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RHO PxCHI post

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AN AWARD-WINNING, STUDENT-OPERATED NEWSLETTER BY THE ST. JOHN'S UNIVERSITY COLLEGE OF PHARMACY AND HEALTH SCIENCES' RHO CHI BETA DELTA CHAPTER

Inside This Issue

A Word From The Immediate Past Editor-in-Chief – Passing the Torch!

By: Katharine Cimmino, Co-Copy Editor [Content-Focused]

Dear Readers,

Working on the Rho Chi Post has been an amazing opportunity. Entering a science heavy program, I truly thought I would be putting my love for reading and writing on the back burner. The Rho Chi Post has allowed me to combine my passion for reading and writing with the art of my profession.

I want to take this opportunity to thank our faculty advisor, Dr. S. William Zito. He is our rock, and only through his dedication and encouragement are we able to publish a monthly, student-operated newsletter.

I would like to thank Dr. Mohammad Rattu, our behind-the-scenes technical support. He was one of the founders of the newsletter back in 2011 and is still actively involved today. Because of his tenacity and commitment, we were able to build an interactive website that increased our readership and accessibility on a worldwide level. Since the initiation of the website on February 12, 2014 we have had over 31,800 unique visitors and over 127,500 visits from over 105 different countries.

I would like to thank my fellow team members; each of who contributed innovative ideas that helped our newsletter become such a unique publishing platform.

I would like to thank my classmates and peers for their submissions, which gives the Rho Chi Post its diverse content. I am beyond grateful for the faculty members and administrators at the College of Pharmacy and Health Science for their help and advice.

Last but not least, I would like to thank you, our readers, for your interest in our publication. Your contributions, feedback, and comments are what drive our staff to take our newsletter to the next level! It is because of everyone's support that the Rho Chi Post was recognized by Rho Chi Society and won a national award.

Please continue to be active and support the Rho Chi Post Team!

Sincerely,

Katharine Cimmino

Immediate Past Editor-in-Chief

Single Line Stories

-Congratulations to our new Editor in Chief Tasnima Nabi-

- Welcome to our new members: Andrew, Nicolette, and Svetlana!-

- Follow us on Twitter @ RhoChiPost and on Facebook: FB.com/RhoChiPost -

NEWS

No More ABCs: FDA Issues Final Rule on Pregnancy and Lactation Drug Labeling

By: Svetlana Akbasheva, Staff Writer

Pregnancy categories in drug labeling were created in order to facilitate decisions on a medication's use during pregnancy. With only five possibilities – A, B, C, D, or X – they provided a quick and simple reference regarding a medication's teratogenic potential. However, in practice this grading system has often caused more confusion than clarity; with many critics arguing that the categories provide an oversimplified view of a very important issue. While categories A, B, and X are pretty clear, what is the correct action for pregnant women who may need a category C or D drug? And how could drugs with widely differing data be placed in the same category?

In response to these criticisms, the FDA decided to implement a more comprehensive format for pregnancy and lactation drug labeling, with the initial proposal being drafted in 2008.[1] Six years later, the FDA's final rule regarding this matter was officially issued on December 3, 2014. The new labeling guidelines discard the pregnancy categories entirely and instead create three mandatory categories for drug monographs – "Pregnancy", "Lactation," and "Females and Males of Reproductive Potential." The "Pregnancy" section will contain a risk summary, clinical considerations, and human and animal data supporting the stated information.[2] In addition, it will now be required rather than recommended to include information regarding any existing pregnancy exposure registry for the drug in this section.[3] The "Lactation" section will replace the previous "Nursing Mothers" subsection and will also include a risk summary, clinical considerations, and relevant data. Finally, "Females and Males of Reproductive Potential" is a brand new section, which will include information about the need for pregnancy testing or contraception for patients on the medication and whether the drug has any effects on fertility.[2]

The new labeling guidelines are set to officially go into effect beginning on June 30, 2015. Monographs for new drugs will automatically need to use the new format, while the labeling for existing drugs will gradually adopt the changes. The final rule solely affects prescription drug labeling and has no implications for over-the-counter drugs.[3]

At a time when many pregnant and lactating women require medications for serious health conditions such as asthma and hypertension, the FDA hopes that these new labeling rules will help physicians and pharmacists make more informed decisions regarding the safe use of medications in this subgroup of patients.

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Went to an event on your campus?

Learned something interesting?

Write to our editors at RhoChiPost@gmail.com

NEWS

Usage of Codeine in Pediatric Patients

By: Azia Tariq, Section Editor

With the deaths of thirteen pediatric patients undergoing tonsillectomy and/or adenoidectomy occurring post operation between 1969 to 2012, the Food and Drug Administration (FDA) reviewed the safety of codeine in children in its August 2012 Drug Safety Communication. The FDA subsequently issued a black box warning and a contraindication on the use of codeine in pediatric patients after tonsillectomy and/or adenoidectomy.[1] Though all children had received doses of codeine for postoperative pain management that were within the typical dose range, it was discovered that these patients had a genetic ability to convert codeine into life-threatening or fatal amounts of morphine in the body.

Codeine is an opioid and a prodrug to morphine used as an analgesic and an antitussive agent. The World Health Organization (WHO) has devised a three-step analgesic ladder for the progressive treatment of increasing pain, in which codeine holds a significant place. The first step contains non-opioids, and the third step includes strong opioids such as methadone, fentanyl, morphine, and oxycodone. Codeine occupies a position on the second step, meaning it is a weak opioid.[2] In addition to other cough and cold medications, it is available as both a single-ingredient product and a combination product with acetaminophen or aspirin. In 2011, approximately 1.7 million pediatric patients (0-17 years old) filled a prescription for a codeine/acetaminophen combination product or single ingredient codeine product at outpatient pharmacies in the United States.[3] With so many receiving this drug, it is important to understand concerns over its use in patients, particularly infants and children.

