

# Curriculum Vitae

## Ferdous Khan, PhD

Assistant Professor  
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## Educational Qualifications

### Doctor of Philosophy:

- Awarded on 16<sup>th</sup> September, 2016
- From The United Graduate School of Agricultural Sciences, Tottori University, Japan
- Subject of the Thesis: Specific action of prostacyclin on adipogenesis at different stages of cultured adipocytes
- Major focus: Molecular mechanism of adipogenesis and exploration of future drug development target.

### Master of Pharmacy in Pharmaceutical Technology:

- Obtained the Degree of Master of Pharmacy in Pharmaceutical Technology from the Department of Pharmaceutical Technology, Faculty of Pharmacy, University of Dhaka, Bangladesh, in the year 2002 (examination held in 2006 and degree awarded in 2007) with **first class first position**.

### Bachelor of Pharmacy:

- Obtained the Degree of Bachelor of Pharmacy from the Faculty of Pharmacy, University of Dhaka, Bangladesh, in the year 2001 (examination held in 2004 and degree awarded in 2005) with **first class**.

## Research Experiences

1. Now, I am interested to explore the genetic background of adipogenesis. More specifically, how different type of bioactive lipids and food ingredients can alter the expression of pro-adipogenic and anti-adipogenic genes. In this way I would like to shed some light on the ongoing stride to understand obesity and related disorders which ultimately causes metabolic syndrome. In the last 2 years we have been able to publish 7 articles in high impact peer-reviewed journals.
2. I have 3.5 years of research experience in the field of Molecular Biology and Biotechnology, during my graduate study as a PhD student at The United Graduate School of Agricultural Sciences, Tottori University, Japan under the supervision of Professor Kazushige Yokota. During this time we investigated dietary factor and chemical mediator induced adipogenesis in 3T3-L1 cells and I submitted a thesis entitled “**Specific action of prostacyclin on adipogenesis at different stages of cultured adipocytes**”. I published 2 research articles in 2 reputed journals based on my research outcomes during this period. I have also co-authored 3 research articles during this time. I have also attended 2 conferences where I was the presenter. My research works and findings were also presented in a number of conferences around the world.

3. I have one-year research experience in the field of Pharmaceutical Technology, during my study as a graduate student in the Department of Pharmaceutical Technology, University of Dhaka. I submitted a thesis paper entitled “**Preparation and *in vitro* evaluation of theophylline loaded gastro-retentive floating tablets**” under the supervision of Md. Selim Reza PhD, Professor, Department of Pharmaceutical Technology, University of Dhaka for the partial fulfillment of my Master of Pharmacy Degree in Pharmaceutical Technology. After completion of my Master of Pharmacy study I also worked with Professor Selim Reza in the subsequent years. We published 6-research articles in the reputed journals of home and abroad based on our research findings during this period.
4. I have one-year research experience in the field of microbiology during my undergraduate study in the Faculty of Pharmacy, University of Dhaka. I submitted a thesis paper entitled “**Effect of magnesium on the antimicrobial activities of some antibiotics against different strains of microorganism**” under the supervision of Abul Hasnat PhD, Professor, Department of Clinical Pharmacy and Pharmacology, University of Dhaka, for the partial fulfillment of my Bachelor of Pharmacy Degree. We also published one research article in Pakistan Journal of Pharmaceutical Sciences based on our research outcomes during this period.

