Dr. Murad Hossain, Ph.D.
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EDUCATION

04/2007-03/2010 **Doctor of Philosophy (Ph.D.) in Pharmacy,** Niigata University of Pharmacy and Applied Life Sciences, Japan.

04/2005-03/2007 **Master of Science (M. Pharm.) in Pharmacy,** Niigata University of Pharmacy and Applied Life Sciences, Japan.

06/1997-07/2001 **Bachelor of Science (B. Pharm.) in Pharmacy,** Faculty of Pharmacy, University of Dhaka, Bangladesh. (Exam was held in 2004, due to session jam)

1997 **Higher Secondary School Certificate (H.S.C.),** University Laboratory School & college, Dhaka.

1995 **Secondary School Certificate (S.S.C.),** University Laboratory School & college, Dhaka.

PROFESSIONAL EXPERIENCES

09/2014-Present **Assistant Professor,** Department of Pharmaceutical Sciences, North South University, Bangladesh.

02/2014- 09/2014 **Assistant Professor,** Department of Pharmacy, University of Asia Pacific, Bangladesh.

11/ 2013-12/2013 **Postdoctoral Research Associate,** Department of Medicine, University of Illinois at Chicago, USA

11/2010 – 11/2013 **Postdoctoral Research Fellow,** Department of Basic Sciences, University of North Dakota, Grand forks, ND, USA.

04/2010-11/2010 **Postdoctoral Research Associate,** Department of Fundamental and Experimental Pharmacology, Niigata University of Pharmacy & Applied Life Sciences, Niigata, Japan.

04/2005-04/2010 **Ph.D. Research Scholar,** Department of Pharmacology, Niigata University of Pharmacy & Applied Life Sciences, Niigata, Japan

RESERCH EXPERIENCES

11/2010 – 10/2013 **Postdoctoral Research Fellow, Advisor: Dr. Lucia Carvelli**, University of North Dakota, Grand forks, ND, USA.

Project-1: *Important role of Dopamine Transporter for Amphetamine Induced Desensitization of C. elegans behavior.*

- Wild type and different knock out animals were subjected to behavioral assay as swimming induced paralysis (SWIP).
- Preparations of double knock out transgenic animals and confirmed by PCR detection and also embryonic primary DA neuronal culture of WT and different transgenic animal
- *In vivo* and *in vitro* analysis of AMPH induced Dopamine transporter (DAT-1) and Dopamine (DA) receptor internalization by using [^{3}H]-DA uptake, live DAT trafficking of DA neuronal confocal microscopy.
- Determined surface protein by biotinylated Western blot from isolated primary neuron of dopaminergic neuron of *C. elegans*or CeDAT-1 expressed in LLC-PK1 cell line.

Project-2: *Amphetamine and β-Phenylethylamine generated behavioral effects through DAT mediate DA release or activation of different channel.*

- Determine the β-phenylethylamine induced SWIP behavior with wild type and different knock out animal.
- Embryonic primary DA neuronal culture of WT and different transgenic animal.
- Evaluated the β-phenylethylamine induced the dopamine uptake and release by using radiolabel dopamine with wild type and different knock out animal of *C. elegans.*

Project-3: *Amphetamine induced epigenetic histone modification of C. elegans.*

- Treatment of AMPH during embryonic development and determine SWIP behavior assay of different progeny of *C. elegans.*
- Determined global histone protein expression level by Western blot for different progeny of AMPH treated *C. elegans.*
- Collaboration research work was done for determining the AMPH induced histone modification by analysis of Chromatine immunoprecipitation (Chip) assay.

04/2010 – 10/2010 **Postdoctoral Research Fellow, Advisor: Dr. Masanobu Ozaki,** Niigata University of Pharmacy & Applied Life Sciences, Niigata, Japan.

