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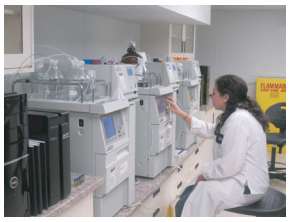

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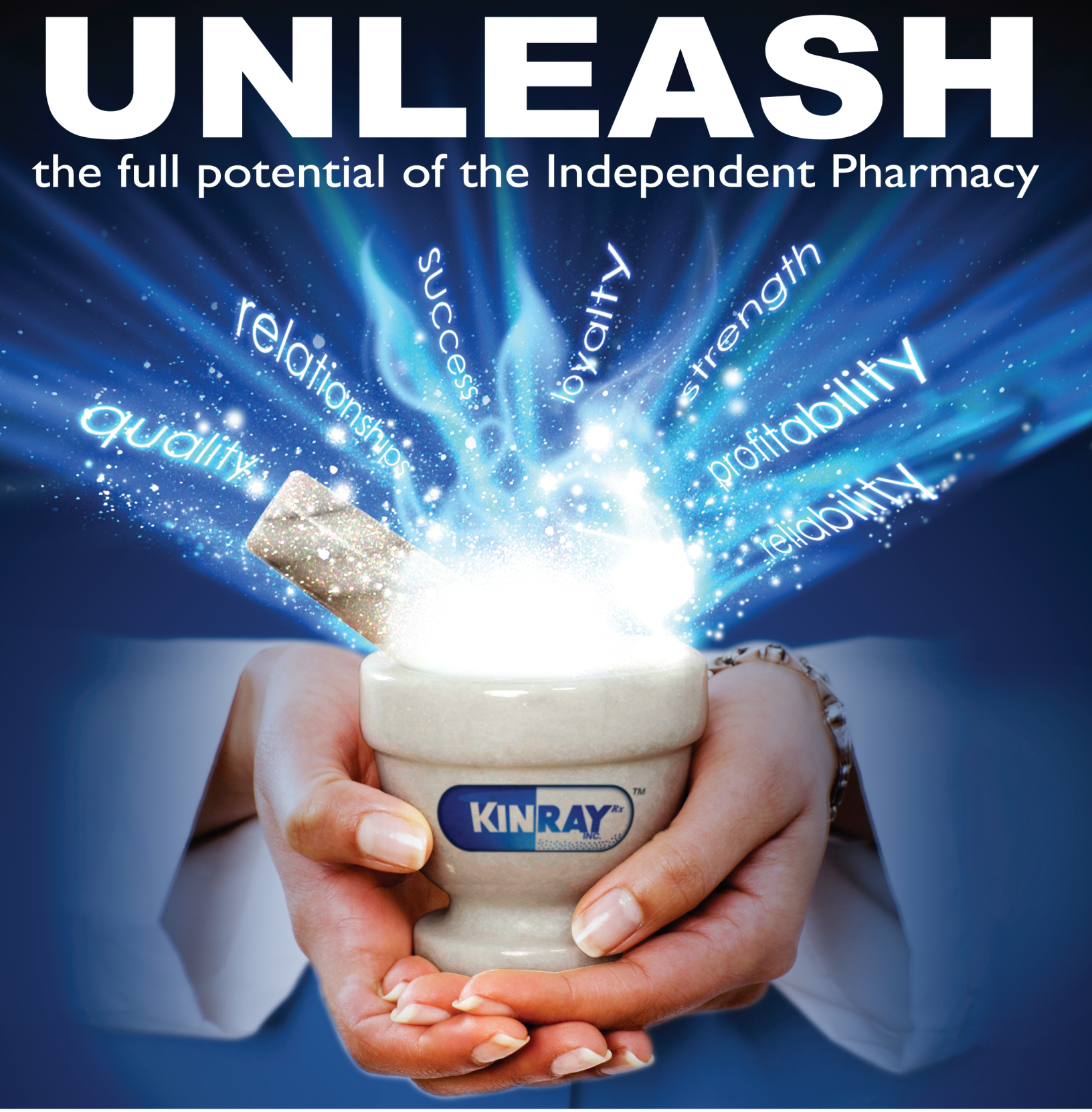

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Message from the President

It seems like only yesterday that I wrote my 1st message for the BAPA Convention! And yet, this is 1 year after that we are meeting again to celebrate the most awaited 20th Annual Convention for the event that we all look forward to! Though it seems that a blink of moment ago, we enjoyed the last grand event, 19th Convention, 2010, enormous things, a sum total of Joys, Sorrows, Triumphs happened around us, we left behind our fellow Pharmacists and loved ones. Let us pray for each other.

