AABPS 2022

ACCESS TO AFFORDABLE MEDICINE

6th Convention

Baltimore, Maryland

October 8, 2022

www.aabps.org

Abon Pharmaceuticals, LLC is aligned to become a leading specialty drug delivery company for developing broad ranges of complex pharmaceutical products

Introduction

Abon's talented scientific team is skillful in preformulation research, formulation and process development, analytical method development, characterization of polypeptide and polymers, technology transfer at a GMP site and manufacturing GMP batches at CMO.

Abon is led by an experienced management team, proficient in the selection of product portfolio, appropriate CMO and CRO, managing bio/clinical studies, product filing to FDA, responding comment letter and assisting PAI. The Company is flexible and can quickly adopt to overcome any challenges.

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Dissolution apparatus: basket/paddle, Bio disc, rotating bottle, Flow cell, diffusion cell, HPLC/UPLC (with CAD, fluorescence, RI, MALLS detectors), Preparative LC, LC-MS/MS, GC, GC-MS, FTIR, Malvern 2000, DSC, TGA, DVS, TAM, SEM with EDX, XRD, Texture analyzer, Dynamic Rheometer.

abon Pharmaceuticals™

140 Legrand Ave., Northvale, NJ 07647, USA.

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AABPS 2022

6th Convention

Program Theme:

ACCESS TO AFFORDABLE MEDICINE

D I S C L A I M E R

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PRESIDENT
PEOPLE'S REPUBLIC OF BANGLADESH
BANGABHABAN, DHAKA.

22 Ashwin 1429
08 October 2022

Message

I am pleased to know that the American Association of Bangladeshi Pharmaceutical Scientists (AABPS) is organizing its 6th convention in Maryland, USA.

Ensuring access to quality medicine is one of the most cherished goals of the Government of Bangladesh. The Government is providing all sorts of support for the flourishment of the pharmaceutical industry in Bangladesh. Today pharmaceutical industry is one of the most developed and rich sectors of the country. It is making praiseworthy contribution to the country's socio-economic development by fulfilling the total domestic demand of medicine, as well as by earning valuable foreign currency through exporting around the world. I hope members of AA.BPS will lend its expertise to ensure innovation and quality improvement in drug manufacturing and thereby eventually help Bangladesh in capturing the global pharmaceutical market.

I extend my warm felicitations to the participants of the 6th convention of American Association of Bangladeshi Pharmaceutical Scientist. I hope the organization will continue its efforts in developing professional skills of Bangladeshi Pharmaceutical Scientists at home and abroad.

I wish the success of A-A.BPS in the days to come.

Joi Bangla.

Khoda Hafez, May Bangladesh Live Forever.

Md. Abdul Hamid

BRANDON M. SCOTT
MAYOR
100 Holliday Street, Room 250
Baltimore, Maryland 21202

October 8, 2022

On behalf of the people of Baltimore, I am pleased to welcome the Association for American Bangladeshi Pharmaceutical Scientists (AABPS) on the occasion of your 6th Annual Convention: Access to Affordable Medicine.

AABPS was formed by a group of pharmaceutical scientists of Bangladeshi descent attending the 1997 American Association of Pharmaceutical Scientists (AAPS) Annual Meeting in Boston. The AABPS is a professional, scientific organization working to advance the capacity of pharmaceutical scientists to develop products and therapies that improve global health. Today's conference will feature presentations and panel discussions on scientific and developmental advances in the pharmaceutical field.

I am delighted that you have chosen Baltimore for this year's convention, and I invite you to explore our great city. From Baltimore's numerous waterfront attractions, outstanding restaurants, and fabulous shopping to our charming neighborhoods, historical sites, and world-class art museums, you'll find that our city has something for everyone.

Best wishes for a memorable convention.

Sincerely,

Brandon M. Scott

Brandon M. Scott
Mayor
City of Baltimore

Welcome Note

Message from the AABPS President

On behalf of American Association of Bangladeshi Pharmaceutical Scientists (AABPS), it is my honor to welcome our members, speakers, guests, sponsors, volunteers and family members to the 6th AABPS Convention October 8, 2022 in Baltimore, Maryland.

The year's event marks the renewal of our on-site Convention after a 3-year interruption due to the COVID pandemic. We are delighted to see everyone face-to-face and refresh our professional and social networks. The theme of this year's Convention is *Access to Affordable Medicine*. At the plenary session on this topic leading experts and professionals will speak on the opportunities and challenges of bringing life-saving complex generics to market to provide underserved patients access to safe, effective, high quality affordable medicine.

The AABPS is pleased to announce the creation of a Young Scholar Stimulus Fund (YSSF) to provide financial assistance and career mentoring to our rising scholars and young professionals. We will roll out the YSSF at this year's Convention. We have enhanced our website to make it more user-friendly and interactive to facilitate networking and information access to AABPS members. In addition, at this year's Convention we will honor with Lifetime Achievement Awards some of our esteemed leaders and role-models who worked selflessly to promote the growth and development of American Bangladeshi Pharmaceutical Scientists.

