

Muhammad Ikram

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**Academic Career**

- **Postdoc. Neuroscience 03/2021–03/2022.**
Gyeongsang National University, Jinju, 52828, South Korea.
- **Ph.D. Neuroscience (Neurobiology/Neuropharmacology) 03/2016–02/2021.**
Gyeongsang National University, Jinju, 52828, South Korea.
Thesis Title: “Natural Compounds as neurotherapeutic agents against rodent models of neurodegeneration and cognitive dysfunction”
- **M.Phil. Biochemistry 03/2011–08/2013.**
Department of Biochemistry, Hazara, University, Mansehra, 21120, Pakistan.
- **Pharm-D: Doctor of Pharmacy (5 years program) 09/2005–12/2010.**
University of Malakand, Dir Chakdara, 23050, Pakistan.

Research Summary**Proteinopathies, Neuroinflammation, Neuronal Apoptosis, and Memory Impairments in Neurodegenerative & Metabolic Disorders, and in Traumatic/Ischemic Brain Injuries**

- A creative, highly motivated, and talented individual with a strong background in Neurodegenerative Diseases, Natural substances, and Development of animal models of neurodegenerative diseases, with proven publications track record.
- Being an international researcher, acquired strong technical skills (Western blot, Immunofluorescence analysis, and biochemical assays)
- Having excellent communication skills (publications/project/proposal writings, Team leading, public speaking, collaborations, and excellent documentation).
- Proteinopathies, Neuroinflammation, Neuronal Apoptosis and Memory Impairments in Neurodegenerative & Metabolic Disorders, and Traumatic/Ischemic Brain Injuries
- The cellular/molecular signaling pathways involved in neurodegeneration-induced Proteinopathies (A β , pTau & α -synuclein), oxidative stress, neuroinflammation, synaptic dysfunction, neuronal apoptosis, cognitive impairments, behavioral and memory deficits.
- Energy-metabolic regulation in neurodegeneration; metabolic dysfunction-mediated pathological hallmarks such as cognitive deficits, learning, and memory impairments.
- Effects of neurodegeneration on senses; exploring the neurodegeneration-related pathophysiology in major senses i.e. retina and olfactory bulb.
- Traumatic Brain Injury (TBI); the role of JNK and other stress kinases-mediated oxidative stress, gliosis, the release of inflammatory cytokines, neuronal loss, and synaptic dysfunction.
- Cerebral Ischemia-mediated oxidative stress, neuroinflammation, synaptic and memory deficits.
- Sphingolipids signaling in neurodegeneration, especially in Alzheimer's & Parkinson's disease.

Research
Techniques**In Vitro Skills**

- Immortalized cells culturing (neuronal cells, microglia, and astrocytes as well HUVEC cells) and primary cortical & Hippocampal neuronal cells and the isolation of the microglial and astrocyte cells from the primary cortical and hippocampal cells culturing. Cell culture for genomic (PCR), proteomic (Western blot), and morphological (immunofluorescent confocal and light microscopy) analysis.

In Vivo Skills

- Animal (Rodents) handling, their ethical protocols, and design of various models for the experiment.
- All types of stereotaxic injections i.e. intracerebroventricular (ICV) and intracranial injection for drug administration and shRNA, intravenous injection for drug administration and PEI-based shRNA-knockdown tail injection to rodents.
- Ischemia/Hypoperfusion model preparation (Global ischemia, cerebral artery occlusions).
- Traumatic Brain Injury (Repetitive mild TBI [rmTBI], Feeney's weight-drop model & stab wound injury (SWI) model.
- Drug administration to routes in Rodents. Glucose & Insulin Tolerance Tests of rodents.
- Surgery of rodents, brain microdissections, and separations as well other tissue separations.
- Behavioral analysis of rodents (MWZ, Y-maze, and Elevated plus-maze test, Open field test, Novel Object Recognition test, Wire hanging test, Fear conditioning, Forced swim test, Tail suspension test, Sucrose preference test, Olfactory Test, etc.).
- Expertise in protein and RNA extraction, Immunoblotting, and PCR.
- Expertise in animal perfusion for morphological analysis and brain section separations.

Microscopic Skills

- Immunostaining for both in vivo and in vitro samples, Immunohistochemistry, Light Microscopy, Laser Confocal Microscopy.