#### Published Research Articles

1. Selim S, Akter N, Nayan SI, Chowdhury FI, Saffoon N, **Khan F**, Ahmed KS, Ahmed MI, Hossain MM, Alam MA. *Flacourtia indica* fruit extract modulated antioxidant gene expression, prevented oxidative stress and ameliorated kidney dysfunction in isoprenaline administered rats. *Biochem Biophys Rep.* 2021 May 18;26:101012. doi: 10.1016/j.bbrep.2021.101012. PMID: 34041370; PMCID: PMC8142055.
2. Alam, M.A., Islam, P., Subhan, N. Rahman, M.M., **Khan, F.**, Burrows, G.E., Nahar, L., Sarker, S.D. Potential health benefits of anthocyanins in oxidative stress related disorders. *Phytochem Rev* 20, 705–749 (2021). <https://doi.org/10.1007/s11101-021-09757-1>
3. Miah P, Mohona SBS, Rahman MM, Subhan N, **Khan F**, Hossain H, Sharker SM, Alam MA. Supplementation of cumin seed powder prevents oxidative stress, hyperlipidemia and non-alcoholic fatty liver in high fat diet fed rats. *Biomed Pharmacother.* 2021 Jul 10;141:111908. doi: 10.1016/j.biopha.2021.111908. Epub ahead of print. PMID: 34328087.
4. Shariful Islam Nayan<sup>1</sup>, Faizul Islam Chowdhury<sup>1</sup>, Noushin Akter, Md. Mizanur Rahman<sup>1,2</sup>, Saima Selim, Nadia Saffoon, **Ferdous Khan**, Nusrat Subhan, Maqsd Hossain, K. Shahin Ahmed, Hemayet Hossain, Md Areeful Haque Md Ashraful Alam (2021) Leaf powder supplementation of *Senna alexandrina* ameliorates oxidative stress, inflammation, and hepatic steatosis in high-fat diet-fed obese rats. *PLoS ONE* 16(4): e0250261. <https://doi.org/10.1371/journal.pone.0250261>
5. Akter N, Chowdhury FI, Selim S, Nayan SI, **Khan F**, Subhan F, Hossain H, Rahman MM, Haque MA, Alam MA. Polyphenolics in *ramontchi* protect cardiac tissues via suppressing isoprenaline-induced oxidative stress and inflammatory responses in Long-Evans rats. *Journal of Functional Foods.* 75, (2020), 104250. <https://doi.org/10.1016/j.jff.2020.104250>.
6. Kuddus SA, Bhuiyan MI, Subhan N, Shohag MH, Rahman A, Hossain MM, Alam MA and **Khan F**. Antioxidant-rich *Tamarindus indica* L. leaf extract reduced high-fat diet-

- induced obesity in rat through modulation of gene expression. *Clinical Phytoscience* 6, 68 (2020). <https://doi.org/10.1186/s40816-020-00213-9>.
7. Raquibul Hasan, Shoumen Lasker, Ahasanul Hasan, Farzana Zerine, Mushfera Zamila, Faisal Parvez, Md. Mizanur Rahman, **Ferdous Khan**, Nusrat Subhan & Md. Ashraf Alam. Canagliflozin ameliorates renal oxidative stress and inflammation by stimulating AMPK–Akt–eNOS pathway in the isoprenaline-induced oxidative stress model. *Sci Rep* 10, 14659 (2020). <https://doi.org/10.1038/s41598-020-71599-2>.
  8. Raquibul Hasan, Shoumen Lasker, Ahasanul Hasan, Farzana Zerine, Mushfera Zamila, Faizul Islam Chowdhury, Shariful Islam Nayan, Md. Mizanur Rahman, **Ferdous Khan**, Nusrat Subhan & Md. Ashraf Alam. Canagliflozin attenuates isoprenaline-induced cardiac oxidative stress by stimulating multiple antioxidant and anti-inflammatory signaling pathways. *Sci Rep* 10, 14459 (2020). <https://doi.org/10.1038/s41598-020-71449-1>.
  9. Syed A. Kuddus, Zarin Tasnim, Md. Hasanuzzaman Shohag, Tahmina Yasmin, Md. Sahab Uddin, Muhammad M. Hossain, Nusrat Subhan, Md. Ashraf Alam and **Ferdous Khan**. “*Dillenia indica* fruit extract suppressed diet-induced obesity in rat by down-regulating the mRNA level of proadipogenic transcription factors and lipid metabolizing enzymes”, *Curr Nutr & Food Sc* (2020) 16: 1. <https://doi.org/10.2174/1573401316999200901173319>.
  10. Fariha Mamun, Shoumen Lasker, **Ferdous Khan**, Tahmina Yasmin, Khondker Ayesha Akter, Nusrat Subhan, Md Ashraf Alam. Etoricoxib treatment prevented body weight gain and ameliorated oxidative stress in the liver of high-fat diet-fed rats. 2020. *Naunyn Schmiedebergs Arch Pharmacol.* 2020;10.1007/s00210-020-01960-9. doi:10.1007/s00210-020-01960-9.
  11. **Ferdous Khan**, Syed Abdul Kuddus, Md. Hasanuzzaman Shohag, Hasan Mahmud Reza, Murad Hossain. Astaxanthin, the natural antioxidant, reduces reserpine induced depression in mice. *Current Bioactive Compounds.* (2020) 16: 1319. <https://doi.org/10.2174/1573407216666200203142722>
  12. Golam K, Palash K, Shahid MS, Abhijit D, Hasanuzzaman M, **Khan F**, Rafiquzzaman M, Islam MS. 2017. Comparative study of antidiabetic effect of some selected plants extract from Cucurbitaceae family in alloxan-induced diabetic mice. *Journal of Noakhali Science and Technology University (JNSTU)*, **1(2)**:9-18.
  13. **Khan F**, Syeda PK, Nartey MN, Rahman MS, Islam MS, Nishimura K, Jisaka M, Shono F, Yokota K. 2016. Pretreatment of cultured preadipocytes with arachidonic acid during the differentiation phase without a cAMP-elevating agent enhances fat storage after the maturation phase. *Prostaglandins Other Lipid Mediat.* **123(27)**:16-27.
  14. **Khan F**, Syeda PK, Nartey MN, Rahman MS, Islam MS, Nishimura K, Jisaka M, Shono F, Yokota K. 2016. Stimulation of fat storage by prostacyclin and selective agonists of prostanoid IP receptor during the maturation phase of cultured adipocytes. *Cytotechnology* **68(6)**:2417-2429.
  15. Rahman MS, **Khan F**, Syeda PK, Nishimura K, Jisaka M, Nagaya T, Shono F, Yokota K. 2014. Endogenous synthesis of prostacyclin was positively regulated during the maturation phase of cultured adipocytes. *Cytotechnology* **66(4)**:635-46.