The FDA subsequently issued a black box warning and a contraindication on the use of codeine in pediatric patients after tonsillectomy

When codeine is ingested, it is metabolically converted to morphine in the liver via cytochrome P450 2D6 (CYP2D6).[4] Patients known as ultra-rapid metabolizers possess multiple copies of the CYP2D6 gene responsible for codeine metabolism, which has been linked to serious morbidity and mortality in pediatric patients. These DNA variations increase activity of the enzyme, causing codeine to be converted to morphine faster and more completely. Patients with the ultra-rapid metabolizer (UM) genotype are more likely to have increased amounts of morphine in their blood after taking codeine.[5] High levels of morphine can result in adverse drug reactions such as sedation, dry mouth, constipation, nausea, vomiting, urinary retention, and orthostatic hypotension. The UM genotype, which is particularly frequent in those of African and Arab descent, also indicates an increased risk of codeine-induced respiratory depression.[6]

In a case report study by Friedrichsdorf et al, the death of three pediatric patients aged 4-10 years old due to codeine toxicity were examined, and it was determined that codeine should no longer be prescribed to pediatric patients. Though the codeine doses were within the recommended dosage ranges, all three obese children were at risk due to their comorbid states.[7]

The associated benefits of the usage of codeine for pain management must be analyzed. Studies may suggest that adding codeine to pediatric pain therapy may not necessarily lead to an improvement in care. In a randomized, double blind study by Moir et al, results demonstrated that there was little difference in patient response when uu using acetaminophen with codeine over acetaminophen alone. Over the course of ten postoperative days, 51 children (ages 3 to 12 years) who were scheduled for outpatient tonsillectomy and/or adenoidectomy were studied. Patients were randomly assigned to receive acetaminophen alone or acetaminophen with codeine for postoperative pain control. The Wong-Baker FACES pain rating scale was utilized to help the children quantify their level of pain after surgery. Results comprised of the level of pain, quantity of pain medication required, presence of side effects, and the percentage of a normal diet consumed. No significant difference in the level of pain control was found ($P > .05$, all time points) in the level of postop-

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erative pain reported by the parents and children in the two groups. The acetaminophen with codeine group had increased problems with vomiting, nausea, and constipation, but these differences did not reach statistical significance. Children in the acetaminophen group consumed a significantly higher percentage of a normal diet on the first six postoperative days ($P < .05$, all time points). It was determined that there was no difference in the level of pain control provided by acetaminophen and acetaminophen with codeine as measured by the Wong-Baker FACES pain rating scale, however, postoperative oral intake of food was markedly higher in children treated with acetaminophen alone, which can be explained by the increased gastrointestinal side effects of acetaminophen with codeine.[8]

Though there is abundant information on codeine's effect on adults, there is a lack of clinical data to support its usage in the pediatric population. Available research findings suggest that there may be significant age specific differences in the pharmacokinetics of codeine when used in adult or pediatric populations and even among various pediatric age groups. A study by McEwan et al compared intramuscular and rectal administration of codeine in children aged 3 months to 12 years for postoperative analgesia. While the purpose of the study was to evaluate differences in toxicity, it also showed that peak plasma levels of codeine were achieved between 30 minutes and 60 minutes in both groups, but rectal bioavailability was found to be lower.[9]

In Quiding et al's study of rectal administration of codeine for postoperative analgesia in infants and children aged between six months and four years, the mean initial half-life was 2.6 hours, but in infants of the lowest body weight, the half-life was over 2 hours longer than the mean value. This demonstrates that age and weight may have an effect on the duration of codeine levels among different groups of children as well, despite the observation of similar peak levels among the many age groups in the first study. In addition, plasma drug concentration data displayed that a rectal dose of codeine of 0.5 mg kg^{-1} in children can result in similar, or slightly greater, plasma concentrations of codeine and its metabolites than over 60 mg orally in adults. This may indicate that there are vast differences in how codeine affects pediatric and adult populations.[9]

There has been limited research on the benefits and side effects of codeine use in children. Doses of codeine should be adjusted according to the severity of pain and the response of the patient. In addition, patients' renal and liver functions must be taken into account. More clinical studies are needed in order to better assess its safety and efficacy in the pediatric population.[10]

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EVENTS

The 2015 Rho Chi Society Eboard cordially invites you to attend our biggest event of the semester:

The Rho Chi Coffeehouse Chats

WHEN: April 16th 2015 from 6-8:30pm

WHERE: DAC Coffeehouse 3rd floor (Across from Starbucks)

DRESS CODE: Business Casual

ALL pharmacy students (regardless of their year) are invited to attend

Come join us for a relaxing and wonderful night where pharmacy professors and student pharmacists come together and share their experiences in the profession.

DINNER, COFFEE, AND DESSERT WILL BE SERVED.

Please RSVP on our Facebook group (or send an email to rhochis@gmail.com)

We hope to see you there!

The Rho Chi Induction Ceremony: Class of 2015

By: Davidta Brown, Copy Editor [Content-focused]

On February 10th, the Beta Delta chapter of Rho Chi Society granted membership to a new class of students; 52 fourth year pharmacy, fifth year pharmacy, and Ph.D. students from the College of Pharmacy and Health Sciences were inducted in a simple and elegant ceremony in Whitestone, Queens.

Despite the beautiful formality of the venue, the atmosphere of the night was relaxed - one of spending time in the company of family and friends. Inductees and guests wandered into the restaurant's ballroom, where they were able to mingle with peers and congratulate one another. After all the inductees and their guests arrived and had been seated, the President of the 2014 Beta Delta chapter, Tyler Valente, encouraged the new inductees to see the pins that they would receive as symbols of a renewed commitment to the value of academic excellence celebrated by Rho Chi. He encouraged inductees to strive to be even better, to do even more than they had done before induction, and in so doing, they would continually prove themselves worthy of their membership.

Dean DiGate spoke to the inductees and guests next, welcoming them to the evening and reflecting on the importance of recognizing students for their admirable achievements. Current Provost of St. John's, and former Dean of the College of Pharmacy, Dr. Mangione, provided the Keynote Address. Provost Mangione offered words of wisdom to the inductees, encouraging them to remain steadfast and true to the core values and principles that had brought them success thus far.

The induction ceremony concluded with each inductee being called individually to receive their Rho Chi pin and Certificate of Membership. After everyone had gathered in the center of the large room, the crowd of inductees took the pledge to live up to the principles and values of Rho Chi. The 2015-2016 Executive Board of the Beta Delta chapter was then introduced, and they took their own pledge of commitment to their positions.

In all, it was an evening of old and new, of tradition and change. Dedication to the timed-tested principle of academic excellence was celebrated in yet another annual ceremony, and a brand new group of individuals was honored for their commitment.

Statements from the 2015 Executive Board - Elect of the Beta Delta Chapter:

Michael Bosco, President:

"It is a huge honor to become a member of Rho Chi. As I get inducted not only as a member, but as President of the Beta Delta Chapter for the upcoming year, I cannot help but feel a sense of pride. Continuing the mission and advancing the goals of Rho Chi is important to me, and I intend to do so by reaching out to new students that may not be aware of Rho Chi. I would also love to incorporate our ideals and mission with other pharmacy organizations and collaborate in order to include more of the students here in the pharmacy program."