Finally, recognizing that the AABPS needs to change and evolve to serve the emerging needs of our members, we have planned a special session called "*Refreshing and Reframing AABPS to Address the Emerging Needs of Rising Scientists and Young Scholars in Pharmaceutical Sciences.* I and members of the AABPS Executive Committee sincerely appreciate your presence and participation as stakeholders. We look forward to a successful and enjoyable Convention.

Thank you.

Convener's Address

Lasker S Lasker, PhD

General Secretary, AABPS

On behalf of the American Association of Bangladeshi Pharmaceutical Scientists (AABPS), I am delighted to welcome our fellow members and their family, honorable speakers, sponsors, donors, volunteers, and students to the 6th AABPS Convention in Baltimore, Maryland. The AABPS executive committee and our volunteers worked tirelessly for last few months to plan and execute this event for you. Please accept our sincere gratitude for taking your time to join us at this convention

We are thankful and expressing our gratitude to His Excellency Mr. Abdul Hamid Khan, President of the People Republic of Bangladesh and Mr. Brandon M. Scott, Honorable Mayor of Baltimore, Maryland, USA for their encouragement and well wishes.

The theme of this Convention is, "**Access to Affordable Medicine."** We welcome our keynote speakers, Dr. James E Polli, Professor, University of Maryland, Dr. Salah U Ahmed, President and CEO, Abon Pharmaceuticals LLC, and Dr. Shamim Ahmed, Executive Vice president, Agno Pharma.

The Convention this year is especially important for us to recover and reconnect after a 3-year interruption due to the COVID pandemic. We need to reset our future direction to serve the new and emerging needs of our members. I welcome our distinguished scientists and leaders of pharmaceutical industry who are participating in our panel discussion on the important topic, "Reframing AABPS to Address Emerging Need of Rising Scientists and Young Scholars".

Despite all the challenges, we are proud to report that AABPS has made notable progress in enhancing our member services. We expanded AABPS member footprint to include scientists and professionals from all areas of pharmaceutical sciences involved in drug development and biomedical research. We initiated a webinar series to provide technical and soft skill training to our young scientists. We enhanced communication by upgrading our website features. Most notably, we established a "Young Scholar Stimulus Fund" (YSSF) to assist in the education and professional development of our young scholars and students. Your help and cooperation in this regard is very crucial for our success.

We welcome you to the beautiful Baltimore Harbor and wishing that this year's convention will inspire you to engage with AABPS. Your continued collaborations with and participation to AABPS activities is critical for its viability. Let us work together in developing our young talented scientists in enhancing their career through invention and development of lifesaving medicines for the humanity.

Thank you.

AABPS
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Rebecca Islam, MBA
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-*Rebecca Islam*
-*Lasker S Lasker*

AABPS 2022

6th Convention

CONVENTION SCHEDULE

University Ballroom & Chesapeake Room

Saturday, October 8, 2022

Time	Title	Responsible
9:00am-12:00pm	Registration	Maliha Ahmed, Shamima Hoque
MORNING SESSION		
	Session 1: Welcome	Moderator: *Mahboob Rahman, MD, PhD*
10:00a-10:10am	*Welcome Address*	**Imran Ahmed, PhD** *President, AABPS*
10:10am-10:20am	*Opening Remarks*	**Lasker S. Lasker, PhD** *General Secretary, AABPS*
10:30am-12:30pm	**Session 2: General Session**	Session Moderator: *Lasker S Lasker, PhD*
	Panel Discussion: *Refreshing and Reframing AABPS to Address the Emerging Needs of Rising Scientists and Young Scholars*	**Mohammad Jamil Habib, PhD** **Salah Uddin Ahmed, PhD** **Abu Bakar Siddique, PhD** **Farzana Musaweer, Pharm D, BCPS**
12:00pm-12:15pm	*Financial Report* *Service Responsible for Financial Planning*	**Ms. Rebecca Islam, MBA** *Treasurer, AABPS* **Mr. Mizanur Rahman**
12:15pm-12:30pm	*Launch and Request for Support for Young Scientist Stimulus Fund*	**Imran Ahmed, PhD** *President AABPS* **Salah Uddin Ahmed, PhD** *CEO Abon Pharmaceuticals* **Zahur Islam, PhD** *Executive Director, Novartis Pharmaceuticals*