16. Rahman MS, Syeda PK, **Khan F**, Nishimura K, Jisaka M, Nagaya T, Shono F, Yokota K. 2013. Cultured preadipocytes undergoing stable transfection with cyclooxygenase-1 in the antisense direction accelerate adipogenesis during the maturation phase of adipocytes. *Appl Biochem Biotechnol.* **171(1)**:128-44.
17. Syeda PK, Hossain MS, Chowdhury AA, Rahman MS, **Khan F**, Nishimura K, Jisaka M, Nagaya T, Shono F, Yokota K. 2012. A monoclonal antibody specific for  $\Delta^{12}$ -prostaglandin J<sub>2</sub> and its utilization in the immunological assay in cell culture system of adipocytes. *Hybridoma (Larchmt).* **31(5)**:364-71.
18. Md. Shaikhul Millat Ibn Razzak, **Ferdous Khan**, Masuma Hossain, Tasmia Anika and Shamsad Afreen Moon, 2012. Impact of Sodium Lauryl Sulphate on the Release of Carbamazepine from Methocel K15M CR based Matrix Tablets. *Bangladesh Pharmaceutical Journal.* **15(1)**: 79-82.
19. **Khan, F.**, Razzak, M.S.M.I., Khan, M.Z.R., Azad, M.A.K., Chowdhury, J.A. and Reza, M.S. 2009. Theophylline Loaded Gastroretentive Floating Tablets Based on Hydrophilic Polymers: Preparation and *in vitro* Evaluation. *Pakistan Journal of Pharmaceutical Sciences.* **22 (2)**: 155-161.
20. Razzak, M.S.M.I., **Khan, F.**, Hossain, M., Khan, M.Z.R., Azad, M.A.K., and Reza, M.S. 2009. Effect of Channeling Agents on the Release Pattern of Theophylline from Kollidon SR Based Matrix Tablets. *Pakistan Journal of Pharmaceutical Sciences.* **22(3)**: 303-307.
21. **Khan, F.**, Razzak, M.S.M.I., Khan, M.Z.R., Azam, K.R., Sadat, S.M.A. and Reza, M.S. 2008. "Preparation and *In vitro* Evaluation of Theophylline Loaded Gastroretentive Floating Tablets of METHOCEL K4M", *The Dhaka University Journal of Pharmaceutical Sciences.* **7(1)**: 65-70.
22. Razzak, M.S.M.I., **Khan, F.**, Khan, M.Z.R., Fatema, K., Islam, M.S. and Reza, M.S. 2008. "Effect of Channeling Agents on the Release Profile of Theophylline from METHOCEL K4M Based Matrix tablets" *The Dhaka University Journal of Pharmaceutical Sciences* **7(1)**: 27-32.
23. Azam, K.R., Razzak, M.S.M.I., **Khan, F.**, Islam, M.S., Rony, M.R. and Reza, M.S. 2008. Impact of Granulation Technique and Effect of Polymers on Theophylline Release from Matrix Tablets. *The Dhaka University Journal of Pharmaceutical Sciences.* **7(2)**: 133-139.
24. **Ferdous Khan**, Younus Patoare, Pinky Karim, Mohiuddin Abdul Quadir, Israt Rayhan and Abul Hasnat, 2005. Effect of magnesium and zinc on the antimicrobial activities of some antibiotics against different strains of microorganism. *Pakistan Journal of Pharmaceutical Sciences.* **18(4)**: 57-61.

