

AACP REPORT

New Investigator Award Recipient Poster Abstracts Presented at the 121st Virtual Annual Meeting of the American Association of Colleges of Pharmacy, July 13-31, 2020

Co-Curricular Drug Information Organization's Impact on IPE Outcomes

Jason Guy, *University of Findlay*, Elizabeth Claus, *University of Findlay*, Carmen Witsken, *University of Findlay*.

Objective: To determine the impact of The Annual Review of Changes in Health care (The ARxCH) on Interprofessional Education (IPE) competency scores.

Methods: The ARxCH is a student run, co-curricular organization made up of approximately 30 students from a variety of health care professions that produces an annual drug information (DI) publication. Placed in groups with representation from multiple health care professions, students met and communicated their unique perspectives on how to best care for patients. Integrating these perspectives, the students proceeded to create an article focusing on patient therapy for a given disease state. Students took a pre and post survey using a validated IPE survey called the ICCAS survey. The pre and post survey results were compared before and after participation in The ARxCH to determine if there were significant changes in IPE domain scores. Wilcoxon-Signed Rank and paired t-tests were used in the study ($\alpha = 0.05$). **Results:** Twenty-four students participated in the project from various health care fields including physical therapy, physician assistant, health informatics, pharmacy, and occupational therapy. Significant improvements were realized in 15 of the 17 ICCAS IPE competency questions ($p < .05$). The improvements were seen in questions focused on communication, collaboration, roles and responsibilities of various health care professions, conflict management, and team functioning. **Implications:** The ARxCH was effective in helping to improve perceptions and confidence of students in several interprofessional areas. Integrating IPE opportunities longitudinally into co-curricular organizations may be beneficial for Colleges of Pharmacy in the future to help improve students' skills needed for practice.

Community Pharmacy Owners' Perceptions of Performance-Based Pharmacy Payment Models

Benjamin Y. Urick, *University of North Carolina at Chapel Hill*, Shweta Pathak, *UNC Eshelman School of Pharmacy*, Tamera Hughes, Stefanie P. Ferreri, *University of North Carolina at Chapel Hill*.

Objective: To collect community pharmacy owners' experiences with, perceptions of, and responses to performance-based pharmacy payment models (PBPPMs). **Methods:** Published literature and qualitative results from a related study evaluating facilitators and barriers to implementation of PBPPMs were used to develop the electronic survey for this study. The survey included questions on the types of measures and incentives used in PBPPMs, opinions of PBPPMs, changes to practice implemented because of PBPPMs, and respondent demographics. The survey was distributed between November 2019 and January 2020. Univariate statistics and thematic analysis were used to describe results. **Results:** There were 68 respondents. After excluding respondents who did not own a pharmacy or have any exposure to PBPPMs, 41 remained. The most common quality measures used for these models were Medicare Stars Rating measures followed by financial performance measures. Performance measures were reported across all payer types. Negative financial impact was reported by 90% of respondents and many implemented changes to improve their performance. From the open-ended responses, some respondents considered these models a "necessary evil" and many were highly critical of their design. **Implications:** This is the first study to report community pharmacy owners' perceptions of PBPPMs. The use of financial measures within Medicare is intriguing, and suggests that payers are viewing these as a way to improve Part D plan profits through reductions in prescription drug spending as well as Stars-linked bonuses. Transparency initiatives for measures could alleviate some concerns over these models, as could changes to the fee structure used to implement the models within Medicare Part D.