12:30pm- 1:30pm **GROUP LUNCH BUFFET**

AFTERNOON SESSION		
1:45pm-3:45pm	**Session 3:** Plenary Session: *Access to Affordable Medicine*	Session Moderator: *Imran Ahmed, PhD* *Farzana Musaweer, Pharm D*
1:45pm-2:15pm	Presentation 1: *Research and education need for complex generics, and use of modeling as a new tool to approach bioequivalence*	**James Polli, PhD**. *Ralph F. Shangraw/Noxell Endowed Chair in Industrial Pharmacy and Pharmaceutics University of Maryland*
2:15 pm-2:45 pm	Presentation 2: *Complex Generic Product: Concept to commercialization*	**Salah U Ahmed, Ph.D**. *President and CEO, Abon Pharmaceuticals LLC*
2:45pm-3:15pm	Presentation 3: *Bangladesh's Pharmaceutical Industry: An Upcoming Force in Today's Economy*	**Shamim Ahmed, PhD, MBA** *Executive VP, Pharmaceutical Development, Agno Pharma.*
3:15pm-3:45pm	Panel Discussion: *Q&A with Speakers- FDA Young Scientists*	
3:45 pm- 4:00pm	**Coffee Break**	
	Session 4: Graduate Student & Rising Scientist Forum	Moderator: *Abu Bakar Siddique, PhD*
4:00pm-5:00pm	*Poster and Presentations*	***Graduate Students***
	Session 5: Endnotes	
5:00pm-5:15pm	*Award and Recognition*	Abu Bakar Siddique *President AABPS*
5:15pm-5:45pm	*Lifetime Achievement Award Recipients:* *Prof. Abu Serajuddin, PhD & Salah U Ahmed, Ph.D.* *Executive Committee Special Recognition:* *Prof. Muhammad Jamil Habib, PhD*	Zahur Islam, PhD *General Secretary AABPS*
5:45pm	*Closing Remarks*	

Evening Session:

6:30 pm – 7:30 pm	**Group Dinner**
7:30 pm – 9:30 pm	**Entertainment & Cultural Program**

Lifetime Achievements

Abu Serajuddin, PhD

Abu Serajuddin, PhD, is Professor of Industrial Pharmacy at St. John's University, Queens, New York, USA. He received his B Pharm (Honors) degree from Dhaka University, Bangladesh (1967), MS in Pharmaceutics from Columbia University & PhD in Industrial Pharmacy from St. John's University, New York. He has 32 years of industry experience including Executive Director at Novartis. Dr. Serajuddin has published over 140 scientific papers and book chapters, and he is a co-inventor in 14 issued patents. He received the Ralph Shangraw Memorial Award in 2016 from International Pharmaceutical Excipients Council (IPEC). Dr. Serajuddin also received the St. John's University Medal for Outstanding Achievement in 2019 for his academic and research excellence as a member of the faculty.