Project: *Role of Peroxisome Proliferator-Activated Receptor (Gamma PPARγ) activation in morphine induce behavioral sensitized mice*

- Determined repeated administration of morphine induced behavior and withdrawal syndrome in mice.
- Evaluation of PPARγ agonist induced reduction of inflammation generated by morphine induced behavioral sensitized mice.
- Preparation of nuclear fraction from mice brain and also evaluated the PPARγ expression level by Western blot.
- Isolation and purification of total RNA from mice brain and also evaluated the semi-

quantitative reverse transcriptase RT-PCR of PPARγ.

04/2010-03/2010 **Ph.D. Research Scholar, Advisor: Dr. Takafumi Nagatomo,** Niigata University of Pharmacy & Applied Life Sciences, Niigata, Japan.

Dissertation Title: *Pharmacological and Molecular Studies for the Regulation of β_1-Adrenergic Receptors that Reveals Activation and Inactivation*

Project: Investigations were carried out to confirm the precise binding sites of ligands with human recombinant β_1-Adrenergic Receptors (β_1-ARs) to develop a new cardiovascular drug and illustrated the *in vitro* molecular mechanism of receptor activation and inactivation as assessed by molecular modeling, site-directed mutagenesis, radioligand binding, endocytosis and signal transduction assays etc.

04/2005 – 03/2007 **Masters Research Scholar**, **Dr. Takafumi Nagatomo,** Niigata University of Pharmacy & Applied Life Sciences, Niigata, Japan.

Thesis Title: *Site-directed mutagenesis of β_1-adrenergic receptor: Inverse agonist activity of* β *-blockers to a novel constitutively active mutant*

Project: Research project was investigated to identify the binding sites of novel compounds with recombinant human β_1-ARs to evaluate new inverse agonist drug in the treatment of cardiovascular disease. To determine the inverse agonist activity of beta-blockers with constitutively active mutant (CAMs) of β_1-ARs were evaluated by using recombinant technology, radioligand binding and signal transduction assays.

04/2004-08/2004 **Undergraduate Project Research, Supervisor: Professor of Md. Shawkat Ali, Ph.D**, University of Dhaka, Bangladesh

Thesis Title: *Antinociceptive activity of whole plant extracts of Paederiafoetida*

SCIENTIFIC PUBLICATIONS

1. Ulla A, Mohamed MK, Sikder B, Rahman AT, Sumi FA, **Hossain M**, Reza HM, Rahman GMS, Alam MA. Coenzyme Q10 prevents oxidative stress and fibrosis in isoprenaline induced cardiac remodeling in aged rats. *BMC Pharmacol Toxicol*, 18(1):29 (2017)
2. Alam MA, Subhan N, Hossain H, **Hossain M**, Reza HM, Rahman MM, Ullah MO. Hydroxycinnamic acid derivatives: a potential class of natural compounds for the management of lipid metabolism and obesity. *Nutr Metab (Lond).* 11, 13:27 (2016)
3. Safratwoich BD, **Hossain M**, Bianchi L, Carvelli L. Amphetamine Potentiates the Effects of β-Phenylethylamine through Activation of an Amine-Gated Chloride Channel. *Journal of Neuroscience*. 34(13):4686-91(2014)
4. **Hossain M**, Wickramasekara RN, Carvelli L. β-Phenylethylamine requires the dopamine transporter to increase extracellular dopamine in *Caenorhabditiselegans* dopaminergic neurons. *Neurochemistry International Journal*, 34(13):4686-91 (2014)
5. **Hossain M**, Muntasir HA, Ishiguro M, Bhuiyan MA, Rashid M, Sugihara T, Nakamura T, Nagatomo T. Mechanism of inverse agonist activity of sarpogrelateat the constitutively active

mutant of human 5-HT_{2A} receptor revealed by molecular modeling, *Biological and Pharmaceutical Bulletin*, 35(9):1553-9 (2012)