Lina Lin, Vice President:

"My strategic plan for Rho Chi is to foster the intellectual and professional excellence of our esteemed members at St John's University – the very students who will become the future leaders in the world of pharmacy. As Vice-President, I aim to diversify the opportunities for development by including informative programs that increase awareness of current issues facing pharmacists, meetings that elucidate cutting-edge innovations in the field, and workshops that help cultivate new skills. I hope that in upholding the spirit and fundamental objectives of the na-

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tional organization, our Rho Chi Society chapter will stimulate talented members to advance and expand the horizons of the pharmacy profession."

Julia Kamuda, Treasurer:
"I would like to congratulate all Rho Chi inductees on this prestigious accomplishment. My goals as an executive board member are to reach out to all pharmacy students and to encourage academic excellence, pharmacy leadership, and service to others. Our executive board is working to facilitate programs and events to give students in their earlier years of pharmacy an idea of what to expect for the rest of their time at St. John's University and in the profession. In this respect, I hope to encourage them to work hard, get involved, and aspire to become a member of this great Society."

Jessica Langton, Secretary:
"I'm very excited to be a part of the executive board. Along with the rest of the executive board, I expect to play an active role in promoting service and learning within the pharmacy profession, through participation in events. My role as Secretary will allow me to improve and expand communication among students, faculty, and the community."

Davidta Brown, Historian:
"The privilege of being inducted into Rho Chi and selected to serve on the 2015 Executive Board is not lost on me. I look forward to working with my accomplished and very deserving fellow executive board members to provide a variety of career and professional development opportunities through Rho Chi. Every student who has been inducted into Rho Chi has shown great dedication, perseverance, and potential. I plan to use my position to help to build on these great qualities as we all prepare to take our places as great healthcare providers of the future."

Zachary Piracha, Media Relations Coordinator:
"As the Media Relations Coordinator, I look forward to carrying on the visions and goals of our chapter, and to be able to represent what it means to be in Rho Chi. We are a group of dedicated members and classmates that can drive our chapter forward. The current executive board helped win our chapter two national awards. I am really looking forward to advancing our chapter even further by collaborating with them and our new class of inductees.

Went to an event on your campus?

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RHO PX CHI post

Presents:

Writing Series Workshops

Award-winning editors of the **Rho Chi Post** share their tools of the trade in this series of three workshops to help you become a more knowledgeable and professional writer!

Learn How To:

- Research quickly and efficiently
- Write essays and research articles
- Edit your medical writing

Upcoming Events:

How to Research: March 31, 5-7pm, MAR 324
How to Write: April 13, 2-3pm, SUL 306
How to Edit: April 27, 5-7pm, DAC 409

Refreshments will be served!
Please RSVP via our Facebook page

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Interested in joining the Rho Chi Post?

Submit an article and letter of intent

To rhochipost@gmail.com

View the application: http://rhochistj.org/RhoChiPost/application/

Below are some FAQ; please email us for any other concerns!

Who can join the Rho Chi post? Do I have to be a member of Rho Chi?

You do not have to be a member of the Rho Chi Honor Society to contribute to the newsletter. You can be in any year of your Pharmacy education to join the Rho Chi Post. In fact, any member of the College of Pharmacy and Health Sciences can join our team!

What positions can I apply for to become a permanent member of the team?

1. Staff Writer: Commitment per issue: 2 contributions- either pieces that you write or pieces that you get from your friends

2. Staff Designer

-Web based: Commitment per issue: Redesign and upkeep of the website

-Graphic based: Commitment per issue: Any graphic designing that goes into creating the issue.

3. Section Editor: Commitment per issue: 1 contribution, 2 articles edited

-Note: for this position you need to show past editing experience.

What can I write about?

Feel free to write about any topic that interests you! Please just email us with your topic so there are no duplicates. For suggestions check out our list: http://rhochistj.org/RhoChiPost/article-signup/

*Log in username is required

How long will it take to review my application?

After we accept your article for publication, we will respond to you via email within 7 days.

Besides the article requirement, how time consuming is being a member?

We only meet a few times each semester! Most of our communications are done online. Besides the meetings just meet your monthly requirements!

Are there any dues?

No dues are required to become a member!

If you don't want to commit to a permanent position, we welcome any submission at any time. There is no minimum or maximum to how many articles a person can submit!

CLINICAL

Case Report: Correlation between the Use of Weight Loss Products and Seizures

By: Luxi Wang, PharmD Candidate c/o 2015, Lev Gurevich, PharmD Candidate c/o 2015, and Gladys El-Chaar, PharmD, Clinical Professor, Department of Clinical Pharmacy Practice, St. John's University College of Pharmacy and Health Sciences

Case Presentation

A 17-year-old female presented to the ED after experiencing a tonic-clonic seizure with loss of consciousness lasting 5 minutes while she was at the mall with her friends. The patient had a history of one previous episode of tonic-clonic seizure 5 months prior to admission. The patient is currently enrolled in 10th grade and receives passing grades. She lives at home with her mother, while her father lives in China. The patient denied use of tobacco and illicit drugs and admitted to drinking alcohol occasionally at parties. There is no family history of seizures.

In the ED, the patient was recorded as weighing 56.8 kg with a height of 160cm. Her weight and height fell in the 50th percentile for her age. There were no significant physical exam findings and her vital signs were within normal limits. Laboratory values were within normal limits except for a mild decrease in magnesium upon admission, and a mild increase in sodium 2 days following date of admission (see Appendix A). The patient had a blood pressure of 106/73, respiratory rate of 16, temperature of 98.2°F, and pulse of 73, and her oximetry was at 99%. Her urine toxicology results were negative. She reported occasionally taking acetaminophen (Tylenol®) for headaches as per package instructions and "diet pills". She was admitted to the hospital's pediatric unit and was placed on levetiracetam 250mg po BID to control her seizures. The dose was then increased to 500mg po BID after 2 days to reach the recommended dosage; however, the patient did not experience any additional seizure episodes throughout admission. The pediatric medical team asked us, the pharmacy team, for assistance in understanding the content and potential adverse effects of the weight loss products the patient was taking. An extensive interview with the patient in Mandarin Chinese revealed that she had experienced her first seizure 5 months ago, a month after she began consuming products marketed for weight loss. She revealed that she had been taking two different products: a "Yanhee" product from Thailand, and the weight loss product Apidexin®. The patient claimed to take 8 doses per day of the "Yanhee" product, as per package instructions, and she took Apidexin® intermittently, usually upon running out of the "Yanhee" product. The patient reported never stopping her regimen for more than a few days.

