability enhancement			
6	Formulation and evaluation of Layer by layer nanoparticles in the treatment of Pancreatic cancers	Vice presidency for graduate studies & academic research, Deanship of Scientific research, King Abdulaziz University	Three years	Co-I
7	Evaluation of the efficacy of methanolic extract of Foeniculum vulgare in ethylene glycol induced urolithiasis on Wistar rats.	Deanship of Scientific research, Jouf University	One year	PI
8	Formulation and evaluation of a topical gel of Moxifloxacin HCl for arthritis	Deanship of Scientific research, Jouf University	One year	PI
9	Protective effect of theophylline in estradiol valerate induced Polycystic ovary syndrome rodents via modulation of NFkB and IKBalph	Deanship of Scientific research, Jouf University	One year	PI
10	Rosinidine protects streptozotocin induced memory impairments-activated neurotoxicity by altering oxidative stress and inhibition of cholinesterase activity in rats	Deanship of Scientific research, Jouf University	One year	PI
11	Sterubin protects rodents from Parkinson's disease induced by rotenone via antioxidant and anti-inflammatory mechanisms	Deanship of Scientific research, Jouf University	One year	PI

12	Anti-Huntington's effect of rosinidin via oxidative stress/AchE inhibition and improved mitochondrial enzyme complex against 3-nitropropionic acid-in rodents	Deanship of Scientific research, Jouf University	One year	PI
13	Fustin attenuates complete Freund's adjuvant-induced arthritis paradigm in rats via inhibiting inflammatory cytokines	Deanship of Scientific research, Jouf University	One year	PI
14	Fustin attenuates complete Freund's adjuvant-induced arthritis paradigm in rats via inhibiting inflammatory cytokines	Deanship of Scientific research, Jouf University	One year	PI
15	Rosinidin flavonoid ameliorates hyperglycemia, lipid pathway and pro-inflammatory cytokine in streptozotocin-induced diabetic rats	Deanship of Scientific research, Jouf University	One year	PI
16	Influence of stress, corticosteroidal and adrenergic surge in rats: A sway in conventional pathophysiological mechanism and treatment of diabetes.	Deanship of Scientific research, Jouf University	One year	PI
17	Distinguished Researcher	Deanship of Scientific research, Jouf University	One Year	PI
18	"Research Group" Enhancement of biological efficacy of poorly soluble drugs by nano-formulation approach	Deanship of Scientific research, Jouf University	One Year	Co-I
19	"Research Group" To study and examine the molecular mechanism of Non Communicable Diseases (NCDs) and to find	Vice Rector for graduate studies and scientific Research, Deanship	18 Months	PI

	out & evaluate potential drug candidates in the treatment of NCDs.	of Scientific Research		

Editorial Board Member:

- Associate Editor "Frontiers in Pharmacology".
- Guest editor, special issue, "Frontiers in Pharmacology".
- Guest Editor Special issue "Journal of Biological Regulators and Hemostatic Agents"
- Editor of Book entitled "How Synthetic Drugs Work": Insights into Molecular Pharmacology of Classic and New Pharmaceuticals, 1st edition, Elsevier publications.
- Guest editor, special issue, Current Pharmaceutical Design, Bentham science publisher
- Editorial Board Member "International journal of Pharmaceutics and Pharmacology", Ed-wiser publishing Group, India.
- Editorial Board member " Research Trends in Hematology and Oncology, Gavin Publishers, USA. https://gavinpublishers.com/journals/board_members/Research-Trends-in-Hematology-and-Oncology
- Editorial Board Member, " Acta Scientific Pharmacology" Acta Scientific International open Library.
- Editorial Board Member, " Acta Scientific Pharmaceutical Sciences" Acta Scientific International open Library.