Defining the Pharmacogenetic Associations for CYP3A5 and Intravenous (IV) Tacrolimus

Amy L. Pasternak, *University of Michigan*, Lauren A. Marcat, *Washington State University*, Gianni Scappaticci, *University of Michigan*, David Frame, *University of Michigan*, Daniel L. Hertz, *University of Michigan*

Objective: It is hypothesized that the impact of CYP3A5 genetic phenotype on tacrolimus exposure differs between IV and oral administration. We aimed to determine the impact of CYP3A5 phenotype on IV tacrolimus

exposure and on IV to oral dose conversion recommendations. **Methods:** Bone marrow transplant recipients who received IV tacrolimus from 6/1/2014-7/1/2018 were included. Tacrolimus doses, trough concentrations, concomitant medications were extracted from the medical record. Secondary use samples were genotyped for *CYP3A5**3. The dose-controlled concentration (C/D) was calculated as the trough (ng/mL)/dose (mg/kg); the IV:PO ratio was calculated as the (IV C/D)/(oral C/D) for the last IV and first oral steady-state concentrations with matching azole use. The C/D and IV:oral ratio were compared between *CYP3A5* expressers and non-expressers for all patients, and patients without concomitant azoles, via T-test or Mann-Whitney-U test. **Results:** 298 subjects were included; 51(17%) were *CYP3A5* expressers and 217(73%) were receiving a concomitant azole at the time of the first IV trough. The mean C/D was 10% and 25% lower in *CYP3A5* expressers for all patients and those without azoles, respectively, compared to non-expressers, which was not statistically significant. IV:oral ratios were determined for 267 subjects; 42(16%) were *CYP3A5* expressers and 224 (84%) had concomitant azoles. *CYP3A5* expressers had higher IV:oral ratios for all subjects (4.5 vs 3.6, $p < .01$) and those without azoles (7.1 vs. 4.1, $p < .01$). **Implications:** *CYP3A5* guided tacrolimus dose recommendations should be tailored to route of administration. IV:oral dose conversions should be personalized to *CYP3A5* phenotype and likely concomitant azole use.

Development and Assessment of Entrustable Professional Activities for Global Health

David R. Steeb, *University of North Carolina at Chapel Hill*, Tina P. Brock, *Monash University*, Sarah A. Dascanio, *University of North Carolina at Chapel Hill*, Paul K. Drain, *University of Washington*, Allison Squires, *New York University*, Melissa Thumm, Robin Tittle, *Oregon Health and Sciences University*, Stuart T. Haines, *University of Mississippi*.

Objectives: To evaluate how entrustable professional activities (EPAs) can be used across professions regarding global health work. **Methods:** Thirty global health experts across medicine, nursing, pharmacy, and public health participated in an online, multi-round Delphi process. Experts had an average of 17 years of global health work and twelve (40%) came from low to middle income countries. Participants were asked to list essential global health activities, which were then used to develop initial EPA statements. Participants in later rounds evaluated the statements for the characteristics of importance, relevance to multiple health professions, wording, and whether each statement was an observable unit of work

that could be assigned to somebody. A priori consensus was defined at 70% for all characteristics using a five-point Likert scale for importance and relevance. In vivo coding was used for the development of initial EPA statements and descriptive statistics were used for subsequent rounds. Participant comments were used by the research team to categorize EPA statements into role domains. **Results:** Twenty-two EPA statements reached consensus and were categorized into five role domains: partnership developer, capacity builder, data analyzer, equity advocate, and health promoter. The equity advocate domain statements had the highest agreement for importance and relevance. While several statements achieved 100% agreement as a unit of work, there were lower levels of agreement regarding statement observability. **Implications:** EPAs for global health may be used as a framework to further interprofessional education and collaboration across academic institutions and other training organizations worldwide.

Formulation of Polymeric Micelles for Co-Delivery of Bortezomib and Doxorubicin

Vaibhav Mundra, *Manchester University*, Valentin Bogun, *Manchester University*, Kendall M. Wrage, *Manchester University*.