The patient has been struggling with her body image for a long time and perceived herself as "chubby", which propelled her to take these medications and go on a strict diet, avoiding carbohydrates and meat altogether. She would typically eat one small meal per day, consisting of plain salads, fruits, tofu and eggs in small amounts, and drank only water. In addition she would run on the treadmill for at least an hour a day for exercise. As a result, she had lost 20 kg over a period of 6 months, an average of 0.83 kg per week. Her most recent height and weight were appropriate for her age. To us, she admitted feeling depressed, agitated, and tired since beginning to take the aforementioned weight loss products. She mentioned that, in the past five months, she had been alerted to a low thyroid stimulating hormone level by her primary care physician. She also reported experiencing blurry vision, particularly when reading. The patient developed suicidal ideation, without any attempts or plans. Approximately one week prior to day of admission, patient experienced significant worsening of depression and agitation. The patient's mother was aware of her use of these weight loss products and had also noticed the behavioral changes. Following further discussion with the patient and her mother, it became apparent that she has a great deal of psychological dependence on the weight loss products. The patient believed that the episode of seizure was an "isolated incident" since none of her friends experienced it even though they were also taking the "Yanhee" product. She also asked about the drug interaction between the weight loss product and levetiracetam, indicating that she was planning on continuing with these weight loss products. We informed the pediatric medical team of our findings, which significantly influenced the discharge plan. Subsequently, during her hospitalization, the patient developed an increased

amount of anxiety and agitation, possibly due to the withdrawal effect of certain ingredients of the weight loss products, particularly the amphetamine-like components. One dose of lorazepam 0.5mg IV was effective in reducing her anxiety. Upon discharge the patient was referred to a 24-hour inpatient eating disorder unit at a different medical facility.

Follow Up

Patient was brought to the ED a few hours following discharge for experiencing auras of seizure. Patient did not develop a seizure and was discharged on the same day. The exact events leading up to the ED visit were unknown. However, there are strong suspicions that the patient had reinitiated her weight loss products.

Discussion

A literature search was conducted for the contents of each product as well as evidence for toxicity and efficacy of each component. We also consulted with the NS-LIJ-St John's University drug information center for further assistance.

The ingredients in the weight loss product Apidexin® are numerous, yet there is limited data on their efficacy and safety. Some of these ingredients are chromium picolinate, coleus forskohlii, irvinginia gabonensis, raspberry ketone, flucoxanthin, guggul extract, Lipolide-SC®, Thermo-Diamine®, and cyanocobalamin.

Chromium picolinate was studied in a pilot study of 80 otherwise healthy, overweight adults over 24 weeks to assess its efficacy on weight loss. Chromium picolinate was not effective for weight loss. The only reported adverse effect was a rash. There was no incidence of seizures.[1]

A study was performed to investigate the effects of coleus forskohlii on body composition and hematological profiles in 23 mildly overweight women. In terms of efficacy, there was no weight loss observed. It was found that coleus forskohlii may mitigate weight gain without other clinical adverse effects. However the duration of the study was only 12 weeks, and our patient had been taking her weight loss products for at least 24 weeks. In addition, although there were no clinical adverse effects, increases in calcium, white blood cell count, absolute lymphocyte and absolute neutrophil counts were observed, as well as decreases in ALT and uric acid levels. There is no data indicating how these laboratory values may be affected by prolonged use.[2]

Irvinginia gabonensis was reviewed in a study involving 102 healthy, overweight volunteers. Efficacy was established based on significant improvements in body weight, body fat, and waste circumference. During the 10-week study, there was no reported incidence of seizure. Incidence of other adverse events, such as headache, sleep difficulty, and intestinal flatulence were also similar among the placebo and treatment groups.[3]

Raspberry ketones have a similar structure to synephrine, a sympathomimetic with longer acting effects compared to norepinephrine. A study was performed on rats to gauge the weight loss action of raspberry ketones. The result was an increase in norepinephrine-induced lipolysis and a benefit in weight loss. Unfortunately there are no further studies demonstrating the safety profile of this substance, and no data on its relation to seizures.[4]

Flucoxanthin is a substance derived from brown seaweed, which contains iodine. This ingredient is often listed as seaweed extract. A daily dose of iodine in patients without iodine deficiency may lead to misregulation of the thyroid gland, which was seen in this patient. Also, aqueous iodinated contrast agents have been reported to cause convulsions. [5] A study on human subjects included 151 obese women and fluoxanthin was found to promote weight loss, reduce body fat, reduce liver fat content, and improve liver function tests.[6] A trial attempting to ascertain the toxicity of oral dose flucoxanthin in mice found that it may actually increase total cholesterol. No seizures or other adverse events were reported.[7]

A randomized controlled trial testing the efficacy of guggulipid for the treatment of hypercholesterolemia that involved 103 adults found that there was no change in total cholesterol, triglycerides, or HDL after 8 weeks of treatment. In addition, treatment with guggulipid showed no significant effects on body weight. Although there were no reported cases of seizures, there were reported incidences of rash, and the guggulipid was found to raise LDL levels. [8] A literature review of gum guggul and its constituents mentioned adverse effects of rashes, irregular menstruation, diarrhea, headache and mild nausea. In high doses, liver toxicity was observed.[9]

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Lipolide-SC®, otherwise known as clary sage, has been known to have anti-depressant activity. This was further investigated in a trial performed on rats, and the mechanism of this activity was explained by modulation of dopaminergic pathways. Safety data was not included in the study, and there have yet to be studies performed on humans.[10]

Thermo-Diamine®, scientifically known as evodiamine, was tested on rats for weight loss. As the name suggests, Thermo-Diamine® was demonstrated to simultaneously induce heat loss and production to dissipate energy from food. This would prevent accumulation of fat and excessive weight gain.[11] Efficacy in humans has not been tested, and a study showed evodiamine to have significant negative chronotropic effects on the heart as well as hypotensive action. Seizures were not reported.[12]

Cyanocobalamin is an essential vitamin which aids in the normal bodily functions of metabolism and energy utilization. It is a water-soluble vitamin with limited blood brain barrier penetration and little accumulation. However, there are still notable adverse effects associated with toxicity including abnormal gait, anxiety, ataxia, dizziness, headache, hypoesthesia, nervousness, pain, and paresthesia. Toxicity is rare, although taking this supplement daily without an actual deficiency could potentiate the aforementioned adverse effects, especially with prolonged use.[13]

The other weight loss supplement, the "Yanhee" product, originates in Thailand. Although not available on the US market, it can be easily obtained from websites such as eBay. The manufacturing of "Yanhee" products is highly unregulated, and the ingredients vary among different brands and preparations. Discrepancies between labeled ingredients and the actual contents are common. Some of the popular ingredients among different "Yanhee" product preparations include phentermine, amphetamine, sibutramine, fenfluramine, diuretics, and caffeine. Unfortunately, the amount of each ingredient in "Yanhee" product is unspecified. Some of these ingredients are either banned or labeled as controlled substances in the United States due to toxicity and dependence liability.