PRESENTATIONS/CONFERENCE/WORKSHOP PROCEEDINGS:

- **Workshop “How to Target High Impact Journals”, “ Lecture delivered on Manuscript writing”, Batterjee Medical College, Jeddah, Saudi Arabia (22-23 October 2024)**
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- **Mawhiba Training Program, Dealt with Anatomy and Physiology Course from July 1-July 18, 2024, at Batterjee Medical College Jeddah, Saudi Arabia.**
- **Workshop “How to Target High Impact Journals”, “ Lecture delivered on Manuscript writing”, Batterjee Medical College, Jeddah, Saudi Arabia (November 2023)**
- **Research Committee Chair at Batterjee Medical College, Jeddah, Saudi Arabia.**
- **Advisor ““International Conference on Biostart: Bridging innovative research and startups in Pharmaceuticals” Organized by SD College of Pharmacy, Muzaffar Nagar, India.**
- **Oral presentation on “Combination therapy in diabetes (Synthetic and herbal medicine): A novel approach”, in an international conference NHPBMS/ORAL/ROLL NO. / 15.**
- **Oral presentation on “Wound healing activity of ursolic acid stearyl glucoside isolated from *Lantana camara*”, in an international conference NHPBMS/ORAL/ROLL NO. / 43.**
- **M Afzal, NR Patel, NR Kanzariya, P Tripathi, PK Rameshvar, PJ Natvar Protective effect of aminoguanidine in diabetes induced hyperalgesia and vascular dysfunction, Indian Journal Of Pharmacology 40, 179-180**
- **Participated as a delegate in national workshop on “Clinical research & Regulatory Affairs” held at K.B.Institute of Pharmaceutical Edu.& Research, Gandhinagar, 2008.**
- **Participated at the International conference on cardiovascular disease held at Surat, India, 2008.**
- **Participated as a delegate in 26th annual conference of Indian pharmacological society Gujarat Chapter at Vapi, Gujarat in 2008**
- **Participated in the CPCSEA National Conference 2010 held at india habitate centre, New Delhi.**
- **Rupinder Kaur, Muhammad Afzal: Polysystic ovarian syndrome (PCOS): Hormonal diagnostic approach, Indian pharmacological Society, MM University-2019, India**
- **Shakir Saleem, Muhammad Afzal, Imran Kazmi Biochemical and pharmacological evaluation of thiamine on the efficacy of methotrexate in hepatocarcinogenesis; Conference Current Issues/ Challenges facing the pharmacy profession, 19th Nov. 2016, Glocal university, Saharanpur, India**

Workshops

- ISI & SCOPUS آلية النشر العلمي في مجلات 2019
- QS World University Rankings, Jouf University, Sakaka, Saudi Arabia, 2018.
- Benchmarking, Faculty of Science, Jouf University, Sakaka, Saudi Arabia, 2017.
- Blackboard, Faculty of Pharmacy, Jouf University, Sakaka, Saudi Arabia, 2017.
- Blackboard, Faculty of Pharmacy, Jouf University, Sakaka, Saudi Arabia, 2018.
- Awareness to antibiotics resistance, Jouf University, Sakaka, Saudi Arabia, 2018.
- Bioethics online training course, KACST website, 2017.
- Workshop 24th aug.2021, organized by Saudi authority for intellectual property. "Topic: Using IP Protection Cumulatively (Maximizing the Advantages of IP Protection"
- Workshop 7 September 2021 organized by Elsevier publisher ""Health Research Writing Masterclass".
- Workshop on BASICS OF PATENT & PATENT SEARCH" on February 04, 2022, organized by Shree S. K. Patel College of Pharmaceutical Education & Research, Ganpat University, Kherva, Mehsana, Gujrat, India.