This year, we have gone through the challenging process of creating an agenda with much greater confidence and have hopefully, been able to put together something that would be meaningful to all of you. The structure of course remains essentially similar so that we can cater to the varied interests we have ..... Be it retail, manufacturing, regulatory affairs, R&D or academia.

We will therefore be running parallel events so that we all can have some solid takeaway from the meetings. There will be a host of distinguished speakers and combined with the question & answer sessions & open forums, we trust that you will have a satisfying learning & information exchange experience.

This year, we also have a host of visitors from Bangladesh, both from the industry & academia. I would like to thank all of them & I hope that through them, you will be able to catch up on the developments in Bangladesh. Also, I am sure that they will deeply value your advice and insights for the advancement of pharmacy education in Bangladesh.

Last, but not the least, a host of social events has been organized so that our families can enjoy the convention too. The unique flavor & color of the event is created by the vibrant presence of our families & friends and I hope you will all enjoy each other's company.

Finally, I take this opportunity to thank the executive committee members and office bearer for the hard work they have put in for the convention. I would be failing in my duty if I don't thank all the sponsors and patrons of this year's event. Without their generous support, this program would not have been possible.

On a personal note, may I take this opportunity to thank all of you for supporting me during my Presidency? It was a great honor & privilege to serve you & I am truly humbled by your support. I am also deeply indebted to my wonderful Executive Committee and General members who have made it possible for me to run this unique organization.

Thank you all from the bottom of my heart & do please enjoy the Convention!

Mahmud Hossain, MS, RPh

Message from the Vice President

Dear BAPA Members and Participants,

It is my pleasure to welcome you for the annual BAPA Convention. I hope you are energized after passing a long exhausting winter to finally enjoy beautiful summer days and evenings with us with your family and friends. This is the event we always look forward to every year and our children really love it. BAPA executive committee is well aware of everybody's needs and diligently working to meet their expectations. As I mentioned in my last year's message that we are desperately looking for the younger generation who have already become pharmacists or are enrolled into the pharmacy schools to get involved with this wonderful organization. This will help them to grow professionally and encourage them to lead various national pharmacists' organizations. You will be very pleased to hear that this year BAPA executive committee took an initiative to invite young pharmacists/pharmacy students to actively participate in our annual convention. I hope this trend will continue to avoid a possible generation gap.

As we are going to celebrate this year's convention I just want to remind ourselves with very saddened heart that within the past year we lost couple of our fellow pharmacists and many loved ones. While these losses cannot be recovered, I simply want to request you to please pray for the departed souls and also pray for their loved ones whom they left behind.

I would like to thank all our members, guests and sponsors for their support and participation for bringing this year's convention a success. I hope you will enjoy this wonderful event. May the Almighty keep you and your family safe and happy! I would also like to congratulate our editor for the publication of BAPA Annual Journal.

Finally, I would like to extend my sincere thanks to all the executive committee members for their tireless work and diligence to successfully organizing this year's convention.

Mohammed Daud Bhuiyan, MS, R.Ph

Vice President

Message from the General Secretary

Dear BAPA Members,

On behalf of the BAPA Executive Committee, we want to thank you for your continued support for the Bangladeshi American Pharmacists Association. As always, without your contribution, we would not be the vital professional organization we are today. Before I was elected as the General Secretary, I pledged to increase membership and enhance our relationship with the Pharmacists Society of State of New York (PSSNY) and its affiliates in order to keep our members updated on all the current issues we face.

With regard to increasing membership, we are off to a good start. At the past annual general meeting in December, with the approval of our executive committee and members, BAPA pledged to create a scholarship for a Bangladeshi-American pharmacy student at St John's University and at Long Island University. Our belief it that this will help make our presence known to each of the colleges, to the students in our community and to cultivate potential members.