One of the labeled ingredients of "Yanhee" product is phentermine, which has been approved by the FDA for the treatment of obesity. The two prescription drugs containing phentermine that are currently available on the US market are Apidex-P® and Qsymia®, which is a combination of phentermine and topiramate that was approved by the FDA in 2012. Phentermine is a sympathomimetic anorectic that stimulates the release of norepinephrine into the hypothalamus. As a result, blood leptin concentration increases, causing suppression of appetite. [14]Although shown to be efficacious for weight loss, phentermine also carries certain risks. Phentermine is contraindicated in patients with hyperthyroidism and agitated states, both of which the patient reported to have experienced. The package insert also warns against the use of phentermine in patients with history of seizure disorders. In addition, phentermine is not indicated for chronic use due to the possible risks of tolerance and dependence.[15]

Fenfluramine, a racemic mixture of the two isomers levofenfluramine and dexfenfluramine, was approved by the FDA in 1973 for adjunctive treatment for obesity. It is a sympathomimetic that promotes the release of endogenous serotonin while inhibiting its reuptake. The 5-HT_{2C} serotonin receptor has been implicated in both satiety and seizure susceptibility.[16] The combination product of fenfluramine and phentermine, also known as Fen-Phen®, gained popularity in the 1980s and 1990s.[17] However, it was withdrawn from the market in 1997 due to serious cardiac adverse events.[18] In 2000, a series of five case reports was published in the journal Epilepsy & Behavior reporting the possible association between the uses of Fen-Phen® and seizures. In two of these cases, patients developed new onset of seizures without a prior history of seizures following treatment with Fen-Phen®. In the other three cases, patients with a history of idiopathic generalized epilepsy in remission experienced episodes of seizure following treatment with Fen-Phen®. One of the patients experienced recurrent seizure upon re-initiation of Fen-Phen®.[19]

Sibutramine is a combined norepinephrine and serotonin reuptake inhibitor that has been marketed for the treatment of obesity. Its sympathomimetic effect induces satiety and increases energy expenditure. However, all sibutramine preparations were recalled by the FDA in 2010 due to significant increases in the risk of nonfatal myocardial infarction and nonfatal stroke in patients with preexisting cardiovascular conditions. Case reports have also demonstrated dose-dependent correlation between

the use of sibutramine and the onset of recurrent seizures. The exact mechanism of this association is unclear, however sibutramine is believed to lower seizure thresholds similarly to tricyclic antidepressants. In addition, sibutramine may induce psychotic symptoms such as paranoia and manic episodes.[20] In September of 2013, the FDA issued a mandatory recall of over the counter weight loss products that had been tainted with sibutramine due to increased risk of seizures and other serious adverse health effects.[21]

Amphetamine, a C-II controlled substance that is present in ADHD medications such as Adderall®, was also detected in certain preparations of "Yanhee" products. Amphetamine, a sympathomimetic and central nervous system stimulant, promotes the release of norepinephrine and dopamine from presynaptic nerve terminals. It should be used with caution in patients with history of seizure disorder due to the seizure threshold lowering effect. New onset and breakthrough seizures have been reported following the first dose of amphetamine.[22] As a result, preparations containing amphetamine should be discontinued at the occurrence of seizure.[15] In addition, prolonged use of amphetamine can also lead to dependency and drug abuse. Clinical presentations of amphetamine withdrawal include anxiety and agitation that can last for weeks.[23] The patient in this case report presented with symptoms similar to that of amphetamine withdrawal during her course of hospital stay.

Caffeine is a commonly consumed substance that also possesses proconvulsant properties. Caffeine blocks the adenosine receptors and subsequently increases the turnover of many neurotransmitters, such as monoamines and acetylcholine. Studies have shown that caffeine lowers the seizure threshold and, when administered in high doses, produces seizure.[22] Incidents of recurrent seizure following ingestion of caffeinated beverages have been reported.[24]

A diuretic is another common ingredient in weight loss products. Although a diuretic is not shown to have any effect on body fat, it can cause temporary and rapid weight loss due to the elimination of water weight from the body. During this patient's 5 days of hospital stay, she gained 2.2 kg, which is an abnormal amount of weight gain for such short period of time, since the patient was not ingesting an adequate caloric intake to gain this weight. It can be attributed to a possible dehydrated status on admission, though there was no mention of dehydration on her physical exam on admission and her vital signs were stable. Although the direct association between the use of a diuretic and seizures is unclear, diuretic-induced hyponatremia and can precipitate seizure.[25] It is known that disorders of vitamin, electrolyte, and endocrine metabolites may disrupt neuronal excitability by influencing neurotransmitter function and the ionic microenvironment. Fluctuation in electrolytes and endocrine metabolites may precipitate seizures.[26] The association of electrolyte imbalance and seizure in this patient remains to be a speculation, since patient's blood electrolyte values were close to or within normal range upon admission.

The patient's complaint of blurred vision was not reported with any ingredients of the weight loss products above. Her report of depression was unexpected in the context of her consumption of fenfluramine and sibutramine, essentially SSRIs such as those typically indicated in the treatment of depression. However, the patient experienced the adverse effects of agitation (amphetamine-like substance) and suicidal ideation (SSRIs).

Conclusion

Barring a past medical history, the occurrence of seizures at least two times following the ingestion of this patient's weight loss products points to a great potential for these products to either induce seizures or lower this patient's threshold for seizures. On the Naranjo scale, this adverse event would be classified as "Definite" with a total score of 9 (see Appendix B). It seems that the "Yanhee" product was used more frequently by this patient. At least four ingredients in this preparation have been linked to seizures, including phetermine, fenfluramine, sibutramine, and amphetamines. The inclusion of caffeine and a diuretic may further produce dehydration and excessive sodium, magnesium, and calcium losses as well as an osmotic shift to precipitate seizure activity, though this was less likely in our patient given her normal laboratory values and vital signs on admission. Apidexin® use, though sporadic, has been associated with some adverse effects on the CNS; however we were unable to find seizures reported with this agent to date.

On admission, this patient's weight and height were in the 50th percentile for her age and gender

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and she was not emaciated. We repeatedly attempted to explain that her current diet and exercise regimens alone should be very sufficient to maintain her body weight. Unfortunately, this was a more complex issue, common among adolescent females preoccupied with their body image.

Through research, the pharmacy team was able to address critical associations between patient's use of weight loss products and her recurrent seizure episodes. In addition, we were able to identify other risks factors, such as dependence and abuse related to these weight loss products. This knowledge may have helped establish a more appropriate discharge facility for continuation of care. Although the use of over-the-counter weight loss products among adolescents is widespread, dietary and behavioral modifications are the only recommended interventions per AMA guideline on the management of childhood obesity.[27] An intense counseling program is necessary to help this patient control her weight while avoiding the use of non-FDA approved and potentially dangerous weight loss products.