RESEARCH OUTCOMES:

Total number of Patents	16
Total No of publications	250
Book chapters	25
Books	05
Citations	5156
H Index	36
I10 index	94

SELECTED PUBLICATIONS IN JOURNALS:

1. Sheikh, Ryan A; Afzal, Muhammad; Al-Abbasi, Fahad A; Bukhari, Hussam A; Almalki, Naif AR; Alqurashi, May M; Imam, Faisal; Sayyed, Nadeem; Kazmi, Imran; Europinidin attenuates methamphetamine-induced learning and memory impairments and hippocampal alterations in rodents: based on Molecular Docking through a mechanism of Neuromodulatory Cytokines/Caspases-3/CREB/BDNF pathway Current Medicinal Chemistry 2025, Bentham Science Publishers (Q1)
2. Alqarni, Sana Saeed; Afzal, Muhammad; Alharbi, Khalid Saad; Alenezi, Sattam Khulaif; Alsahli, Tariq G; Zaidi, Shafqat; Altyar, Ahmed Essam; Ghaboura, Nehmat; Kazmi, Imran; Mantargi,

- Mohammad Jaffar Sadiq; Rosiridin Protects Against Aluminum Chloride-Induced Memory Impairment via Modulation of BDNF/NFκB/PI3K/Akt Pathway in Rats. *Medicina* 60 (11) 1812 2024. (Q1)
3. Balaraman, Ashok Kumar; Moglad, Ehssan; Afzal, Muhammad; Babu, MArockia; Goyal, Kavita; Roopashree, R; Kaur, Irwanjot; Kumar, Sachin; Kumar, MRavi; Chauhan, Ashish Singh; Liquid biopsies and exosomal ncRNA: Transforming pancreatic cancer diagnostics and therapeutics. *Clinica Chimica Acta* 120105 2024 Elsevier (Q1)
 4. Goyal, Kavita; Afzal, Muhammad; Altamimi, Abdulmalik Saleh Alfawaz; Babu, M Arockia; Ballal, Suhas; Kaur, Irwanjot; Kumar, Sachin; Kumar, M Ravi; Chauhan, Ashish Singh; Ali, Haider; Chronic kidney disease and aging: dissecting the p53/p21 pathway as a therapeutic target. *Biogerontology* 26(1)32; 2025 Springer Netherlands Dordrecht (Q1)
 5. Imran, Mohd; Altamimi, Abdulmalik SA; Afzal, Muhammad; Babu, M Arockia; Goyal, Kavita; Ballal, Suhas; Sharma, Pawan; Alanazi, Fadiyah Jadid; Alruwaili, Abeer Nuwayfi; Aldhafeeri, Nouf Afit; Targeting senescence and GATA4 in age-related cardiovascular disease: a comprehensive approach. *Biogerontology* 26(1) 45: 2025, Springer Netherlands Dordrecht (Q1)
 6. Alharbi, Khalid Saad; Afzal, Muhammad; Al-Abbasi, Fahad A; Moglad, Ehssan; Al-Qahtani, Salwa D; Almalki, Naif AR; Imam, Faisal; Sayyed, Nadeem; Kazmi, Imran; In vivo and in silico study of europinidin against streptozotocin-isoproterenol-induced myocardial damage via alteration of hs-CRP/CPK-MB/Caspase-3/Bcl-2 pathways. *Scientific Reports* 15 (1) 3076: 2025 Nature Publishing Group UK London (Q1)
 7. Alqarni, Sana Saeed; Afzal, Muhammad; Al-Abbasi, Fahad A; Moglad, Ehssan; Bawadood, Azizah Salim; Almalki, Naif AR; Alqurashi, May M; Imam, Faisal; Syed, Shoaeb Mohammad; Kazmi, Imran; Exploring acemannan-loaded nanogel formulation for the treatment of IMQ-induced psoriasis-like inflammation: In vitro characterization and in vivo efficacy assessment *International Immunopharmacology* 148 114064 2025, Elsevier (Q1)
 8. Balaraman, Ashok Kumar; Afzal, Muhammad; Moglad, Ehssan; Babu, M Arockia; Priya, G Padma; Bansal, Pooja; Rajotiya, Sumit; Kondapavuluri, Benod Kumar; Kazmi, Imran; Alzarea, Sami I; The interplay of p16INK4a and non-coding RNAs: bridging cellular senescence, aging, and cancer. *Biogerontology* 26 (2) 50: 2025 Springer Netherlands Dordrecht (Q1)
 9. Iqbal, Mahwish; Wasim, Tayyiba; AlQahtani, Saeed A; Alghamdi, Anwar A; Ahmad, Aftab; Abbas, Ahmad Hefnawy; Bushra, Natasha; Thattarauthodiyil, Usman; Easwaran, Vigneshwaran; Afzal, Muhammad; The Thematic Analysis of Barriers to Immediate Post-Partum Long-Acting Reversible Contraception *Healthcare*, 12 (22) 2208 2024 (Q2)