6. Hao J, Chen B, Yao Y, **Hossain** M, Nagatomo T, Yao H, Kong L, Sun H. Practical access to four stereoisomers of naftidrofuryl and their binding affinity towards 5-hydroxytryptamine 2A receptor. *Bioorganic & Medicinal Chemistry Letters*, 22(10):3441-4(2012)
7. Bhuiyan MA, **Hossain M**, Ishiguro M, Nakamura T, Nagatomo T. Engineered Mutation of Some Important Amino Acid in Angiotensin II Type 1(AT1) Receptor Causes Increase in Binding Affinity of AT1 Receptor Antagonists. *Journal of Pharmacological Science* 113, 57-65 (2010)
8. Bhuiyan MA, **Hossain M**, Nakamura T, Ozaki M, and Nagatomo T. Internalization of Constitutively Active N11G Mutant of AT1 Receptor Induced by Agiotensin II Receptor Antagonist Candesartan, Losartan, and Telmisartan: Comparison with Valsartan. *Journal of Pharmacological Sciences* 112, 459-462 (2010)
9. **Hossain M**, Bhuiyan MA and Nagatomo T. Pharmacological and Molecular Studies for the regulation of β_1-Adrenergic Receptor that Reveals Activation and Inactivation, *Pharmacomatrics*, 78(1/2) 1-9 (2010)
10. Bhuiyan MA, **Hossain M**, Masanobu W and Nagatomo T. Selectivity of Valsartan to the Human Angiotensin II Type One Receptor as Assessed by Binding Affinity, Functional Activity and Molecular Modeling. *Pharmacomatrics*, 78 (1/2) 11-20 (2010)
11. **Hossain M**, Bhuiyan MA, Nakamura T, Ozaki M, and Nagatomo T. Mutagenesis of Important Amino Acid Reveals Unconventional Homologous Internalization of β_1-Adrenergic Receptor. *Life Science*, 85, 339-344 (2009)
12. Bhuiyan MA, **Hossain M**, Miura S-I, Nakamura T, Ozaki M, and Nagatomo T. Constitutively Active mutant N111G of AT_1 receptor induces homologous internalization through mediation of AT_1 receptor antagonist. *Journal of Pharmacological Sciences*, 111(3):227-34 (2009)
13. Aly SAR, **Hossain M**, Bhuiyan MA, Nakamura T and Nagatomo T. Assessment of binding affinity to 5-HT_{2A} receptor and inverse agonist activity of Naftidrofuryl: comparison with those of Sarpogrelate. *Journal of Pharmacological Sciences* 110, 445-450 (2009)
14. Bhuiyan MA, Ishiguro M, **Hossain M**, Nakamura T, Ozaki M, Miura S-I, Nagatomo T. Binding sites of valsartan, candesartan and losartan with angiotensin II receptor 1 subtype by molecular modeling. *Life Science*, 85(3-4), 136-40 (2009)
15. **Hossain M**, Ahmed M, Bhuiyan MA, Ishiguro M, Tanaka T, Muramatsu I and Nagatomo T. Mutation of important amino acid residue of residue of asp104lys in human β_1-adrenergic receptor triggers functional and constitutive inactivation", *Biological and Pharmaceutical Bulletin33(8),* 1517-1522 (2008)
16. Ahmed M, **Hossain M**, Bhuiyan MA, Ishiguro M, Tanaka T, Muramatsu I and Nagatomo T. Mutational analysis of the α_{1a}-adrenergic receptor binding pocket of antagonists by radioligand binding assay. *Biological and Pharmaceutical Bulletin.* 31(4) , 598-601(2008)
17. NagaokaY, AhmedM, **HossainM**, Bhuiyan MA, IshiguroM, NakamuraT, Watanabe M and NagatomoT. Amino acids of the human α_{1d}-adrenergic receptor involved in antagonist binding. *Journal of Pharmacological Sciences.*106 (1) (2008)