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Appendix A

Lab (normal range)	Day of admission	2 days following admission
Hematology		
WBC (4.0-10.5 K/µL)	8.3	
RBC(4.1-5.3 M/µL)	4.7	
Hgb (12.0-15.0 g/dL)	12.5	
Hct (35-45%)	38.6	
Plt (150-450 k/µL)	300	
MCH (26-32 pg)	27	
MCHC (32-36 g/dL)	32	
MCV (78-95 fl)	83	
RDW (11.5-14.0 %)	14.1 H	
Hematology-Differential		
Lymphocyte (25-33%)	44 H	
Monocyte (0-10%)	4	
Eosinophil (0-7%)	2	
Neutrophil (33-57%)	50	
Hematology-Absolute Differential		
Absolute neutrophil (1.1-5.0 K/uL)	4.2	
Absolute lymphocyte (1.8-9.0 K/uL)	3.7	
Absolute monocyte (0.0-0.1 K/uL)	0.3	
Absolute eosinophil (0.0-0.7 K/uL)	0.2	

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Routine Urinalysis		
PH (5.0-8.0)	5	
Specific gravity (1.002-1.035 RI)	1.009	
Urine color (yellow)	Yellow	
Urine Protein (Negative)	Negative	
Urine Glucose (Negative)	Negative	
Urine Ketone (Negative)	Negative	
Urine Bilirubin (Negative)	Negative	
Urine Blood (Negative)	Negative	
Leukocyte Esterase (Negative)	Negative	
Urine Nitrite (Negative)	Negative	
Urine Clarity (Clear)	Clear	
Urine Microscopic		
WBCU/HPF (0-2)	<1	
RBCU/HRF (0-2)	<1	
BACT graded/HPF	Trace	
Chemistry		
Sodium (138-145 mEQ/L)	140	147 H
Potassium (3.7-5.2 mEQ/L)	cancelled by lab due to hemolysis	4.6
Chloride (103-112 mEQ/L)	105	109
CO2 (23-33mEQ/L)	19 L	28
BUN (8-21 mg/dL)	11	11
SCr (0.6-1.2 mg/dL)	0.7	0.5 L
Glucose (73-107 mg/dL)	89	96
Calcium (8.6-10.3 mg/dL)	9.4	8.9
Phosphate (2.7-4.7 mg/dL)	4.5	
Magnesium (1.7-2.2 mg/dL)	1.6 L	
Special Chemistry		
Total CK (42-284 IU/L)	291 H	
Cardiac Markers		
Troponin-I (<0.6 ng/mL)	<0.0	
Miscellaneous		
hCG	Negative	

Appendix B

Naranjo Adverse Drug Reaction Probability Scale [28]				
Question	Yes	No	Do Not Know	Score
Are there previous *conclusive* reports on this reaction?	+1	0	0	+1
Did the adverse event appear after the suspected drug was administered?	+2	-1	0	+2
Did the adverse reaction improve when the drug was discontinued or a *specific* antagonist was administered?	+1	0	0	+1
Did the adverse event reappear when the drug was re-administered?	+2	-1	0	+2
Are there alternative causes (other than the drug) that could on their own have caused the reaction?	-1	+2	0	+2
Did the reaction reappear when a placebo was given?	-1	+1	0	0
Was the drug detected in blood (or other fluids) in concentrations known to be toxic?	+1	0	0	0
Was the reaction more severe when the dose was increased or less severe when the dose was decreased?	+1	0	0	0
Did the patient have a similar reaction to the same or similar drugs in *any* previous exposure?	+1	0	0	+1
Was the adverse event confirmed by any objective evidence?	+1	0	0	0
			TOTAL SCORE:	9

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Remember, you do not have to be a member of the Rho Chi Society to write for the Rho Chi Post.

Got something interesting to say?

Want to publish your poster presentation? Want to review a new drug on the market?

Then write to us at **RhoChiPost@gmail.com**

Visit our website:

http://rhochistj.org/RhoChiPost/Topics/

A Message from the Rho Chi Society 2015 President-Elect

Greetings! My name is Michael Bosco and I am President-Elect for the 2015-2016 Rho Chi Society Beta Delta Chapter. I wanted to take a moment to address my fellow Rho Chi members and professionals, and share my goals to advance the Rho Chi Society's ideals of academic excellence and fellowship here at St. John's University.

As a freshman, I remember listening to a speech given by Dr. Robert A. Mangione, our Dean at the time. The topic of the Rho Chi Society came up, and Dr. Mangione talked about the significance of becoming a member. I thought to myself, "That's crazy; there's no way I'm going to be a part of this." Little did I know that four years later, I would not only be a member, but that I would be President of the Beta Delta Chapter. Life is funny like that – it has a way of surprising you. I would like to take a second to congratulate all those that were inducted alongside me, and all those that have been inducted in the past.

The current and new executive board members are feverishly working on innovative ideas for our chapter – we hope to bring something unseen here to St. John's University. We also plan on continuing traditional events, such as our Coffeehouse Chats and Mock Interviews. These events represent unique opportunities for students to interact with faculty and gain important skills.

Alongside the events that we host, the Rho Chi Post continues to be a unique opportunity that allows all students to get involved. A group of hard working Rho Chi students created the Rho Chi Post in October 2011. To date, the newsletter has published over 39 issues and has expanded far beyond the walls of St. John's University. The Rho Chi Post has promoted the vision of the Rho Chi Society and in doing so, has received national recognition by winning the Rho Chi Society Project Proposal Award. I look forward to continuing the expansion of the Rho Chi Post so that all students have the opportunity to be published.

The current executive board has done an amazing job advancing the Beta Delta Chapter here at St. John's University. Their excellence has gained the Beta Delta Chapter national recognition – a testament to their dedication to the ideals of the Rho Chi Society as a whole. They will be accepting the Chapter Achievement Award during the Annual Rho Chi Society Meeting in San Diego, CA. The new executive board members and I hope to follow in their footsteps and continue their tradition of success.

John Quincy Adams, the sixth president of the United States and an advocate for the advancement of the sciences, once said, "If your actions inspire others to dream more, learn more, do more, and become more, you are a leader." As members of the Rho Chi Society and professionals in healthcare, we are all leaders in our own right. It is up to us to apply the knowledge and skills we've gained, inside and out of the classroom, to educate and inspire others.

I would like to wish you all a great year and continued success!