#### Submitted Research Articles

1. Syed Abdul Kuddus, Farjana Abedin, Md. Hasanuzzaman Shohag, Khondker Ayesha Akter, Md. Hafizur Rahman, Ferdous Khan. Swelling and erosion played dominant role in controlling the release of naproxen from hydrophilic polymer based enteric coated sustained release tablets. Submitted to Drug Development Research.
2. Syed Abdul Kuddus, Farjana Abedin, Khondker Ayesha Akter, **Ferdous Khan**. Preparation and *in vitro* evaluation of Metformin HCl sustained release tablets using

blend of hydrophilic and lipophilic polymers. Submitted to *Journal of Applied Pharmaceutical Science*.

3. Md. Mizanur Rahman; Ferdous Khan; Md Faruk; Mousumi Saha; Md. Abdulla Al Mamun; Faizul Islam Chowdhury; Shariful Islam Nayan; Mohammad A. Halim; Maqsd Hosanna; Nusrat Subhan; Gias U. Ahsan; Md Ashraful Alam. Apocynin prevents lipid peroxidation and restored antioxidant function following Nrf-2/HO-1 signaling in the heart of isoproterenol-induced cardiac damage in rats. Submitted to *European Journal of Pharmacology*.

### Conference Papers

1. Biosynthesis of prostacyclin and its action is up-regulated during the maturation phase of adipocytes. **Khan, F.**, Rahman, M. S., Fatema, P. K. S. K., Islam, M. S., Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *40th Annual Meeting of Chu-Shikoku Division in the Japan Society for Bioscience, Biotechnology, and Agrochemistry* 2014
2. Biosynthesis of prostaglandin I<sub>2</sub> at different life stages of cultured adipocytes as determined by the immunological assay for its stable hydrolysis product. **Khan, F.**, Rahaman, M. S., Syeda, P. K., Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *36th Annual Meeting of Chu-Shikoku Region, Japan Society for Bioscience, Biotechnology, and Agrochemistry* 2013
3. Stimulation of adipogenesis with 11-deoxy-11-methylene-PGD<sub>2</sub>, a stable, isosteric analogue of PGD<sub>2</sub>, during the maturation phase of adipocytes. Fatema, P. K. S. K., **Khan, F.**, Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *The 86th Annual Meeting of the Japanese Biochemical Society* 2013: adipogenesis, adipocyte, 11-deoxy-methylene-PGD<sub>2</sub>, a stable isosteric analogue of PGD<sub>2</sub>
4. Stable transfection of cultured preadipocytes with cyclooxygenase-1 in the antisense direction up-regulates adipogenesis during the maturation phase of adipocytes. Rahman, M. S., Syeda, P. **K. Khan, F.**, Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *13th International Conference on Bioactive Lipids in Cancer, Inflammation and Related Diseases* 2013
5. Pro-adipogenic effect of 11-deoxy-11-methylene-prostaglandin (PG) D<sub>2</sub>, a stable, isosteric analogue of PGD<sub>2</sub>, during the maturation phase of adipocytes. Fatema, P. K. S. K., **Khan, F.**, Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *36th Annual Meeting of Chushikoku Region, Japan Society for Bioscience, Biotechnology, and Agrochemistry* 2013
6. Biosynthesis of prostacyclin serving as a biomarker for enhanced adipogenesis program in cultured adipocytes. Rahman, M. S., **Khan, F.**, Syeda, P. K., Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *13th International Conference on Bioactive Lipids in Cancer, Inflammation and Related Diseases* 2013
7. Up-regulation of prostacyclin biosynthesis and its response after the maturation phase of adipocytes. Rahman, M. S., **Khan, F.**, Fatema, P. K. S. K., Islam, M. S., Nishimura, K., Jisaka, M., Nagaya, T., Shono, F., and Yokota, K. *The 87th Annual Meeting of the Japanese Biochemical Society* 2014
8. Association of GSTP1 and ABCC4 polymorphisms with response and toxicity of cyclophosphamide-based chemotherapy on Bangladeshi breast cancer patients. Islam, M. S., Islam, M. S., **Khan, F.**, Fatema, P. K. S., Hasnat, A., and Yokota, K. *40th Annual*

9. 11-Deoxy-11-methylene-prostaglandin (PG) D<sub>2</sub> exerts pro-adipogenic effect on cultured adipocytes during the maturation phase through cellular mechanism different from that of natural PGD<sub>2</sub>. Fatema, P. K. S. K., Islam, M. S., **Khan, F.**, Nishimura, K., Jisaka, Nagaya, T., Shono, F., and Yokota, K. *40th Annual Meeting of Chu-Shikoku Division in the Japan Society for Bioscience, Biotechnology, and Agrochemistry 2014*

#### Poster Presentation

1. Excessive elevation of cAMP level suppresses adipocyte differentiation by inducing the synthesis of anti-adipogenic prostaglandins. **Khan F.**, Akhand, L. B., Bhattacharya, R., and Yokota, K., *1st International Conference on Genomics, Nanotech and Bioengineering*, May, 2017.
2. Preparation and in vitro evaluation of theophylline loaded gastro-retentive floating tablets of hydrophilic polymers. **Khan, F.**, Alam S. B., Shahnewaz K. A., Reza, M. S., *1st International Conference on Genomics, Nanotech and Bioengineering*, May, 2017.