Objectives: To synthesize a biodegradable polymer for micelles-based co-delivery of Bortezomib (BTZ) and Doxorubicin (DOX) at an optimum molar ratio **Methods:** We determined the optimal molar ratio of BTZ and DOX by calculating combination index values for different ratio of BTZ and DOX in MM.1S multiple myeloma cell line. Core of methoxy-poly(ethylene glycol)-block-poly(L-Aspartic acid) was modified with dopamine and phenylalanine for encapsulation and delivery of BTZ and DOX at the optimized molar ratio. Drug loaded micelles were prepared by nanoprecipitation method and were characterized for particle size and zeta potential using Malvern Zetasizer. Drug loadings were calculated using standard curves. **Results:** BTZ and DOX exhibited additive anticancer effect at 1:1 molar ratio with increase in combination index values at higher DOX to BTZ ratio. Micelles formulated from synthesized polymer resulted in effective encapsulation of BTZ and DOX by allowing covalent interaction between dopamine and BTZ and ionic interaction between the polymer and DOX. BTZ and DOX loaded micelles exhibited mean particle size of 50.8 nm with a narrow size distribution (PDI=0.22) and zeta potential value of -0.55. DOX and BTZ were loaded in the formulated micelles at 9.8% w/w and 6.6% w/w respectively resulting in co-delivery of this two drug at an optimum molar ratio of 1:1. **Implications:** A biodegradable polymer was designed and synthesized for micelles based

co-encapsulation of DOX and BTZ at an optimum 1:1 molar ratio for effective delivery to multiple myeloma.

Gabapentinoid Abuse Prevalence

Kirk E. Evoy, *The University of Texas*, Jordan Covvey, *Duquesne University*, Alyssa M. Peckham, *Northeastern University*, Kelly Reveles, *University of Texas*.

Objectives: Reports of gabapentinoid (gabapentin and pregabalin) misuse/abuse are on the rise, but the general population prevalence is unknown. Estimate lifetime prevalence of, and descriptive characteristics associated with, gabapentinoid misuse/abuse. **Methods:** This cross-sectional questionnaire administered online through Qualtrics® research panel aggregator via quota-based sampling collected data from a representative sample that mirrored the general US population aged 18-59 years, with regards to sex, geographic region, ethnicity, income, and education level, based on most recent census data. Misuse/abuse was defined as either gabapentinoid use for reasons other than a diagnosed medical condition or obtaining either drug without a prescription. A logistic regression model was created to predict misuse/abuse of gabapentinoids. **Results:** Among 1,843 respondents, 359 (19.5%) had ever used a gabapentinoid, with 121 (6.6%) reporting gabapentinoid misuse/abuse. Specifically, 6.3% (N=117; 81 [4.4%] gabapentin; 51 [2.8%] pregabalin) reported use outside of medical recommendations, and 3.8% [N=70; 48 [2.6%] gabapentin; 33 [1.8%] pregabalin) reported obtaining without a prescription. Recreational gabapentin and pregabalin use was documented in 39 (2.1%) and 27 (1.5%) respondents, respectively, while 28 (1.5%) and 19 (1.0%) used to enhance effects of another drug. Opioids were the most common drug used concomitantly. Health care providers and family/friends were the most common source of obtainment for misuse/abuse. Previous treatment for addiction (OR: 2.61, 95% CI: 1.32-5.14, $p=.005$) and the total attitudinal risk score (OR: 1.14, 95% CI: 1.09-1.19, $p<.001$) were associated with gabapentinoid misuse/abuse. **Implications:** This study presents the first estimate of lifetime gabapentinoid misuse/abuse prevalence in the general US population.

Generation of Lipopeptide Analogs Using Biocatalytic Methods

Sherif I. Elshahawi, *Chapman University*, Nagaraju Mupparapu, *Chapman University*, Yu-Hsin Cindy Lin, *Chapman University*.