Sincerely,

Michael Bosco

President-Elect of Rho Chi Society Beta Delta Chapter

Matching Column: Look-Alike Sound-Alikes

By: Sang Hyo Kim
Section Editor

Many drugs

LOOK – ALIKE

OR

SOUND– ALIKE

causing them to be easily mixed up in practice.

Can **YOU** match these facts with the correct medication?

Answers

1. A serotonin 5-HT1 receptor agonist.
2. Patients should not take this antidepressant medicine if they have taken an MAO inhibitor in the past 14 days, which include isocarboxazid, linezolid, phenelzine, rasagiline, selegiline, and tranylcypromine.
3. Antipsychotic medication that is available in 1mg/ml oral solution.
4. This medication is used to treat seizure or panic disorders.
5. Allows blood vessels to relax and heart to beat more slowly and easily.
6. This extended-release tablets are used to treat symptoms of schizophrenia.
7. Atypical antipsychotic that belongs to the thienobenzodiazepine class.
8. Patient should not take more than 3 doses (36mg) in a 24 hr period; too much of this medication can cause liver damage.
9. Controls the symptoms of Parkinson's disease and restless legs syndrome.
10. This medication used for treating migraine headaches with or without aura; it is not approved for use in children younger than 18 years old unless instructed by doctor.

A. Clonazepam
B. Clonidine
C. Quetiapine
D. Olanzapine
E. Risperdal
F. Ropinirole
G. Tizanidine
H. Trazadone
I. Sumatriptan
J. Zolmitriptan

Lexi-Comp OnlineTM , Lexi-Drugs OnlineTM , Hudson, Ohio: Lexi-Comp, Inc.; January 1st, 2014

PUZZLES

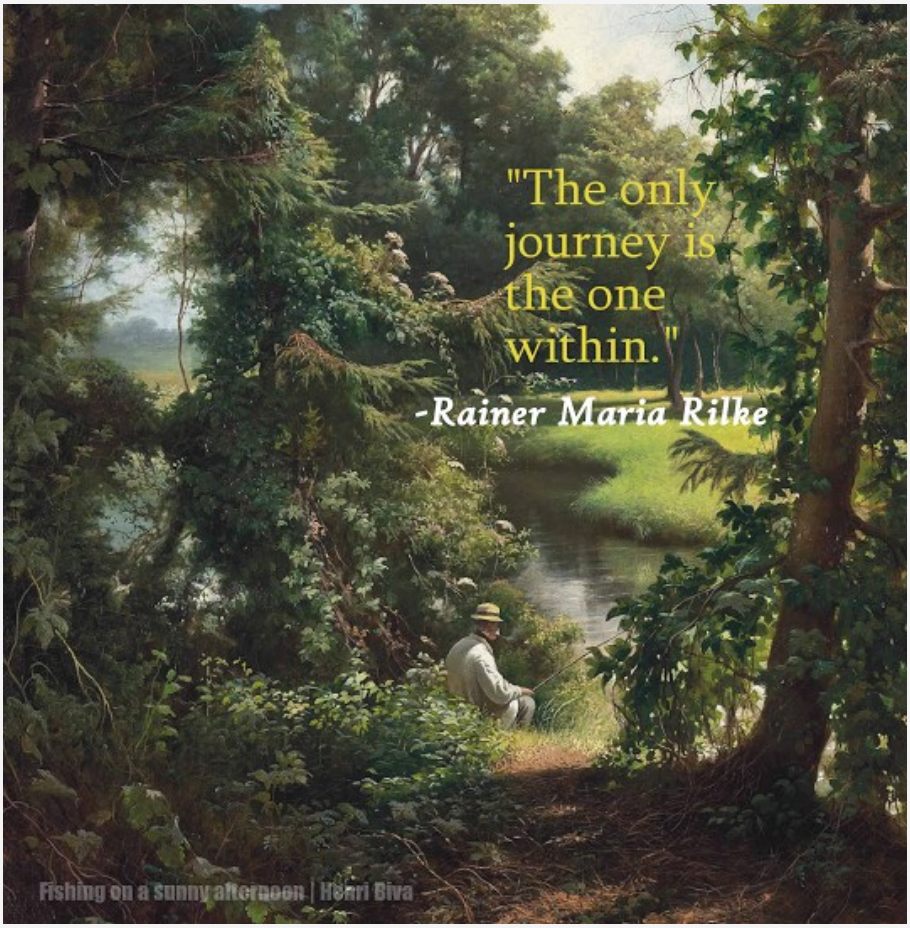
How Did You Do???

Answers to Crossword & Look Alike and Sound Alike

A. 4 B. 5 C. 6 D. 7 E. 3 F. 9 G. 8 H. 2 I. 10 J. 1

Quote of Month

By: Sylva Ohanian, Staff Editor [Graphics Focused]



PUZZLES

Did you enjoy our puzzle?

Send us a suggestion for a brainteaser at

RhoChiPost@gmail.com

We will feature your work in our next issue!

RHO CHI POST: TEAM MEMBERS

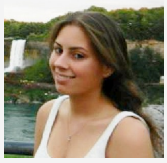
EDITORS

@ Tasnima Nabi ***(5th Year, STJ; Editor-in-Chief)***
Writing has always been my greatest outlet for experience and knowledge, through which I hope to keep you engaged and informed. It is imperative to keep up with our changing profession and community, and I look forward to bringing pertinent information to the newsletter.

@ Katharine Cimmino ***(6th Year, STJ; Copy Editor [Content-Focused])***
I have always been an avid reader and writer. As a member of the Rho Chi Post I am able to merge my passions with the professionalism that comes with aspiring to be a healthcare provider. I am eager to be a part of a publication that promotes my interests and vocation.

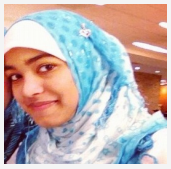
@ Bharat Kirthivasan ***(PhD, Copy Editor [Content-Focused])***
I am a doctoral candidate in Industrial Pharmacy researching nanoparticles for delivery to the brain. The only thing I enjoy more than reading a well-written piece of work is writing it. I am glad to work for the Rho Chi Post, and I encourage others to do the same.

@ Hayeon Na ***(6th Year, STJ; Copy Editor [Content-Focused])***
Hello! My name is Hayeon Na. I am a 2015 PharmD Candidate and one of the Copy Editors for the Rho Chi Post. I hope the information I present will be helpful, or at least interesting. If you have any comments regarding my contribution, feel free to contact me at any time!



@ Erica Dimitropoulos ***(6th Year, STJ; Copy Editor [Content-Focused])***
As busy student pharmacists, we often fail to keep current with healthcare developments. My aim is to sort through the news and provide quick updates that are important to our profession. Feel free to contact me if there are any topics you would like to see covered in the next issue!