10. Rawat, Sushama; Moglad, Ehssan; Afzal, Muhammad; Goyal, Ahsas; Roopashree, R; Bansal, Pooja; Mishra, Shivang; Prasad, GV Siva; Pramanik, Atreyi; Alzarea, Sami I; Reprogramming Tumor-Associated Macrophages: The Role of MEK-STAT3 Inhibition in Lung Cancer. *Pathology-Research and Practice*, 155748 2024 (Q2)
11. Nadeem, Muhammad Shahid; Khan, Jalaluddin Azam; Kazmi, Imran; Moglad, Ehssan; Afzal, Muhammad; Alzarea, Sami I; Rahim, Fazal; Khan, Shoaib; Muhammad, Khushi; Gupta, Gaurav; Synthesis, DFT, ADMET and molecular docking studies of thiazole derived thiazolidinone-based chalcone derivatives: alzheimer's disease current therapies. *Future Medicinal Chemistry* 9-Jan, 2024 Taylor & Francis (Q2)
12. Bukhari, H.A., Afzal, M., Al-Abbasi, F.A. et al. In vivo and computational investigation of butin against alloxan-induced diabetes via biochemical, histopathological, and molecular interactions. *Sci Rep* 14, 20633 (2024). <https://doi.org/10.1038/s41598-024-71577-y>
13. Ebtihaj J. Jambi, Abdulaziz Alamri, Muhammad Afzal et al., 6-shogaol against 3-Nitropropionic acid-induced Huntington's disease in rodents: Based on molecular docking/targeting pro-inflammatory cytokines/NF-κB-BDNF-Nrf2 pathway, *PLOS-ONE* 2024, <https://doi.org/10.1371/journal.pone.0305358>
14. Riya Thapa, Ehssan Moglad, Muhammad Afzal, et.al., ncRNAs and their impact on dopaminergic neurons: Autophagy pathways in Parkinson's disease, *Ageing Research Reviews*, Volume 98, 2024, 102327, <https://doi.org/10.1016/j.arr.2024.102327>.
15. Altyar, A.E.; Afzal, M.; Ghaboura, N.; Alharbi, K.S.; Alenezi, S.K.; Sayyed, N.; Kazmi, I. Barbaloin Protects Pentylene-tetrazol-Induced Cognitive Deficits in Rodents via Modulation of Neurotransmitters and Inhibition of Oxidative-Free-Radicals-Led Inflammation. *Pharmaceuticals* 2024, 17, 699. <https://doi.org/10.3390/ph17060699>
16. Asif Ahmad Bhat, Muhammad Afzal, Ahsas Goyal, et. al., The impact of formaldehyde exposure on lung inflammatory disorders: Insights into asthma, bronchitis, and pulmonary fibrosis, *Chemico-Biological Interactions*, Volume 394, 2024, 111002, <https://doi.org/10.1016/j.cbi.2024.111002>.
17. Asif Ahmad Bhat, Ehssan Moglad, Ahsas Goyal, Muhammad Afzal, et al., Nrf2 pathways in neuroprotection: Alleviating mitochondrial dysfunction and cognitive impairment in aging, *Life Sciences*, Volume 357, 2024, 123056, <https://doi.org/10.1016/j.lfs.2024.123056>.
18. Bhat AA, Afzal M, Moglad E, Thapa R, Ali H, Almalki WH, Kazmi I, Alzarea SI, Gupta G, Subramaniyan V. lncRNAs as prognostic markers and therapeutic targets in cuproptosis-mediated