Objectives: Daptomycin is an FDA-approved antibiotic drug approved for the treatment of complicated skin and skin structure infections. Daptomycin suffers from limitations such as inactivity against pneumonia, anaerobic and gram-negative infections in addition to

rising levels of bacterial resistance. Chemical modifications of chemical drugs can lead to improvement of drug biological activities. However, daptomycin has a complex lipopeptide structure with multiple reactive moieties limiting any traditional derivatization approaches. Tailoring enzymes, on the other hand, catalyze regio- and stereospecific reactions under mild and “green” conditions. The goal of this project was to use a chemoenzymatic approach to generate regiospecific daptomycin analogs. **Methods:** We synthesized four nonnative alkyl pyrophosphates by treating the alkyl halides with tetrabutylammonium pyrophosphate. To obtain the enzymes, the sequences encoding ten aromatic prenyltransferases were synthesized, cloned and transformed into an expression host. The corresponding proteins were overproduced and purified by metal chelation, quantified and adjusted to have a final concentration of 7-10 mg mL⁻¹. *In vitro* enzymatic assays with 0.4 mM daptomycin, 0.4 mM pyrophosphate and 50 µg enzyme in Tris buffer were optimized and the kinetically competent conditions were scaled up. The enzymatic-derived products were purified by HPLC and identified using NMR and MS. **Results:** One regiospecific daptomycin analog was generated and characterized with superior antimicrobial activity when compared to the parent daptomycin. **Implications:** Aromatic prenyltransferase enzymes coupled with strategically selected pyrophosphates can be used to expand the chemical and biological diversity of antibiotics and other tryptophan-containing complex peptides under mild and aqueous conditions.

Inhibitors of Type 1 Adenylyl Cyclase as Novel Pain Therapeutics

Tarsis F. Brust, *Palm Beach Atlantic University*, Gianna Giacoletti, *Palm Beach Atlantic University*, Tatum Price, *Palm Beach Atlantic University*, Abdulwhab Shremo Msd, *Palm Beach Atlantic University*, Ryan Cook, *Palm Beach Atlantic University*, Katerina Vazquez-Falto, *Palm Beach Atlantic University*, Alexandra Gonzales, *Palm Beach Atlantic University*, Sumer Chapman, *Palm Beach Atlantic University*, Edwin Santini, *Palm Beach Atlantic University*, Adwoa Nornoo, *Palm Beach Atlantic University*.

Objectives: Adenylyl cyclases 1 (AC1) is one of the nine isoforms of membrane-bound adenylyl cyclases expressed in humans. These enzymes catalyze the production of cAMP from ATP. Previous studies have linked AC1 activity to pain, memory, and opioid dependence. In the present work, we conducted a pre-clinical study to determine the effects of ST034307, a selective small molecule AC1 inhibitor, in animal models of pain, memory, and

normal behavior. **Method:** ST034307 was tested in the mouse writhing and formalin assays to determine the compound's effect on visceral and inflammatory pain, respectively. The compound was also tested in the mouse nesting assay and in fear extinction experiments with rats. Pharmacokinetic studies were conducted to determine ST034307's peak plasma concentration. **Results:** ST034307 is as potent as morphine to relieve visceral pain in mice. ST034307 also relieves inflammatory pain in mice, but it is less potent than morphine. The compound does not disrupt mouse innate behavior (nesting) at analgesic doses. In fear extinction experiments with rats ST034307 had no effects on extinction learning. However, the compound disrupted the consolidation of fear extinction compared to vehicle-treated rats. **Implications:** These data indicate that AC1 inhibitors may be useful to treat different types of pain and also highlights that at analgesic doses ST034307 do not disrupt normal behavior in mice, thus suggesting the absence of certain adverse effects. The compound's effect on the consolidation of fear extinction may suggest AC1 as a novel target for the treatment of anxiety disorders, such as post-traumatic stress disorders (PTSD).

Lie to Me: How to Overcome Dishonest Responding in the Estimation of Prescription Stimulant Misuse

Sujith Ramachandran, *University of Mississippi*, Swarnali Goswami, *University of Mississippi*, Yiqiao Zhang, *University of Mississippi*, John Bentley, *University of Mississippi*.