Bio-Statistical
Programming

- GraphPad Prism
- Image-J software
- Confocal FluoView FV 1000 Image analysis
- Sigma Gel System
- SPSS

Scholarships /
Award

- *PharmD Merit Scholarship*, University of Malakand, Pakistan. 2005-2010.
- *BK21+ (Brain Korea 21 Plus) Scholarship* - for the doctoral degree by the Korean Govt.
- *Young Pioneer Research Award* - excellent research performance in May 2019
- *Young Pioneer Research Award* - excellent research performance in Nov 2019
- *Young Pioneer Research Award* - excellent research performance in May 2020
- *Otstanding Research Award* - outstanding research achievements in May 2020
- *Young Pioneer Research Award* - excellent research performance in Nov 2020

Short Courses

- Ethical guidelines and protocols of the IACUC (Approval ID: 125): October 2016
- Good Laboratory Practice: October 2016
- Cyber Security Course: November 2016
- LMO (Living Modified organism) handling: January 2017

List of Publications

I have published a total of 19 papers, 11 of which are first/equal contributed first author publications and 8 as co-author publications.

First (Principal) Author Publications:

- 1) Ongoing Research on the Role of Gintonin in the Management of Neurodegenerative Disorders. 2020, 9, 1464. <https://doi:10.3390/cells9061464> (Cells/MDPI, 2020).
- 2) Natural Dietary Supplementation of Curcumin Protects Mice Brains against Ethanol-Induced Oxidative Stress-Mediated Neurodegeneration and Memory Impairment via Nrf2/TLR4/RAGE Signaling. Nutrients. <https://doi:10.3390/nu11051082> (Nutrients/MDPI, 2019).
- 3) Hesperetin confers neuroprotection by regulating Nrf2/TLR4/NF- κ B signaling in an A β mouse model. Molecular Neurobiology. <https://doi.org/10.1007/s12035-019-1512-7> (Molecular Neurobiology/Springer Nature, 2019).
- 4) Antioxidant and Neuroprotective Effects of Caffeine against Alzheimer's and Parkinson's Disease: Insight into the Role of Nrf-2 and A2AR Signaling. <https://doi.org/10.3390/antiox9090902> (Biomolecules/MDPI, 2020).
- 5) Oral Administration of Gintonin Protects the Brains of Mice against A β -Induced Alzheimer Disease Pathology: Antioxidant and Anti-Inflammatory Effects. <https://doi.org/10.1155/2021/6635552> (Oxidative medicine and cellular Longevity, 2020).

Equally Contributed (as the first author) Publications:

- 6) Antioxidant and Anti-inflammatory effects of Citrus Flavonoid Hesperetin: Special focus on Neurological Disorders. <https://doi.org/10.3390/antiox9070609> (Antioxidants/MDPI, 2020).
- 7) Gut Microbiota, Its Role in Induction of Alzheimer's Disease Pathology, and Possible Therapeutic Interventions: Special Focus on Anthocyanins. <https://doi:10.3390/cells9040853> (Oxidative medicine and cellular Longevity, 2020).
- 8) Oral administration of alpha-linoleic acid rescues A β -induced Glia-mediated neuroinflammation and cognitive dysfunction in C57BL/6N mice. <https://doi:10.3390/cells9030667> (Cells/MDPI, 2020).
- 9) Gintonin Mitigates MPTP-Induced Loss of Nigrostriatal Dopaminergic Neurons and Accumulation of α -Synuclein via the Nrf2/HO-1 Pathway. 2018, 1-17. <https://doi.org/10.1007/s12035-018-1020-1> (Molecular Neurobiology/Springer Nature, 2018).
- 10) Hesperetin, a citrus flavonoid, attenuates LPS-induced neuroinflammation, apoptosis, and memory impairments by modulating TLR4/NF- κ B signaling. 2019, 11, 648. <https://doi:10.3390/nu11030648> (Nutrients/MDPI, 2019).
- 11) Neurological enhancement effects of melatonin against brain injury-induced oxidative stress, neuroinflammation, and neurodegeneration via AMPK/CREB signaling. <https://doi:10.3390/cells8070760> (Cells/MDPI, 2019).
- 12) Caffeine May Abrogate LPS-Induced Oxidative Stress and Neuroinflammation by Regulating Nrf2/TLR4 in Adult Mouse Brains. <https://doi:10.3390/biom9110719> (Biomolecules/MDPI)..
- 13) Vanillic Acid, a Bioactive Phenolic Compound, Counteracts LPS-Induced Neurotoxicity by Regulating c-Jun N-Terminal Kinase in Mouse Brain. <https://doi:10.3390/ijms22010361> (Biomedicines/MDPI, 2021).
- 14) Pathology, Risk Factors, and Oxidative Damage Related to Type 2 Diabetes-Mediated Alzheimer's Disease and the Rescuing Effects of the Potent Antioxidant Anthocyanin.