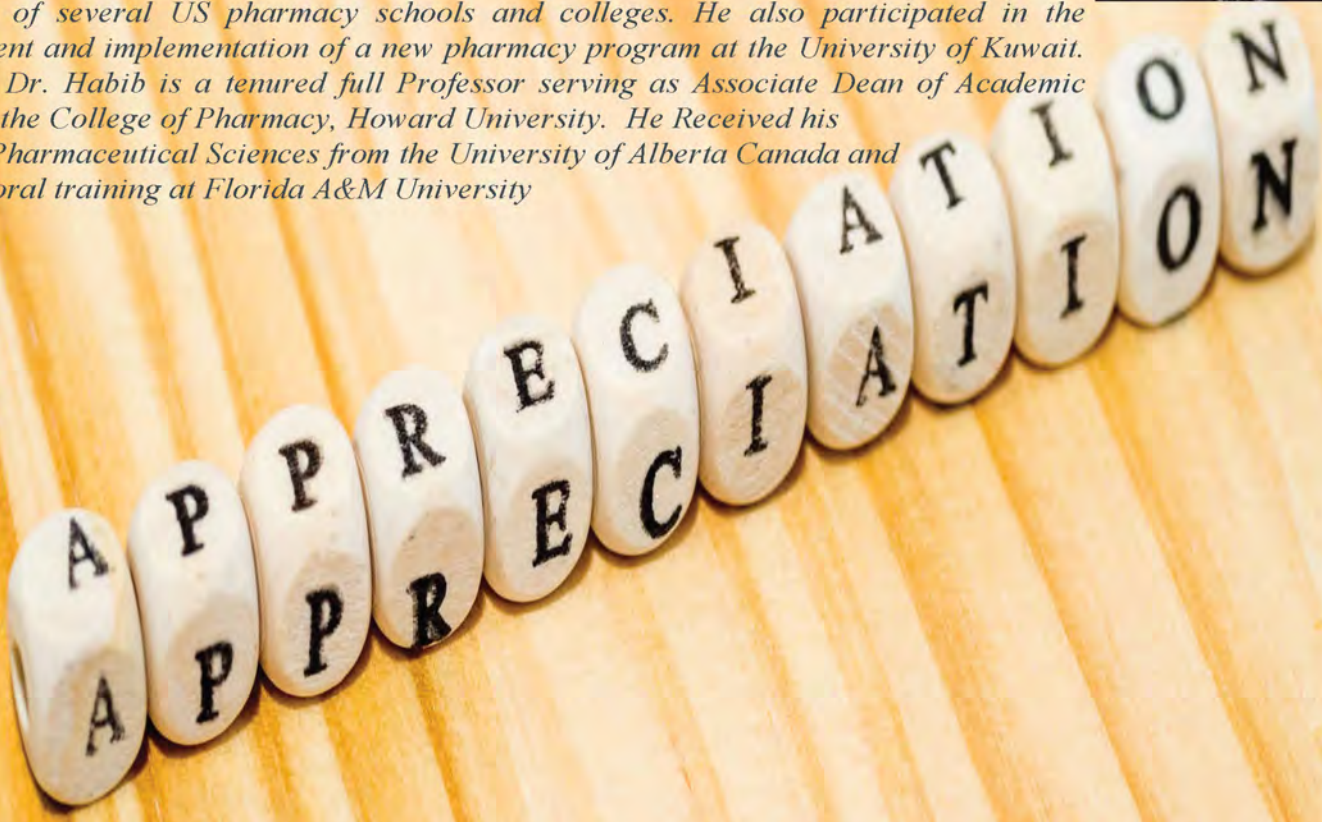
Salah Uddin Ahmed, PhD

Dr. Salah U. Ahmed is the Founding President & CEO of Abon Pharmaceuticals, LLC, established in 2009. He received his B. Pharm (Hons) and M. Pharm from University of Dhaka, Bangladesh, prior to earning his MS in Industrial Pharmacy and PhD in Pharmaceutical Sciences from St. Johns University, New York. He has about four decades of pharmaceutical experience in academia and industry. He is a former Executive Vice President, Global Head of Research and Development and Chief Scientific Officer at Barr Pharmaceuticals, Inc. His interests extended to cGMP facility design and mentored individuals to achieve professional excellence. Dr. Ahmed has a notable track record in pharmaceutical research involving special DDS, solid-state interactions, statistical design and mathematical modeling in product development, in-vitro/in-vivo performance of dosage forms. Dr. Ahmed currently advises academic committees in two of the largest Universities offering pharmaceutical education in the New York metropolitan area.

AABPS APPRECIATION

Dr. Muhammad Jamil Habib, M. Pharm., PhD

Dr. Muhammad J. Habib has 34 years of experience in academia as educator, researcher and administrator. He is an ACPE trained accreditation evaluator and evaluated Pharm.D. programs of several US pharmacy schools and colleges. He also participated in the development and implementation of a new pharmacy program at the University of Kuwait. Presently Dr. Habib is a tenured full Professor serving as Associate Dean of Academic Affairs in the College of Pharmacy, Howard University. He Received his Ph.D. in Pharmaceutical Sciences from the University of Alberta Canada and post-doctoral training at Florida A&M University



Dr. Habib was instrumental in establishing a research based private university in Bangladesh in 2015, the International University of Scholars (IUS) and served as the founding Chairman of the Board of Trustees. He also served as a consultant on Pharm.D. curriculum nationally and internationally. Dr. Habib is serving as a reviewer of professional research journals and as an editorial board member of a number of peer-reviewed international journals. He is a member of several professional organizations in North America including American Association of Pharmaceutical Scientists (AAPS), Controlled Release Society (CRS), American Association of Colleges of Pharmacy (AACP), Sigma Xi scientific research society,

Keynote Speaker

Dr. Salah U. Ahmed, PhD
Founding President & CEO of Abon Pharmaceuticals LLC

Title: Complex Generic Product: Concept to Comercialization

Abstract:

Complex drug product is a term relative to the technological advancement in the pharmaceutical field at that time. The progression of drug delivery science enabled many new and novel approaches to broaden the scope and magnitude of patient care. Today's evolution in medication is attentive to targeting patient's needs as well as improving convenience. While, marketing Drug Products are getting increasingly competitive and finding new drug molecules are at an all-time low, the industry is focusing intensely on new ways of delivering old drugs. Many of these approaches give birth to complex drug delivery systems, which is no longer out of reach to generic industries.

This presentation addresses the landscape of US Generic market and the driving forces that motivate specialty generic pharmaceutical companies to take on the development of Complex Generic Products. The presentation will shed light on:

- Generic Market Landscape
- Types of Complex Generic Product
- Development Requirements
- Regulatory hurdles.
- Commercialization aspects.
- Rewards and Pitfalls.

Biography:

Dr. Salah U. Ahmed is the Founding President & CEO of Abon Pharmaceuticals, LLC, established in 2009. He received his B. Pharm (Hons) and M. Pharm from University of Dhaka, Bangladesh, prior to earning his MS in Industrial Pharmacy and PhD in Pharmaceutical Sciences from St. Johns University, New York. He has about four decades of pharmaceutical experience in academia and industry. He is a former Executive Vice President, Global Head of Research and Development and Chief Scientific Officer at Barr Pharmaceuticals, Inc. His interests extended to cGMP facility design and mentored individuals to achieve professional excellence. Dr. Ahmed has a notable track record in pharmaceutical research involving special DDS, solid-state interactions, statistical design and mathematical modeling in product development, in-vitro/in-vivo performance of dosage forms.

Dr. Ahmed currently advises academic committees in two of the largest Universities offering pharmaceutical education in the New York metropolitan area. He is a member of the Overseers Council with Long Island University and is an advisor to the faculty for the Graduate program in College of Pharmacy and Health Science St. John's University.

Keynote Speaker

Dr. Shamim Ahmed, PhD
Executive VP, Pharmaceutical Development, Agno Pharma

Title: Bangladesh s Pharmaceutical Industry: An Upcoming Force in Today s Economy

Abstract:

Bangladesh is one of the fastest growing economies in the world with a real GDP growth accelerated to 6.9% in FY2021. It has grown from about $25 million in FY1982 to about $3.5 billion in FY2021. It is likely to be more than $6 billion by 2025.