Over the past six months, we have been representing BAPA at the monthly New York City Pharmacists Society (NYCPS) board meetings. NYCPS is an important affiliate of PSSNY, mainly composed of politically active business owners. There is some good news, despite the challenges we face in our profession.

- The Anti-Mandatory Mail Order (AMMO) bill just passed and is expected to be signed into law by the governor. Many of the patients lost to mail order pharmacy will be allowed to come back to the community pharmacist. The law requires that the local pharmacy be reimbursed at a comparable price as the mail order pharmacy. Health plans will continue to be able to set co-payment amounts for their patients.

- On another note, Collaborative Drug Therapy Management (CDTM) also passed this year. This law will allow registered pharmacist to work more closely with physicians to review, evaluate, modify and implement drug therapy but will apply now to pharmacists in teaching hospitals.

As a final reminder, do not forget to register with NABP for the new NABP e-Profile. In the future, your CE will be tracked by NABP. Pharmacists and technicians can obtain their ID by creating an NABP e-Profile at www.MyCPEmonitor.net<http://www.MyCPEmonitor.net><http://www.mycpemonitor.net/>.

I hope this information has been informative. If you have any questions, feel free to email me at taher0210@gmail.com<mailto:taher0210@gmail.com><mailto:taher0210@gmail.com<mailto:taher0210@gmail.com>>.

I wish each of you an enjoyable and productive time at the convention

Message from the Treasurer

Once Again, the time has come for us to gather our good spirited members together for the BAPA Convention of 2011. Hosting the much awaited event at DOLCE Hotels and Resorts, Basking Ridge, New Jersey will provide the members of the Revered BAPA community to get away from the rigors of their daily professional responsibilities and relax in an atmosphere of friendship and entertainment.

We are fortunate and delighted to have the whole-hearted support of the members who relentlessly come forward to participate at this special event. Without them, no Organization can succeed or be as vibrant as it is today.

To the valuable sponsors and Patrons that come to our assistance without fail, we are grateful. It is with their support that BAPA continues to be the responsible and active Organization that it is today.

I wish you all a most enjoyable and Safe Convention. Let us all look forward to BAPA's unity and the strength that it provides to our community.

MD MOHIUDDIN

Treasurer,BAPA

From the Editor's Desk

Dear BAPA Members:

I am very excited that we are all getting together for the 20th Annual Convention. It is my delight to see you every year and a few new faces as well. As an organization we would like to grow a lot faster and hence new faces are always welcome.

In the past year since we met, lot has happened. We have lost a few dear and near ones among us thereby creating an irreplaceable void. I do miss them.

This year we have quite a number of interesting articles that you will enjoy. Besides that we have a host of continuing education and industrial seminars. We are fortunate to have a few important guests from Bangladesh visiting us that cover the gamut of industry through academia.

I am very thankful to the current committee and past presidents for giving us guidance. I thank all the patrons of BAA magazine to help us financially in making this huge event a success. I particularly thank our President for being focused and persistent in keeping the communication going with the members so that we stay connected.

Thanks and enjoythe Convention.

Devabrata Mondal, MS, R.Ph.

From NYCPS President

As president of the New York City Pharmacists Society, I bring greetings and best wishes from our board and officers to the Bangladesh American Pharmacists Association. Our profession is privileged to have such great diversity, that New York is home to no fewer than five pharmacists' societies of various ethnicities. It is truly wonderful that each one of those groups are able to celebrate their heritage, as well as their common profession.

As I am sure that you are aware, NYCPS, along with PSSNY, was recently successful in passing its anti mandatory mail order (AMMO) legislation, that would allow many of our customers to fill their prescriptions in pharmacies of their choice, rather than being forced by the PBMs into mail order. After passing both the assembly and senate by wide margins, we are currently waiting for Governor Cuomo to sign it into law. Hopefully, that will happen soon. The passing of this bill was the result of long, hard work on the part of dedicated pharmacy leaders and pharmacists from the entire state. It was a well orchestrated, coordinated effort that showed every that by working together, we can accomplish much.

The message that I am attempting to get across is that while we enjoy the closeness of our unique ethnic organizations, it is important that we all actively participate in, and support the efforts of, our state society (PSSNY) and its regional affiliates. Together, we can get done those things that might be impossible to accomplish separately. I ask you all to become members of PSSNY and to encourage others to do the same. I invite all New York City pharmacy owners to attend the NYCPS continuing education event, to keep up with the current events happening in our progression and business.