<https://www.hindawi.com/journals/omcl/2021/4051207/> (Oxidative medicine and cellular longevity/Hindawi).

Co-author Publications

- 15) Natural dietary supplementation of anthocyanins via PI3K/Akt/Nrf2/HO-1 pathways mitigates oxidative stress, neurodegeneration, and memory impairment in a mouse model of Alzheimer's disease. <https://doi.org/10.1007/s12035-017-0798-6> (*Molecular Neurobiology/Springer Nature* 2018).
- 16) Neuroprotective effect of quercetin against the detrimental effects of LPS in the adult mouse brain. <https://doi.org/10.3389/fphar.2018.01383> (*Frontiers in Pharmacology*, 2018).
- 17) Caffeine modulates cadmium-induced oxidative stress, neuroinflammation, and cognitive impairments by regulating Nrf-2/HO-1 in vivo and in vitro. <https://doi.org/10.3390/jcm8050680> (*Journal of clinical medicines/MDPI*, 2019).
- 18) Inhibition of JNK Alleviates Chronic Hypoperfusion-Related Ischemia Induces Oxidative Stress and Brain Degeneration via Nrf2/HO-1 and NF-κB Signaling. <https://doi.org/10.1155/2020/5291852> (*Oxidative medicine and cellular Longevity*, 2020).
- 19) Dietary supplementation of the antioxidant curcumin halts systemic LPS-induced neuroinflammation-associated neurodegeneration and memory/synaptic impairment via the JNK/NF-κB/Akt signaling pathway in adult rats. : <https://doi.org/10.1155/2019/7860650> (*Oxidative medicine and cellular Longevity*, 2020).
- 20) Melatonin rescue oxidative stress-mediated neuroinflammation/neurodegeneration and memory impairment in scopolamine-induced amnesia mice model. <https://doi.org/10.1007/s11481-018-9824-3> (*Neuroimmune Pharmacology/Springer Nature*).
- 21) Glycine, the smallest amino acid, confers neuroprotection against D-galactose-induced neurodegeneration and memory impairment by regulating c-Jun N-terminal kinase in the mouse brain, <https://doi.org/10.1186/s12974-020-01989-w> (*Journal of Neuroinflammation*).
- 22) Fisetin Rescues the Mice Brains Against D-Galactose-Induced Oxidative Stress, Neuroinflammation and Memory Impairment. <https://www.frontiersin.org/articles/10.3389/fphar.2021.612078/full> (*Frontiers in Pharmacology*).

International Conferences

Society for Neuroscience (2019)

Poster Title: Osmotin mitigates susceptibility of alpha-synuclein and MPTP-induced neuropathology dopaminergic neuronal death via the AMPK activation.

Work Experience

I am working as a Ph.D. Researcher in Neuroscience (Neurobiology/Neuropharmacology), College of Natural Sciences, Gyeongsang National University, South Korea, under the supervision of Professor Myeong Ok Kim.

Editorial Board

Editorial board member of Science Frontiers
(<http://www.sciencepublishinggroup.com/journal/index?journalid=637>).

Member

Language Proficiencies

English	Urdu	Pashto	Korea
Excellent	Native	Native	Basics

Reviews

- Scientific Report.
- BMC Complementary and alternative medicines
- Plos One
- Frontiers in Pharmacology

References

1. Professor Dr, Myeong Ok Kim

Position: Full Professor, Head Department of Applied Life sciences, Gyeongsang National University, Jinju Republic of Korea.

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Google Scholar Profile:

<https://scholar.google.co.kr/citations?hl=en&user=NezEAEsAAAAJ>**Dr. Thair Ali:**

2. Dr Tahir Ali

Position: Postdoctoral Research Associate

Address: Department of Comparative Biology and Experimental Medicine, Faculty of Veterinary Medicine, Hotchkiss Brain Institute, Cumming School of Medicine,

University of Calgary, Calgary, AB, Canada, Email: tahirneuro@gmail.com, Phone: +15874299267,

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