

RESUME

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RESEARCH AND PROFESSIONAL EXPERIENCE:

- **Postdoctoral researcher** (January 2022 till date): Michael S. Wolfe lab, Department of Medicinal Chemistry, University of Kansas, Kansas, USA.
Current Project 1 – Determining the role of molecular chaperones in amyloid beta production and gamma-secretase complex formation.
Project 2- Determining the role of long amyloid beta in pathogenesis of familial Alzheimer's disease.
- **Postdoctoral researcher** (January 2018 to December 2021): Makoto Michikawa lab, Department of Biochemistry, Nagoya City University, Nagoya, Japan.
Project: Effect of high temperature on Alzheimer's disease
 - Used various cell lines (HEK-APP, CHO-APP, Primary neuron) to confirm the effect of high temperature on amyloid beta production.
 - Similar experiments performed on C57BL/6J mice.
 - Performed various cellular and molecular biology techniques (ELISA, Western blot, Immunoprecipitation, Immunostaining, etc.) to determine the molecular mechanism by which high temperature increased the amyloid beta productions.
- **Lecturer** (February 2014 to April 2017): Department of Pharmacy, Oman Medical College (West Virginia University, USA), Muscat, Oman.
 - Taught undergrad Pharmacy course **pharmacology**
 - Designed lab experiments and lab setup
 - Supervised undergrad research projects

RESEARCH SUMMARY:

Determined *the high temperature is a novel risk factor for Alzheimer's disease*

I report the novel temperature-dependent regulation of amyloid beta (A β) production via modulation of γ -secretase complex formation. I have demonstrated for the first time that heat shock protein 90 (Hsp90) interacted with NCT and APH-1 at high temperature and promoted γ -secretase complex formation and activity, leading to enhanced A β production. Hsp90 knockdown attenuated the increased γ -secretase complex formation and A β production at high temperature. Overall, my studies reveal that elevation of the Hsp90 level at high temperature is a key factor for the regulation of γ -secretase complex formation and A β production. These studies were performed in *in vitro* cell lines (HEK-APP, CHO-APP, N2a-APP, SHSY5Y- APP, Primary neuron) and in *in vivo* C57BL/6J mice.

Developed a surgical model for hepatotoxicity

I developed a prolonged bile duct obstruction as a new experimental model for cirrhosis in the rat and proposed that as a good model for hepatic fibrosis. Evaluated bile duct ligation induced liver fibrosis by using biochemical (aspartate aminotransferase (AST), alanine aminotransferase (ALT), triglyceride (TG), total bilirubin (TB), direct bilirubin (DB) and total protein), morphological, functional and histopathological studies. These studies were performed in *in vivo* albino wistar rats.

Developed an animal model for antibiotic-induced hepatotoxicity and nephrotoxicity

Gentamicin-induced hepatotoxicity was not previously demonstrated in experimental studies. I designed the animal models for gentamicin inducing liver toxicity and determined liver biochemical parameters.

Pharmacokinetics

Knowledge in the field of pharmacokinetics in general, with specific areas of interest in bioequivalence, drug-drug interactions, ADME and special populations. Preclinical pharmacokinetic studies (toxicokinetics, bioavailability, dose proportionality, quantitative tissue distribution, and allometric scaling) in mouse and rat models.

SKILLS AND TECHNIQUES:

1. ***Animal handling***- Rats/Mice
2. ***In vivo experiments*** -Collection of biological samples from experimental animals. Cannulation of small blood vessels like carotid artery, jugular vein. Ligation of bile duct in rats. Isolation of liver and brain samples from rats and mice. Blood collection by retro orbital plexus & tail vein methods. Administration of drugs, orally by using oral feeding needle, intra-venous (i.v), intraperitoneal (i.p), subcutaneous (s.c). and tail vein
3. ***In vivo biochemical assays /toxicity studies***- Serum glutamic oxaloacetate transaminase (SGOT), serum glutamic pyruvate transaminase (SGPT) and triacyl glycerides, direct bilirubin (DB), total bilirubin (TB) and lipid peroxidation. Histology of liver. Acute toxicity study according to the OECD 425 guideline on animals
4. ***Cell culture***- Transient and stable transfection of plasmid DNA in cell lines (SH-SY5Y, N2a and HEK293 cells, Mouse fibroblast cells, etc)
5. ***Molecular biology experiments***- Gel electrophoresis, Western blotting, Blue native page analysis BCA assays, Immunoprecipitation, ELISA, siRNA, shRNA, Immunofluorescence microscopy and confocal microscopy
6. ***RNA/DNA analysis***- Isolation and estimation of genomic DNA/RNA, cDNA synthesis, PCR amplification, Restriction digestion, carried out agarose gel electrophoresis, Mutagenesis, Protein purification
7. ***Microbial techniques***: Plasmid isolation from microbial cells, cloning and transformation
8. ***Excellent written and oral communication***: Scientific journal article, grant proposal writing, and presentation

9. **Leadership skills:** Managerial, supervision, training, mentoring, and teaching experience

- Excellent interpersonal skills and team leader, Excellent time management and work independently
- Able to work under pressure and meet deadlines, independent research development, Quick adaptability in different academic, social, and cultural environments
- Learning and implementation of new scientific skills to tackle challenging projects
- Hard-working, positive-minded and problem-solve

EXPERIENCED IN WORKING ON:

Plethysmometer – 7140	(Ugo Basile, Italy)	Rota rod
Power lab 8 channel	(AD instruments)	Actophotometer
NIBP (tail cuff)	(AD instruments)	Hot-plate
ECG analysis module	(AD instruments)	Plus maze
Physiograph	(Medicaid)	Water maze

AWARDS/ACHIEVEMENTS:

- Postdoctoral research fellowship from **Takeda Science Foundation, Osaka, Japan (January 2018 to December 2018)**.
- **First best paper award** at the National level seminar on ‘**Impact of Pharmaceutical Education on Employment**’ conducted by DST on 22nd December 2010, Mandasaur (M.P.), India.
- Master of Pharmacy scholarship from **World Memon Organization (India Chapter), UK (2007 to 2009)**.

EDUCATIONAL DETAILS:

Ph.D. dissertation Topic: Evaluation of hepatoprotective & antioxidant activity of some Indian medicinal plants on albino wistar rats			
Degree	Institute	Year	Result
Doctor of Philosophy <i>(Pharmaceutical Sciences)</i>	Mahatma Jyoti Rao Phoole University, Jaipur, Rajasthan, India	2010-15	Awarded
Master of Pharmacy <i>(Pharmacology)</i>	R. C. Patel College of Pharmacy, Shirpur. Dist – Dhule. Maharashtra, India	2007-09	First Class (61%)
Bachelor of Pharmacy	Allana College of pharmacy, Pune, Maharashtra, India	2003-07	First Class (63%)

POSTER/ CONFERENCES:

- **Noorani AA**, Yuan Gao, Sadequl Islam, Yang Sun, Kun Zou and Makoto Michikawa. Effect of high temperature on amyloid β -protein production. **Presented a poster** at annual meeting of Japan Society of Dementia on 7th November 2019, **Tokyo, Japan.**
- **Noorani AA**, Yuan Gao, Sadequl Islam, Yang Sun, Kun Zou and Makoto Michikawa. Effect of high temperature on amyloid β -protein production. **Presented a poster** at Takeda Science Foundation on 1st February 2019, **Osaka, Japan.**
- Participated in the International level conference on “Genome Editing Towards Medical Applications” conducted by Takeda Science Foundation on 07-08th February 2018, **Osaka, Japan.**
- **Noorani AA** and Kale MK. Pretreatment of Albino Rats with Methanolic Fruit Extract of *Randia dumetorum* (L.) Protects against Alcohol Induced Liver Damage. **Presented a poster** at University of Nizwa, on 25-26th January 2012, **Nizwa, Oman.**
- Participated in the national level seminar on Impact of Pharmaceutical Education on Employment conducted by DST on 22nd December 2010, **Mandsaur (M.P.), India.**

COMPUTER KNOWLEDGE:

- Experienced in Graph Pad Prism, Endnote, Adobe Illustrator, Adobe Photoshop, ImageJ, Random allocation, Sample size determination software employed for calculation of experimental pharmacology.