The pharmaceutical industry is one of the most developed technology sectors in Bangladesh. Manufacturers produce almost all types of medicine including high tech products like insulin, hormones, anti-cancer drugs, etc. This sector provides 98% of the total medicinal requirement of the local market. The industry also exports medicines to over 160 countries, including Europe, Australia, Africa. Bangladesh's pharma exports witnessed economic blast during the last decade.

Despite the extraordinary achievements this feat will require a strong backward linkage industry, nvestment in human resources, research and innovation. One of the major drawbacks are Bangladesh's huge importation of Active Pharmaceutical Ingredients (APIs) and raw materials. A strengthened backward linkage in API production can help boost our export competitiveness. Fortunately, Bangladesh government is strongly encouraging the manufacturing of APIs through various fiscal and export subsidies. In other words, the goal is for local API production to increase and for import-dependence to decrease. Reported findings and statistics support this aim and prove Bangladesh as a global pharmaceutical force intoday's economy.

Biography:

Dr. Shamim Ahmed is a Globally experienced pharmaceutical professional with over 25 years of industrial experience in Formulation, Drug Delivery, External Drug Development & Manufacturing, Project Management/ Leadership, Regulatory, Business Development, Alliance Management, Strategy, etc. Dr. Ahmed is an Executive Vice President, Pharmaceutical Development at Agno Pharma. Prior to joining Agno, he was Chief Scientific Officer and Chief Operating Officer of Square Pharmaceutical Limited. Dr. Ahmed held senior level positions in several large pharmaceutical companies including Pfizer (Sr. Director, Development Operations), Novartis/Sandoz (Head of External Development), Covidien (Global Project Leader), and Merial (Sr. Manager, Global Projects), Wyeth Dr. Ahmed received a Bachelor of Pharmacy and a Master of Pharmacy from Dhaka University. He earned a Ph.D. in Pharmaceutical Science from Kumamoto University, Japan. Dr. Ahmed obtained an MBA from University of Missouri, St. Louis. He has over 30 patents and publications including review article.

KEYNOTE SPEAKER

Dr. James E Polly, PhD

Professor, University of Maryland

Title:

Research and education need for complex generics, and use of modeling as a new tool to approach bioequivalence.

Abstract:

Complex products have characteristics that can make it complex to demonstrate bio equivalence (e.g. complex active ingredients, complex dosage forms), such that developing generics of such products is challenging. In this presentation, research and education needs for complex generics will be described. Also, examples of the use of modeling as a new tool to approach bio equivalence will be featured.

Biography:

Dr. James E. Polli is Professor and Ralph F. Shangraw/Noxell Endowed Professor in Industrial Pharmacy and Pharmaceutics at the University of Maryland School of Pharmacy. He received a B.S. in Pharmacy from the Philadelphia College of Pharmacy and Science and a Ph.D. (pharmaceutics) from the University of Michigan. He is also co-Director of the University of Maryland Center of Excellence in Regulatory Science and Innovation (M-CERSI; www.cersi.umd.edu), an FDA-funded collaborative agreement with the Agency, and Director of the online MS in Regulatory Science program (www.pharmacy.umaryland.edu/regulatoryscience). His two main research interests are 1) maximizing oral bioavailability through formulation and chemical approaches and 2) developing public quality standards for oral dosage forms. He has published in the areas of dissolution, drug intestinal permeability, transporter substrate requirements, prodrug design, oral bioavailability, in vitro - in vivo correlation, and bioequivalence. Dr. Polli is a fellow of the American Association of Pharmaceutical Scientists, an Editorial Board member of several journals, an Editor of Pharmaceutical Research, and a member of the FDA Pharmaceutical Science and Clinical Pharmacology Advisory Committee. He teaches professional pharmacy students and graduate students, and has served as advisor to over 20 Ph.D. graduates.


AMERICAN ASSOCIATION OF
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BANGLADESHI PHARMACEUTICAL SCIENTISTS
AABPS 2022
6th Convention
ABSTRACTS

Localized oral delivery of 5FU and bcl2 SiRNA attenuates gastric cancer

Humayra Afrin[1], Md Nurunnabi[1,*]

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[*]Correspondence to- mnurunnabi@utep.edu (Dr. Nurunnabi)