18. Takahashi K, **Hossain M**, Ahmed M, Bhuiyan MA, Ohnuki T, Nagatomo T. Asp125 and Thr130 in transmembrane domain 3 are major sites of α_{1b}-adrenergic receptor antagonist binding. *Biological and Pharmaceutical Bulletin.* 30(10): 1891-4 (2007)
19. Muntasir HA, **Hossain M**, Bhuiyan MA, Komiyama T, Nakamura T, Ozaki M, Nagatomo T. Identification of a key amino acid of the human 5-HT_{2B} serotonin receptor important for sarpogrelate binding. *Journal of Pharmacological Sciences.* 104(3): 274-7 (2007)
20. Miyajima K, Nakazawa M, Muntasir HA, **Hossain M**, Ahmed M and Nagatomo T. Differential inhibition by oxygen radicals of vasoactive amines-induced contraction in porcine coronary artery. *Biological and Pharmaceutical Bulletin.* 30(7):1242-1245 (2007)
21. Ahmed M, Muntasir HA, **Hossain M**, Ishiguro M, Komiyama T, Muramatsu I, Kurose H, Nagatomo T. Beta-blockers show inverse agonism to a novel constitutively active mutant of β_1-adrenoceptor. *Journal of Pharmacological Sciences.* 102(2):167-72 (2006)
22. Muntasir HA, Takahashi J, Rashid M, Ahmed M, Komiyama T, **Hossain M**, Kawakami J, Nashimoto M, Nagatomo T. Site-directed mutagenesis of the serotonin 5-HT_{2C} receptor: identification of amino acids responsible for sarpogrelate binding. *Biological and Pharmaceutical Bulletin* 29(8):1645-50 (2006)
23. Ahmed M, Muntasir HA, Ishiguro M, Komiyama T, Muramatsu I, **Hossain M**, Takahashi N and Nagatomo T. Pharmacological and Molecular Characterization of Novel SWR-Compounds for β_1-adrenergic Receptors as Assessed by Molecular Modeling, Site-directed Mutagenesis, Binding Affinity and Functional Activity. *Pharmacomatrics*, 71 (1/2) 1-20 (2006)
24. **Hossain M**, Ali MS, Saha A, Alimuzzaman M. Antinociceptive activity of whole plant extracts of *Paederiafoetida*, *Dhaka University Journal of Pharmaceutical Science*, 5, 67-69 (2006)

SCIENTIFIC PRESENTATION

1. **Hossain M,** Safratwich BD, Carvelli L**,** Multiple exposures to AMPH induced desensitization of the dopaminergic system in living animals. Poster presentation in the *Society for Neuroscience 41st Annual Meeting in* Washington DC Convention Center on November from 12 to 16th, 2011, abstract published (444.08/D22).
2. **Hossain M**, Bhuiyan MA and Nagatomo T. Mutagenesis of important amino acid reveals unconventinal homologous internalization of β_1-adrenergic receptor. Oral presentation in the *83rd Annual Meeting of the Japanese Pharmacological Society* in Osaka Grand Cube Convention Center on March 16-18, 2010, abstract published (AS2C-2-3).
3. **Hossain M**, Bhuiyan MA and Nagatomo T. Assessment of binding affinity to 5-HT_{2A} receptor and inverse agonist activity of naftidrofuryl: comparison with those of sarpogrelate. Poster presentation in the *11th OyoYakuri/Pharmacometrics conference* on September 26, 2009 in Niigata University of Pharmacy and Applied Life Sciences.
4. Bhuiyan MA, **Hossain M**, and Nagatomo T. Angiotensin II receptor antagonists induce homologous internalization in constitutively active mutant N111G of AT_1 receptor" Oral presentation in the 60th*Conference of Japanese Pharmacological Society*on September 27, 2009, in Toyama, Japan, abstract published (B-II-1).