Objectives: To estimate the prevalence of prescription stimulant misuse (PSM) in the college student population using the crosswise randomized response technique (CRRT); and identify the differences in risk factors that predict PSM, as measured using CRRT and direct self-report (DSR). **Methods:** This study employed a cross-sectional, randomized experimental design conducted with undergraduate students using an online survey. Eligible respondents randomized to the CRRT group were presented a non-sensitive question along with the PSM Question and had to indicate whether their responses were 'same' or 'different' to both questions. In the DSR group, the non-sensitive question, 'being born in the first 10 days of the birth month', were asked directly along with a direct self-report question for PSM. Respondents were also asked a series of questions assessing the demographic and other characteristics that are expected to be risk factors for PSM. **Results:** Of the 1326 respondents who completed the survey, 16.7% individuals self-reported ADHD, 50.6% were upperclassmen, 66.4% female, and 78% Caucasian. Prevalence of PSM in the DSR group was 18.6%, while prevalence in the CRRT group was 32.5%

(estimated using an established algorithm). The difference between the two rates was statistically significant ($p = .003$). Effects of risk factors predicting PSM were not significantly different between the DSR and CRRT methods. **Implications:** Direct questioning may not yield valid estimates of prevalence for sensitive behaviors such as PSM. This systematic bias can cause underestimation of PSM prevalence and a misunderstanding of the risk factors and causes behind the growth in PSM rates.

NMR-Based Structural Characterization of a Glucan Isolated from Ganoderma Lucidum

Alysia V. Gonzalez, *University of Mississippi*, Thais Bergmann, *University of Mississippi*, Anamélia L. Bocca, *University of Brasilia*, Vitor H. Pomin, *University of Mississippi*.

Objectives: *Ganoderma lucidum* is a polypore fungus commonly known as Lingzhi or Red Reishi mushroom. It is frequently marketed as an herbal supplement and often utilized as traditional Chinese medicine. Our research comprises the structural investigation of the principal polysaccharide from this fungus. **Methods:** After proper purification, the fungal glucan was subjected to multiple experiments of nuclear magnetic resonance (NMR) spectroscopy, including 1D ^1H , 1D ^{13}C , 2D ^1H - ^1H COSY, 2D ^1H - ^1H TOCSY, 2D ^1H - ^1H NOESY, and 2D ^1H - ^{13}C HSQC NMR spectra. **Results:** Data have confirmed that this fungal polysaccharide contains residues of glucose (major), galactose (minor), and mannose (minor) as the main constituents. Anomeric signals indicated that all these three residues occur as both alpha and beta configurations. This fungal glucan is mostly composed of 6-linked units together with minor amounts of the 3-linked units. **Implications:** Future directions remain to assess the inter-residue connections to prove the presence of a regular sequence or a random pattern of the monosaccharide distribution throughout the polysaccharide chains.

Preparing Pharmacists to Care for Patients Exposed to Intimate Partner Violence

Marie Barnard, *University of Mississippi*, Aaron White, *University of Mississippi*, Alicia Bouldin, *University of Mississippi*.

Objectives: This project evaluated a pharmacy-specific continuing professional development module on Intimate Partner Violence (IPV). IPV is a seriously, highly prevalent public health problem associated with poor health outcomes, negative impacts on medication behavior, and increased health care utilization and costs. **Methods:** A quasi-experimental pretest-posttest with nonequivalent dependent variable study design was employed.

Practicing community pharmacists (n=36) completed a pre-assessment, an online education module, a post-module evaluation, and 3 months later a post-assessment. The PREMIS for Pharmacists instrument was utilized to evaluate potential changes in perceived and actual knowledge and preparation, workplace and self-efficacy, and awareness of legal reporting requirements. Practice changes were also assessed. **Results:** Participants reported significant increases in perceived preparedness and knowledge, actual preparation, workplace and self-efficacy, and legal requirements, but not actual knowledge. Practice changes including identification of legal reporting requirements (19.4%) and development of protocols for managing IPV disclosures (13.9%) were reported at follow-up. Qualitative responses indicated that the module was useful and easy to understand. Suggestions for module improvements included adding example patient cases. **Implications:** Pharmacists are uniquely positioned to play a pivotal role in patient IPV education and referrals. This is the first examination of an educational module on the topic of IPV for pharmacists and it positively impacted pharmacists' preparedness and practice behaviors related to IPV over a three-month follow-up period. IPV-related pharmacist educational initiatives such as this have the potential to positively impact patients' health, safety, and well-being.