#### Training

1. I have successfully completed one month industrial training in Beximco Pharmaceuticals Ltd. The second largest pharmaceutical industry of Bangladesh.
2. Attended a two weeks training program on “Current Good Manufacturing Practice (CGMP) in Pharmaceutical Industry” organized by Beximco Pharmaceuticals Ltd. On December 2004.
3. I have successfully completed two month training on SPSS (Statistical Package for the Social Sciences) in the Department of Statistics in University of Dhaka.

#### Areas of Expertise

- **Cell Culture:** Primary and cell line, 3T3-L1 cell culture, SP-2 cell culture, primary cell collection and culture from thymus and spleen of mouse and rat. Evaluation of adipogenesis in 3T3-L1 cells by lipid quantification and Oil Red O staining.
- **Molecular Biology and Biochemistry:** DNA and RNA extraction from cultured mammalian cells and bacteria, DNA sequencing, primer designing, transfection, reverse transcription, Real-time PCR, DNA/RNA gel electrophoresis, SDS-PAGE, western blot, prokaryotic protein expression and purification.
- **Immunology:** Antigen preparation by conjugation, Polyclonal and Monoclonal antibody production in mouse, quantification of prostaglandins by ELISA method.
- **Microbiology:** Handling and culture of different type of Gram positive and Gram negative bacteria, extraction and sequencing of DNA from cultured bacteria, aseptic techniques.
- **Analytical:** UV-visible spectrophotometry, Nano-drop, HPLC, LCMS/MS
- **Pharmaceutical Technology:** Preparation and in vitro evaluation of gastro-retentive floating tablets and sustained release tablets.

#### Area of Interest

- Control of gene expression during the differentiation of various types of cells
- Molecular mechanism of obesity and diabetes
- Role of bioactive lipids and food ingredients in adipogenesis

### Professional Experiences

1. At present, I am working as an Assistant Professor in Department of Pharmaceutical Sciences under the School of Health and Life Sciences, North South University, Bangladesh.
2. I worked as an Assistant Professor in Department of Pharmacy, Daffodil International University from 2 May 2015 to 16 July 2016. I performed the responsibility of Head (In-Charge) from 29 September 2015 to 16 July 2016.
3. I served as an Assistant Professor in Department of Pharmacy, ASA University Bangladesh, on 1<sup>st</sup> February 2011 and worked until 30<sup>th</sup> September 2011 before going to Japan as a graduate student of Doctoral Program of The United Graduate School of Agricultural Sciences, Tottori University.
4. I was appointed as a Lecturer in the Department of Pharmacy, State University of Bangladesh on 2<sup>nd</sup> July 2005 and was promoted to Assistant Professor on 1<sup>st</sup> March 2010. I worked as an Assistant Professor in the Department of Pharmacy, State University of Bangladesh until 31<sup>st</sup> January 2011.
5. I worked as a Quality Control Officer in Beximco Pharmaceuticals Ltd., the 2<sup>nd</sup> largest pharmaceutical company of Bangladesh from 19<sup>th</sup> August 2004 to 1<sup>st</sup> July 2005.

### Awards and Scholarships

- Received Japanese Government Monbukagakusho Scholarship (MEXT), for the period of October 2011 to September 2014, during pursuing Doctorate Degree from The United Graduate School of Agricultural Sciences, Tottori University, Japan.
- Became Summa cum laude in the Master of Pharmacy in Pharmaceutical Technology examination of year 2002 (held in 2006 and the degree awarded in 2007) from Department of Pharmaceutical Technology, University of Dhaka, Bangladesh.
- Received Elementary school level, Junior high school level and Secondary school level scholarships based on examination performance.

### Memberships

- Editorial Board member of International Journal of Applied Research
- BPS (2007-) Bangladesh Pharmaceutical Society Association
- PGA (2007-) Pharmacy Graduates Association, Bangladesh

### Personal Information

Fathers Name : Late A. Wahab Khan  
Mothers Name : Mrs. Halima Begum  
Spouse Name : Tasmia Anika  
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### References

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