SEMINARS DELIVERED:

- Various blotting technique.
- Pathophysiology of liver diseases.
- Pre-clinical evaluation of anti-Parkinson activity using various animal models.
- Sub-acute toxicity testing in safety pharmacology.

RESEARCH PUBLICATIONS:

- Islam S, Sun Y, Nakamura T, Gao Y, **Noorani AA**, Li T, Wong P, Kimura N, Matsubara E, Ksaug K, Ikeuchi T, Tomita T, Zou K, Michikawa M. Presenilin is essential for ApoE secretion. **Journal of Neuroscience 2022: 42, 1574-1586.**
- **Noorani AA**, Yamashita H, Gao Y, Islam S, Sun Y, Nakamura T, Enomoto H, Zou K, Michikawa M. High temperature promotes amyloid β -protein production and γ -secretase complex formation via Hsp90. **Journal of Biological Chemistry 2020: 295; 18010-18022.**
- **Noorani AA*** and Kale MK. Hepatoprotective effect of methanolic roots extract of *Andropogon muricatus* on bile duct ligation - induced liver fibrosis in rats. **Latin American Journal of Pharmacy 2013: 5; 727-733.**
- **Noorani AA*** and Kale MK. Pretreatment of albino rats with methanolic fruit extract of *Randia dumetorum* (L.) protects against alcohol induced liver damage. **Korean Journal of Physiology and Pharmacology 2012:16; 125-130.**
- **Noorani AA***, Badhada K, Gupta K and Kale MK. Protective effect of methanolic extract of *Caesalpinia bonduc* (L.) on gentamycin -induced hepatotoxicity and nephrotoxicity in rats. **Iranian Journal of Pharmacology and Therapeutics 2011: 2; 21-24.**
- **Noorani AA***, Dwivedi G and Kale MK. Antihyperlipidemic activity of rimonabant on high cholesterol diet induced hyperlipidemia in rats. **Pharmacologyonline 2011:1; 1212-1220.**

- Dwivedi G, **Noorani AA**, Rawal D and Patidar H. Anthelmintic Activity of *emblica officinalis* Fruit Extract. **International Journal of Pharmaceutical Research and Development** 2011:3; 50-52.
- **Noorani AA***, Badhada K, Gupta K and Kale MK. Protective Effect of Methanolic Extract of *Caesalpinia bonduc (L.)* on Artesunate -Induced Hepatotoxicity in Rats. **Pharmacologyonline** 2010:3; 401-408.
- **Noorani AA***, Soni M and Patidar K. Antimicrobial Activity of Microwave Assisted Extraction of *Momordica charantia roxb.* **International Journal of Pharmaceutical Research and Development** 2010:7; 43-45.
- **Noorani AA***, Dwivedi G, Badhada K and Kale MK. Preventive effect of methanolic leaf extract of *Caesalpinia bonduc (L.)* on alloxan-induced diabetic rats. **Journal of Scientific Speculations and Research** 2010:2; 25-27.
- **Noorani AA***, Mulla K and Patil S. Hepatoprotective effect of *Cocculus Hirsutus* Linn. against ethanol- induced liver damage in albino wistar rats. **Pharmacophore** 2010: 1; 82-89.
- **Noorani AA***, Saini N and Saini K. Hepatoprotective activity of rimonabant against isoniazid induced liver damage. **International Journal of Pharmaceutical & Biological Archive** 2010:1; 23-26.
- Patil SD*, **Noorani AA** and Surana SJ. Hepatoprotective activity of rimonabant against paracetamol induced liver damage. **International Journal of Pharmacology and Bioscience** 2009: 5; 43-46.

MANUSCRIPT REVIEW:

eFood Journal

Frontiers in Aging Neuroscience Evidence-Based

Complementary and Alternative Medicine Journal

Oman Medical Journal

PERSONAL DETAILS:

Birth date 11th May1986

Sex Male

Marital Status Married

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