Programming Immune Cell Sensitivity Towards Toll-Like Receptor Agonists

Ryan M. Pearson, *University of Maryland*, Jackline Joy Martín Lasola, *University of Maryland*.

Objectives: Sepsis is a life-threatening condition of complex pathophysiological origin that develops due to an uncontrolled immune response during infection and there is no cure. Our objective was to determine the physical and biological mechanisms by which immunomodulatory nanoparticles (iNPs) suppress proinflammatory responses for the treatment of severe inflammation. **Method:** iNPs were prepared using a single-emulsion method from polylactide (PLA) and either neutral poly(vinyl alcohol) (PVA) or anionic poly(ethylene-alt-maleic acid) (PEMA) surfactants. iNPs were incubated with fluorescently-labeled Toll-like receptor (TLR) agonists to assess direct interactions. Macrophages were then treated with iNP formulations followed by TLR agonist treatment and assessed using a combination of confocal microscopy, flow cytometry, qRT-PCR, and ELISA to characterize uptake, cell phenotype, gene expression, and inflammatory cytokine secretions. **Results:** iNPs displayed similar sizes (400 to 500 nm) and different charges depending on the type of surfactant employed (-20 to -50 mV). iNPs did not interact directly with TLR

agonists, yet PLA-PEMA partially inhibited the uptake of TLR agonists *in vitro*. Macrophage treatment with PLA-PEMA significantly downregulated the expression of CD14 and TLR4 cell surface molecules. The expression of *Il6*, *Ccl2*, and *Tnf* remained unchanged or were increased compared to LPS controls. Conversely, proinflammatory cytokine secretions for IL-6, CCL2, and TNF- α were significantly inhibited following PLA-PEMA treatment. **Implications:** Our results suggest that the mechanism of immunomodulation of macrophages by iNPs occurs through both physical and biological mechanisms leaving open the potential to further study the molecular pathways modulated by iNPs for severe inflammation.

Regulation of SGLT1 Function by Tyrosine Kinase Inhibitors

Jason A. Sprowl, *University of Buffalo*, Jieyun Cao, *University of Buffalo*, Kyle Z. Pasquariello, *University of Buffalo*, Nicole Nasta, *University of Buffalo*.

Objectives: Tyrosine kinase inhibitors (TKIs) are among the fastest growing family of drugs and are used to treat numerous diseases. Unfortunately, clinical use is often limited by unexplained and potentially life-threatening gastrointestinal toxicity. Interestingly, symptoms are remarkably similar to those observed when the Sodium/Glucose Transporter, SGLT1, is genetically or pharmacologically inactivated in patients. We previously found that activity of some membrane transporters can be dependent on tyrosine phosphorylation and are sensitive to TKIs. Therefore, we hypothesized that SGLT1 is tyrosine phosphorylated and multiple FDA approved TKIs reduce transport function. **Methods:** SGLT1 overexpressing HEK293 cells (HEK293-SGLT1) were generated using a pcDNA3.1+N-DYK plasmid. These cells were then utilized to assess phosphorylation of SGLT1 by liquid chromatography-mass spectrometry. SGLT1-mediated uptake of 0.4 μ M 14 C- α -methyl-D-glucopyranoside (14 C-AMG) in the presence or absence of 46 individual TKIs at various concentrations (0-20 μ M) and incubation times (15-180 min) was measured in HEK293-SGLT1 and LLC-PK1 cells. Statistical differences were analyzed by One-Way ANOVA using a cutoff for significance of $p < .05$. **Results:** Thirteen TKIs significantly reduced in uptake of 14 C-AMG in HEK293-SGLT1 cells ($p < .05$). The most potent inhibitor, regorafenib (93.4% loss of function), also reduced 14 C-AMG uptake in LLC-PK1 cells and elicits inhibition of SGLT1 through a non-competitive but reversible mechanism. Mass spectrometry also revealed that SGLT1 is tyrosine phosphorylated at 11 different tyrosine phosphorylation sites. **Implications:** We found that SGLT1 is tyrosine phosphorylated and