Stomach cancer is one of the leading cancers based on mortality rate worldwide. The reasons behind the high mortality rate include late diagnosis, lack of targeted therapeutic regimen, and high cost of the treatment. Current available treatment for stomach cancer are surgery, chemotherapy, immunotherapy, and radiation. All these treatment modalities are invasive and requires systemic delivery, though the disease is localized in the stomach. Like other cancer stomach cancer treatment also suffers from random distribution of chemotherapeutics which contribute to the chemotherapy induced toxicity. To overcome this issue, we have developed a β-glucan (BG) based mucoadhesive vehicle for oral delivery of therapeutics. The BG vehicle shows ability to adhere on the mucus lining for an extended period and control release the drug over 6 hrs. We have used a combination of Bcl2 siRNA and 5FU as therapeutic modality. It was found that, Bcl2 siRNA selectively knocks down the Bcl2 gene as a result it upregulates the apoptosis and improves. We found that siRNA with BG is stable in simulated gastric juice for at least 6hr whereas the naked siRNA is not. To examine the therapeutic effect, stomach cancer mouse model was created on C57BL/6 mice and was divided in groups for treatment with 5FU, 5FU/BG, siRNA, siRNA/BG, and 5FU/siRNA/BG. The outcome of the treatment group was compared with the untreated and healthy control. Higher inhibition of Bcl2 was observed with 5FU/siRNA/BG group than others group confirmed by Western blotting and tunnel assay. Significant reduction in tumor region was examined in H&E staining of stomach tissue (Fig 1). Cell proliferation marker Ki67 was also found to be reduced with the 5FU/siRNA/BG treatment. In conclusion we have developed an oral formulation for stomach cancer where it produces better therapeutic effect compared to the conventional treatment with minimum side effect. This study also provides a platform for oral delivery of other biological therapeutics for gastrointestinal diseases.

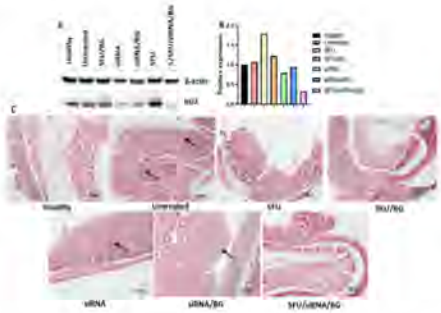

Figure 1: Reduction of Bcl2 expression was found in western blotting (A). Relative protein expression was quantified (B). H&E staining of stomach section shows (C) significant improvement with 5FU/siRNA/BG treatment group. Black arrow indicates the tumor region. In 5FU, 5FU/BG and 5FU/siRNA/BG treatment group there is reduction in the tumor region compared to naked siRNA. With 5FU/siRNA/BG group the stomach almost regained the healthy morphology.

γ-Tocotrienol Synergistically Potentiates the Anticancer Effects of Vitamin D3 in MDA-MB-231 Triple Negative Breast Cancer Cell by Mediating Cell Cycle Arrest, Apoptosis, Downregulation of MAPK Pathway, and Inhibition of Epithelial to Mesenchymal Transition (EMT) *in vitro.*

Md. Rafi Anwar, Jessie J. Grazier, A.K.M. Nawshad Hossian, Georgios Matthaiolampakis and Paul W. Sylvester.

College of Pharmacy, University of Louisiana at Monroe, 700 University Avenue,

Monroe LA, 71209, USA

Epidemiological studies suggest that dietary intake of some natural products may be effective in reducing the risk of breast cancer. Furthermore, various phytochemicals have been shown to interfere with cell signaling pathways involved in regulating breast cancer cell proliferation and viability. Combination therapies have been showing promises for the treatment of breast cancers for the last couple of decades. Many studies have shown that γ-tocotrienol induces potent anti-proliferative effects on MDA-MB-231 triple negative breast cancer cell in culture. The active form of vitamin D3 also induces potent anti-proliferative effects on the same cell line in culture. Studies were conducted to examine the effects of γ-tocotrienol and vitamin D3 given alone or in combination on MDA-MB-231 triple negative breast cancer (TNBC) cellular proliferation, migration, colony formation, invasion, cell cycle progression, and apoptosis. Our study focuses on the effects of combined treatment with γ-tocotrienol potentiates the antiproliferative effects of active form of vitamin D3 on human (MDA-MB-231) mammary cancer cells. Cells were maintained in serum-free defined media containing selected doses of γ-tocotrienol and vitamin D3. Results showed that treatment with γ-tocotrienol or vitamin D3 alone induced a growth inhibition, whereas combination treatment with these agents synergistically inhibited the growth of mammary cancer cells. Combined treatment was found to inhibit the clonogenicity of this cell. It was also found to induce G0/G1 cell cycle arrest, and a corresponding decrease in CDK2, CDK4, CDK6, cyclin D1, and increase in p27 and p53 levels. Additional studies showed the combination treatment initiated significant late apoptosis, and a corresponding increase in cleaved caspase-3 and cleaved PARP levels. Further studies also confirmed that these growth inhibitory effects were associated with suppression MAPK signaling pathway. Taken together, these findings indicate that the synergistic antiproliferative action of γ-tocotrienol or vitamin D3 treatment in human mammary cancer cell is associated from anti-clonogenicity, G0/G1 cell cycle arrest, late apoptosis,

Dapansutrile Attenuates Cyclophosphamide-induced Interstitial Cystitis

Ahmed Rakib, Sonia Kiran, Mousumi Mandal, and Udai P. Singh

Department of Pharmaceutical Sciences, College of Pharmacy, The University of Tennessee Health Science Center, 881 Madison Avenue, Memphis, TN 38163, USA