5. **Hossain M**, Bhuiyan MA, Aly SAR**,** Shoe S and Nagatomo T. Evaluation of binding and functional potency of naftidrofuryl to human recombinant 5-HT_{2A} receptor: comparison with sarpogrelate. Oral presentation in the *14th Serotonin Conference* on February 7, 2009, in Tokyo, Japan, abstract published (I-1).
6. Bhuiyan MA, **Hossain M**, Aly SAR, Ishiguro M, Miura S-I and Nagatomo T. Assessment of valsartan for binding affinity and functional potency towards angiotensin ii type 1 (AT_1) receptors. Oral presentation in the 59*th Conference of Japanese Pharmacological Society*on September 27, 2008, in Sendai, Japan, abstract published (C-II-5).
7. Muntasir HA, Bhuiyan MA, **Hossain M,** and Nagatomo T. Evaluation of Mechanism of Inverse Agonist Action of Sarpogrelate by Molecular Modeling. Oral presentation in the *13th Serotonin Conference* on February 2, 2008, in Tokyo, Japan, abstract published (I-1).
8. **Hossain M**, Bhuiyan MA and Nagatomo T. Inverse agonism of β-blockers to a novel constitutive active mutant of β_1-adrenergic receptor. Oral presentation in *5th International Symposium on Receptor Mechanisms, Signal Transduction and Drug Effects.*Grandship (Shizuoka Convention and Art Center), Shijuoka, Japan, May 10th –May 11th, 2007 Abstract publish (P22)
9. **Hossain M**, Ahmed M, Ishiguro M and Nagatomo T**.** Beta adrenergic antagonists show inverse agonism to a novel constitutively active mutant of β_1-adremergic receptor**.** Oral presentation in the *50th Japan Pharmaceutical Seminar.*October 14-15, 2006, Niigata, Japan, abstract published (H05)
10. Muntasir HA, Bhuiyan MA, **Hossain M,** Kawakami J, Ishiguro M, Komiyama T and Nagatomo T. Inverse Agonist Activity of several 5-HT_{2A} Receptor Antagonists at the Constitutively Active Human 5-HT_{2A} Receptor. Oral presentation in the *34th Symposium on Structure Activity Relationship.* November 14-15, 2006, Niigata, Japan, full paper and abstract published (KP07).

ANALYTICAL SKILLS

1. Molecular Techniques

- Isolation of genomic DNA, plasmid, RNA and Protein
- Blotting techniques (Southern, Northern and Western)
- PCR based site- directed mutagenesis
- DNA sequencing,
- PCR and qRT-PCR
- Co-immunoprecipitation
- ELISA

2. Biochemical techniques

- Electrophoresis
- Chromatographic technique
- Colorimetric and enzyme assay

3. Microscopic techniques

- Fluorescence microscopy

- Confocal microscopy

4. Culture techniques

- Bacterial Cell culture
- Plasmid transformation into bacterial cells
- Mammalian cell culture (Isolation and maintaining, passaging and transfection)

4. Behavioral experiments

- Force Swim test
- Tail Suspension test
- Maze tests (Elevated Plus, Radial Arm Maze, Morris Water)

5. Animal handling experiences

- Mice and nematode (*C. elegans)*

INDUSTRIAL TRAINING

In plant Training has been completed as a part of my B.Pharm curriculum in Sanofi Aventis Limited, Multinational pharmaceutical company, arranged by Faculty of Pharmacy of Dhaka University. I observed manufacturing as well as quality control operation of tablets, capsules, injectable (both antibiotic and non-antibiotic), ointment, toiletries and liquid preparations.

MEMBERSHIP

Member of the society for Neuroscience, USA
Member of the Japanese Pharmacological Society (JPS), Japan
Member of Bangladesh Society of Toxicology (BDSOT), Bangladesh
Member of Bangladesh Pharmaceutical Society (BPS), Bangladesh

AWARD ACHIEVED

Rotary Yoneyama Memorial Foundation Scholarship for PhD study at Niigata, Japan.

COMPUTER/BIOINFORMATICS SKILLS

- Primer design
- Gene sequence Alignment
- Statistical software package (SPSS, Graphpad Prism, excel etc.)
- Image J software
- Adobe Photoshop