highly sensitive to many TKIs, especially regorafenib. These findings indicate that TKI-induced gastrointestinal toxicity may be attributed to loss of SGLT1 activity.

Towards Targeting Antibiotic Resistance in *Staphylococcus aureus*

Aurijit Sarkar, *High Point University*.

Objectives: We need new antimicrobials due to the rise of resistance. Yet, we do not understand which chemicals will penetrate bacterial cells. Here, we aimed to develop and test an algorithm capable of prospectively predicting permeators of bacterial cells. **Methods:** We identified the largest database of ~70,000 chemicals, conclusively classified as permeators and non-permeators. We then generated random forest models capable of correctly classifying permeators and non-permeators. We also tested the use of our models in a live project on drug discovery against methicillin-resistant *Staphylococcus aureus* (MRSA). **Results:** Our algorithm demonstrated ~90% accuracy and precision for Gram-positive pathogens, but a paucity of data limited predictions for Gram-negative pathogens (~85% negative predictive value, ~55% specificity). We predicted permeation of Gram-positive pathogens for a kinase-focused library of chemicals. Five of these chemicals bound a eukaryote-like Ser/Thr kinase called Stk1, but 3 had no activity against MRSA (non-permeators). We also found 5 chemicals that inhibited MRSA growth, either in synergy with β -lactams or separately, and thus are permeators. Our algorithm scored the permeators (0.63 ± 0.08) higher than non-permeators (0.49 ± 0.10). The difference was statistically significant in a two-tailed Student's t-test at the 90% confidence level. **Implications:** We are able to reasonably segregate permeators of MRSA from non-permeators. Yet, improvements are necessary; our models are based on data from phenotypic assays, so we cannot study the correlation between physicochemical properties and degree of permeation. Species- and strain-specific factors are also yet to be understood. At this

time, our research group is beginning to address these weaknesses.

Weight Loss With SGLT2 Inhibitor Use: An Uphill Battle

Sara M. McMillin, *High Point University*, Mimi Pham, *High Point University*, Christina H. Sherrill, *High Point University*.

Objectives: Sodium-glucose cotransporter 2 inhibitors (SGLT2is) lower glycemia by blocking renal glucose reabsorption, which leads to caloric loss and subsequent weight loss. However, studies have shown that the amount of weight lost falls short of that expected based on caloric loss. Objectives of this study were to investigate whether the caloric deficit induced by SGLT2is triggers a compensatory increase in appetite and food intake, driven in part by alterations in appetite regulating hormones. **Methods:** This was a prospective single-center observational pilot study. Adults 18-70 years old newly prescribed an SGLT2i through usual care were identified via electronic medical records and invited to participate in this study. Utilizing a standard survey, appetite was assessed in the fasting and postprandial states immediately before, 1 week after, and 12 weeks after SGLT2i initiation. Serum samples were collected at the same time points to measure appetite regulating hormones. Commercially available ELISA kits were utilized to measure ghrelin, leptin, PYY, and insulin. **Results:** Seven patients were included in the study. At 1 and 12 weeks after SGLT2i initiation, self-reported appetite did not change significantly and trended toward a decrease in appetite. There were no significant differences seen in fasting or postprandial ghrelin, leptin, PYY, or insulin after SGLT2i initiation. **Implications:** Results from this study suggest that the discrepancy between expected and observed weight loss with SGLT2is cannot be explained by increases in appetite or changes in appetite regulating hormones. Further studies are needed to investigate alternative metabolic compensatory mechanisms.