Interstitial cystitis (IC) is an autoimmune condition characterized by chronic pelvic pain, urinary frequency, urgency, and histological alterations in the urinary bladder. The etiology and pathophysiology of IC are still not clear but, it has been proposed that the association of NLRP3 inflammasome activation may have a potential role in the onset of IC. However, very little evidence is available to support the role of NLRP3 in the progression of IC. In this study, we investigated the role of Dapansutrile (Dap), an NLRP3 inhibitor on the cyclophosphamide (CYP)-induced experimental model of IC. The induction of IC by CYP causes significant morphological and functional changes in the urinary bladder (UB) that is comparable to clinical IC. CYP-induced mice showed significant improvement in UB pathology associated with less inflammation score after treatment with Dap as compared to control. In addition, Dap-administered mice exhibited reduced frequency of T cells, mast cells, and neutrophils compared to the mice that received CYP alone. We also noticed a significant decrease in $CXCR3^+$ T cells in UBs after administration of Dap as compared to CYP alone. Dap administration also dampens the frequency of proinflammatory cytokines as compared to CYP alone. Further, Dap treatment decreased the expression of NLRP3, interleukin (IL)-1β, caspase-1, nuclear factor kappa B (NF-κB), and inducible nitric oxide synthase (iNOS) in the UBs as compared to CYP alone. These findings suggest that Dap suppresses IC through the reduction of mast cells, neutrophils, and $CXCR3^+$ T cells in the UBs. Thus, this study represents potential mechanisms underlying the attenuation of IC by NLRP3 inhibitor Dap and may provide a way for a potential therapeutic agent for the treatment of IC.

Multi-exon disrupting CRISPR LNP as a cure for HIV

Mahmudul Hasan, M. Pharm.[1], Chen Zhang, BS[2], Emiko Waight, M.S.[2], Lubaba Zaman, B. Pharm.[2], Pallavi Deol, PhD[2], Milankumar Patel, MS[2], Jacob D Cohen, B.S[2], Saumi Mathews, PhD[2], Larisa Poluektova, PhD[2], Santhi Gorantla, PhD[2], Prasanta K Dash, PhD[2], Howard E Gendelman, MD[2]

Department of Pharmaceutical Science, College of Pharmacy, University of Nebraska Medical Center, Nebraska 68198-5800, USA
Department of Pharmacology and Experimental Neuroscience, College of Medicine, University of Nebraska Medical Center, Nebraska 68198-5800 USA

Integrated human immunodeficiency virus type one (HIV-1) proviral DNA cannot be eliminated by conventional antiretroviral therapy (ART). Moreover, high HIV-1 mutation rates leading to viral diversity, immune evasion, and antiretroviral drug resistance underlie viral persistence. To these ends, we have developed then validated the TatDE rLNP systems capable of CRISPR (Clustered Regularly Interspaced Short Palindromic Repeat) RNA cargo carriage. rLNPs carry gRNAs targeting multiple HIV-1 exons (*tat*$_{1\text{-}2}$/*rev*$_{1\text{-}2}$/*gp41*). TatDE rLNP excised diverse HIV-1 strains and demonstrated its potential as an HIV-1 curative therapy. In the current works, LNP physicochemical characteristics were evaluated and structure of the LNPs was visualized, in tandem, by cryo-transmission electron microscopy. These data served to validate the stability and narrow particle distribution. *In-vitro* studies demonstrated the ability of TatDE rLNPs to excise proviral DNA from latently infected cells. Pilot studies were conducted in HIV-1 infected humanized mice during antiretroviral drug therapy suppressed conditions. PCR assay, sanger sequencing and next generation sequencing support CRISPR mediated excision of proviral DNA. Highly sensitive ddPCR assay shows difference in treated and untreated samples. Further works are underway to validate these findings. Together, our data support "proof of concept" for further developing CRISPR TatDE rLNP therapies for HIV sterilization.

TRPC3 inhibition is a potential anti-seizure strategy

Nelufar Yasmen, Ying Yu, Jianxiong Jiang

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Globally, 65 million people suffer from seizures, making epilepsy one of the most prevalent and debilitating neurological disorders. This disease condition involves epileptic seizures resulting from the hyperexcitability of highly synchronized neurons in the brain. The medical expense associated with epilepsy treatment is enormous. In addition, 30-40 % of epilepsy patients show pharmacoresistance to currently available anti-seizure drugs (ASDs). As an integral member of the transient receptor potential (TRP) family, TRP canonical 3 (TRPC3) regulates calcium homeostasis that contributes to neuronal excitability. Genetic depletion of TRPC3 decreases seizures in pilocarpine-treated mice, implying that inhibition of TRPC3 might provide a novel anti-seizure strategy. Pyrazole 3 (Pyr3) is the most selective and potent compound currently available. Due to its low metabolic stability and potential toxicity, systemic treatment with Pyr3 only showed very limited benefits in pilocarpine-treated mice. To overcome these limitations, a modified pyrazole compound JW-65 with enhanced metabolic stability and less toxicity was developed. The objective of this study was to investigate the effects of TRPC3 inhibition by compound JW-65 on seizure susceptibility. Pharmacokinetics parameters were first assessed including plasma half-life and brain to plasma ratio after systemic administration of JW-65 in mice. The effects of TRPC3 inhibition by JW-65 on behavioral seizures were evaluated in young adult mice treated by pilocarpine for induction of status epilepticus (SE). Time-locked Electroencephalography (EEG) with synchronized video was used to measure the electrographic seizure activities. In order to avoid any possible model-specific effects of the compound, another commonly used chemoconvulsant, pentylenetetrazol (PTZ, a GABA receptor antagonist), was utilized in this study to evaluate the susceptibility of JW-65 treated mice to seizures. The pharmacokinetic results demonstrated that JW-65 has adequate half-life and brain-to-plasma ratio, justifying its use for CNS conditions. Treatment of JW-65 in mice with pilocarpine-induced seizures delayed the initiation and progression of behavioral seizures, reduced the seizure severity, and increased the post-SE survival rates. In addition, electrographic seizures evaluated by EEG revealed that treatment with JW-65 after seizures were well established and reduced the spike number. Furthermore, treatment with JW-65 increased the latency of seizures in a dose-dependent manner and showed more resistance toward generalized tonic-clonic seizures (GTCs) in a higher dose compared to a conventional anticonvulsant drug, Phenytoin. Our results together suggest that pharmacological inhibition of the TRPC3 channels by compound JW-65 might represent an emerging anti-seizure strategy for the treatment of some types of epilepsy.