- cancer. *Clin Exp Med.* 2024 Sep 26;24(1):226. doi: 10.1007/s10238-024-01491-0. PMID: 39325172; PMCID: PMC11427524.
19. Imam F, Kothiyal P, Alshehri S, Afzal M, Iqbal M, Khan MR, Alanazi AAH, Anwer MK. Hirsutidin Prevents Cisplatin-Evoked Renal Toxicity by Reducing Oxidative Stress/Inflammation and Restoring the Endogenous Enzymatic and Non-Enzymatic Level. *Biomedicines.* 2023; 11(3):804. <https://doi.org/10.3390/biomedicines11030804> .
 20. Muhammad Afzal , Khalid Saad Alharbi , Sami I. Alzarea , Najiah M. Alyamani , Imran Kazmi , Emine Güven, Revealing genetic links of Type 2 diabetes that lead to the development of Alzheimer's disease. *Heliyon* 9 (2023) e12202, <https://doi.org/10.1016/j.heliyon.2022.e12202>
 21. Alzarea SI, Qasim S, Afzal M, Alsaidan OA, Alhassan HH, Alharbi M, Alqinyah M, Alenazi FS. Anandamide Reuptake Inhibitor (VDM11) as a Possible Candidate for COVID-19 Associated Depression; a Combination of Network Pharmacology, Molecular Docking and In Vivo Experimental Analysis. *Processes.* 2023; 11(1):143. <https://doi.org/10.3390/pr11010143>
 22. Imran Kazmi, Fahad A. Al-Abbasi, Muhammad Afzal, Muhammad Shahid Nadeem, Hisham N. Altayb, Sterubin protects against chemically-induced Alzheimer's disease by reducing biomarkers of inflammation- IL-6/ IL- β / TNF- α and oxidative stress- SOD/MDA in rats, *Saudi Journal of Biological Sciences*, Volume 30, Issue 2, 2023, 103560. <https://doi.org/10.1016/j.sjbs.2023.103560> .
 23. Afzal, M.; Alzarea, S.I.; Alharbi, K.S.; Alzarea, A.I.; Alenezi, S.K.; Alshammari, M.S.; Alquraini, A.H.; Kazmi, I. Rosiridin Attenuates Scopolamine-Induced Cognitive Impairments in Rats via Inhibition of Oxidative and Nitrate Stress Leded Caspase-3/9 and TNF- α Signaling Pathways. *Molecules* 2022, 27, 5888. <https://doi.org/10.3390/molecules27185888>
 24. S.I. Alzarea, M. Afzal, K.S. Alharbi et al. Hibiscetin attenuates oxidative, nitrate stress and neuroinflammation via suppression of TNF- α signaling in rotenone induced parkinsonism in rats, *Saudi Pharmaceutical Journal* 30 (2022) 1710–1717.
 25. Alharbi, K.S.; Afzal, M.; Alzarea, S.I.; Khan, S.A.; Alomar, F.A.; Kazmi, I. Rosinidin Protects Streptozotocin-Induced Memory Impairment-Activated Neurotoxicity by Suppressing Oxidative Stress and Inflammatory Mediators in Rats. *Medicina* 2022, 58, 993. <https://doi.org/10.3390/medicina58080993>
 26. Afzal, Muhammad, Nadeem Sayyed, Khalid Saad Alharbi, Sami I. Alzarea, Mohammed Salem Alshammari, Fadhel A. Alomar, Sattam Khulaif Alenezi, Anwarulabedin Mohsin Quazi, Abdulaziz I. Alzarea, and Imran Kazmi. 2022. "Anti-Huntington's Effect of Rosiridin via Oxidative

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DECLARATION

I hereby declare that the above information is correct to best of my knowledge.

Place: Jeddah, Saudi Arabia

Muhammad Afzal