@ Davidta Brown ***(4th Year, STJ; Copy Editor [Content-Focused])***
My two great loves are innovative science and quality writing, and the Rho Chi Post is an insightful combination of both. As an editor, I look forward to bringing relevant information and fresh perspectives to the student and faculty of St. John's University, as well as to making the Rho Chi Post a newsletter that offers something new to every reader.



@ Fatema Elias ***(5th Year, STJ; Copy Editor [Content-Focused])***
I am honored to be a part of the Rho Chi Post team. In this age of technology and the continuously changing healthcare profession, I hope to engage like-minded students and professionals. Writing is something that I hold dear to my heart and I hope with this newsletter we can all stay well informed, interested, and educated.

@ Melissa Roy ***(6th Year, STJ; Copy Editor [Graphics-Focused])***
We as future healthcare professionals owe it to our patients and ourselves to be aware and current on the events affecting our profession. The Rho Chi Post is our way to learn new things and stay in touch with the pharmacy world, on- and off-campus. Feel free to reach out to me with suggestions and comments.

@ You!
We are always looking for creative and motivated students to join our team!
If you are interested in becoming an editor for the Rho Chi Post, please visit:
http://rhochistj.org/RhoChiPost/EditorApplication

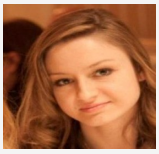
RHO CHI POST: TEAM MEMBERS

@ Tamara Yunusova ***(4th Year, STJ; Section Editor: Clinical)***
My name is Tamara Yunusova, and I am a 3rd year Pharm D candidate at St. John's University. I enjoy articulating information in a captivating and insightful way. I hope to make this publication more informative, student-friendly, and innovative.

@ Beatrisa Popovitz ***(6th Year, STJ; Section Editor: Clinical)***
I am eager to relay current information on interesting topics making waves in the world of healthcare pertinent to the advancement of our profession. As student pharmacists, we are molding the future of our profession, and the Rho Chi Post facilitates the cultivation of a relationship (between students, faculty, and other members of the healthcare community) to share ideas and spread awareness of various issues.

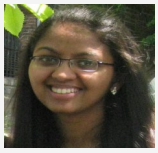
@ Sang Hyo Kim ***(3rd Year, STJ; Section Editor: Puzzles)***
Advancements of technology and developments of new medicines, prolonging the lifespan and improving the quality of life, have increased the geriatric population. In years to come, pharmaceutical industries and healthcare systems will persistently work to find solutions to changing demands and new problems of the society. Through the Rho Chi Post, I wish to learn, educate, and prepare myself and others for the future.

@ Azia Tariq ***(4th Year, STJ; Section Editor: News)***
The Rho Chi Post is a prominent and highly esteemed resource for pharmacy students and professionals. I am privileged to be a part of the team and hope to contribute informative and engaging pieces to the newsletter.

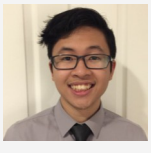


@ Ada Seldin ***(6th Year, STJ; Staff Editor [Content-Focused])***
I am thrilled to have become a new member of the Rho Chi Post team. I hope to further strengthen the goals of this newsletter and make a lasting contribution. It is important, as future pharmacists, to collaborate with our peers, as well as accomplished professionals in the field. Rho Chi Post provides a vehicle to voice our opinions and share relevant news.

@ Nicollette Pacheco ***(4th Year, STJ; Staff Editor [Graphics-Focused])***
As a new member of the Rho Chi Post team, I have a vast appreciation of what it means to be a future pharmacist in the rapidly evolving world of healthcare. I am looking forward to being on the team as a graphics-focused staff editor, and I hope to bring my passion for science and creativity to the Rho Chi Post.



@ Sherine Jaison ***(6th Year, STJ; Staff Writer)***
I find the Rho Chi Post extremely informative and am eager to join the team. I hope my articles will enlighten you about the recent developments in the field of pharmacy and will help you to be a well-informed healthcare provider.



@ Andrew Leong ***(5th Year, STJ; Staff Writer)***
Students have to do more than what is required of us in classes to truly learn about our profession. That's why I joined the Rho Chi Post. This publication represents a channel by which our team members, faculty, and readership can share information - something I believe is important in this ever-changing pharmacy world.

@ Svetlana Akbasheva ***(5th Year, STJ; Staff Writer)***
I am very excited and honored to be part of the Rho Chi Post! In a profession that is constantly evolving with new developments, it is so important to remain informed and current. The Rho Chi Post helps do just that, and I look forward to contributing to this unique publication.

RHO CHI

The Rho Chi Society encourages and recognizes excellence in intellectual achievement and advocates critical inquiry in all aspects of Pharmacy.

The Society further encourages high standards of conduct and character and fosters fellowship among its members.

The Society seeks universal recognition of its members as lifelong intellectual leaders in Pharmacy, and as a community of scholars, to instill the desire to pursue intellectual excellence and critical inquiry to advance the profession.

THE RHO CHI POST

MISSION

The Rho Chi Post is an award-winning, monthly, electronic, student-operated, faculty-approved publication that aims to promote the pharmacy profession through creativity and effective communication. Our publication is a profound platform for integrating ideas, opinions, and innovations from students, faculty, and administrators.

VISION

The Rho Chi Post aims to become the most exciting and creative student-operated newsletter within St. John's University College of Pharmacy and Health Sciences. Our newsletter continues to be known for its relatable and useful content. Our editorial team continues to be known for its excellence and professionalism. The Rho Chi Post essentially sets the stage for the future of student-operated publications in pharmacy.

VALUES

Opportunity, Teamwork, Respect, Excellence

GOALS

1. To provide the highest quality student-operated newsletter with accurate information
2. To maintain a healthy, respectful, challenging, and rewarding environment for student editors
3. To cultivate sound relationships with other organizations and individuals who are like-minded and involved in like pursuits
4. To have a strong, positive impact on fellow students, faculty, and administrators
5. To contribute ideas and innovations to the Pharmacy profession

CURRENT EXECUTIVE BOARD

Anthony, Tyler, Sara, Tasnima, Joshua, Fawad at the 2014 Induction Ceremony

President: **Tyler Valente**
Vice President: **Fawad Piracha**
Secretary: **Tasnima Nabi**
Treasurer: **Anthony Nania**
Historian: **Sara James**
Media Relations Coordinator **Joshua Bliss**
Faculty Advisor: **S. William Zito, PhD**

UPCOMING EVENTS

Mar 27-30: APhA Annual Meeting
San Diego, CA

Apr 7-10: AMCP 27th Annual Meeting
San Diego, CA

Apr 14: IPhO Student Meeting
MCPHS