Addressing Analytical Challenges in Endogenous Peptide Identification

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Biofluids, such as plasma and serum, contain a diverse array of bioactive peptides, including antimicrobial host defense peptides (AMPs), which may have potential biomedical applications. Antimicrobial host defense peptides are essential elements of innate immunity in higher organisms and play complex roles in defending the host against infection. Peptidomic studies of AMPs in under-researched species may provide insights into their immune response and inspiration for the development of novel AMP-based therapeutics against bacterial and viral infections. Well-established bottom-up proteomics methods for protein and peptide identification from organisms with well-characterized proteomes are poorly suited for the study of native intact endogenous peptides in organisms with limited sequence information. Challenges in analyzing intact native peptides from biofluids include isolating low abundance peptides of interest from complex sample matrices while inhibiting proteolysis, optimizing chromatography, comprehensively fragmenting large peptides via mass spectrometry, and identifying peptides without reference to a well-curated database. Traditional enrichment methods include solvent precipitation and filtration; however, these approaches do not specifically target AMPs. Here, the precipitation method was compared to enrichment using novel hydrogel particles developed previously in the Bishop lab to preferentially harvest AMPs and AMP-like peptides from biofluids. For peptide identification using model reference AMPs, LC-MS/MS fragmentation techniques were evaluated based on fragmentation comprehensiveness and total number of peptide identifications. In order to more effectively capture a greater number of the low abundance peptides that may be present in these analyses, the feasibility of implementing data independent acquisition (DIA) with non-tryptic peptides and electron transfer dissociation (ETD) fragmentation was also explored. The results of these studies suggest solvent precipitation is a promising method for processing samples for AMP identification, though a hybrid method including both precipitation and particle enrichment may improve targeting of AMPs. Additionally, ETD with supplemental activation via higher-energy collision dissociation (EThcD) has proven to be a versatile method affording superior fragmentation and identification for larger peptides. Use of this fragmentation technique for the analysis of native intact peptides via DIA will require higher signal intensity and reduced chromatographic co-elution of peptides to increase identifications. The results of these studies and the continued optimization of sample processing and analysis methods to improve the discovery and identification of native peptides from under-researched species allow for a better understanding not only of the chemical and structural characteristics of AMPs, but also of other classes of peptides that can be used as functional components in biomedical applications, as therapeutic agents, in tissue engineering scaffolding or in 3D cell culture medium, for example.

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Coffee & Tea

Fresh Assorted
Bakeries

Evening Refresher:

Coffee & Tea

Assorted Bakeries

Chocolate Chip
Oatmeal Raisin

Lunch:

Garden Salad with Two Dressings

Marinated and Grilled Chicken Breast

Chef's Housemade Shrimp Alfredo with Linguine Pasta

Grilled Vegetable Melange

Freshly Baked Dinner Rolls with Butter

Chef's Selection of Dessert

Dinner:

Garden Salad with Assorted Dressings

Spicy Herb Marinated 8-ct Bone-in Chicken

Sliced Sirloin of Beef with Sautéed Shallots

Seared Dill Salmon with Pineapple & Mango Salsa

Grilled Veggies, Green Bean Almandine & Lime Cilantro Jasmine Rice Pilaf

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The primary purpose of the AABPS, is to serve its membership, and, in specific- the pharmaceutical professionals of Bangladeshi origin residing in North America and working in academia, industry, hospitals, health insurance companies, pharmacies, government or other research institutions- by providing a forum for the interchange of knowledge. AABPS is a non-political, non-religious, not-for-profit, US tax exempt educational organization.

Objectives:

- To foster communication and collaboration among pharmaceutical scientists and professionals of Bangladeshi origin and residing in North America.
- To support its members in achieving their highest level of professional career through collaboration, consultation, mentoring, education and exchange of knowledge.
- To provide timely scientific programs, ongoing education, publications and networking opportunities for the scientists and professionals involved in discovery, development, manufacture and marketing of pharmaceutical products and services.
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