I hope to see you all soon.

Ray Macioci

NYCPS President

Article

Article

The Effects of Food on Drug Absorption from Gastrointestinal Tract

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INTRODUCTION

The food and drug interaction may affect absorption, distribution, metabolism, or excretion of certain drugs. Sometimes the interaction results in therapeutic failure or toxicity. It is, however, not always easy to predict exactly what foods will interact with drugs unless extensive studies are done with each drug. Presence of foods in gastrointestinal tract can affect the usual physiological processes in several ways, for example, extending the gastrointestinal transit time and changing the pH and secretions (Singh and Malhothra, 2004). In addition, food particles may form complex with drugs, which can hinder drug absorption. Food can affect the bioavailability of drugs by altering the rate or extent of absorption of the drug from gastrointestinal tract. Concomitant consumption of food and drugs can significantly increase the bioavailability of some drugs. For example, bioavailability of troglitazone is increased by 59% when taken with a meal (Schmidt and Dalhoff, 2002). This type of interaction may cause severe toxicity with certain drugs, especially those with narrow therapeutic window. On the other hand, therapeutic failure may occur due to food and drug interactions. For example, tetracyclines irreversibly bind with divalent cations like dietary calcium, which results in the formation of a non-absorbable chelate. It is, however, important to recognize that all interactions are not clinically significant. Table 1 presents examples of effects of food on absorption of a few drugs. Pharmacists' roles in the global healthcare are expanding; they are required to counsel patients, caregivers, other healthcare providers, and other stakeholders. It is, therefore, important for the pharmacist to understand the scientific principles and mechanism involved in the food-drug interactions. Food-drug interaction is rather a broad topic and discussion of its every aspect is beyond the scope of this journal. This article, therefore, briefly presents the effects of food on drug absorption from gastrointestinal tract.

Table 2. Examples of food effects on absorption of a few drugs.

Bioavailabilty increased	Bioavailability Decreased
Griseofulvin Propafenon Nitrofurantoin Phenytoin Labetalol Mebendazole Metaxalone	Penicillin Ampicillin Tetracyclines Rifampin Isoniazide Captopril Furosemide

EFFECTS ON GASTROINTESTINAL TRANSIT TIME

Gastrointestinal (GI) transit of drug products may affect the rate and extent of absorption. Presence of food increases gastric residence time, which may delay absorption of drugs that are preferentially absorbed from the intestine. On the contrary, if a drug is essentially absorbed from stomach, the extent of absorption may be increased due to the presence of food. Enteric coated products are designed either to protect the drug from the low pH of the stomach or to protect the gastric lining from the drug. Once the product arrives at the duodenum, the enteric coat is dissolved by higher pH of the environment and the drug becomes available for absorption. Food prolongs the gastric retention time of solids. Enteric coated dosage forms, hence, will take longer to reach duodenum for absorption and the patient may not find the benefit of those drugs sooner. The extent of absorption in 24 hours, however, for those drugs may remain the same. Gastrointestinal transit is highly variable and it may affect the performance of a drug delivery system. g-Scintigraphy, a noninvasive technique, has been used in understanding the GI transit. Basically the transit depends on the GI motility which is characterized by two states: fed and fasted. Besides, many other factors may influence the transit of materials through the GIT. One of the important factors that influence the gastric emptying is the caloric content of the meals. Usually fats tend to form an oily layer on the other gastric contents, and as such, fatty foods are emptied later than the others (Berne & Levy, 1996). Also, increased acidity and osmolality slow down gastric emptying. Table 2 presents the effects of food on gastric emptying. It has been reported that drugs taken before meals usually exit from the stomach within an hour; but when taken after meals, the gastric transit time may be as high as 10 hours depending on the ingested food. Furthermore, viscosity of certain foods such as polysaccharides has been implicated in slowing both intestinal absorption and gastric emptying (Schneeman, 2004). A higher viscosity liquid will require a longer time to be voided than a lower viscosity or clear liquid (Mojaverian et al 1987). The food effects on bioavailability of drugs are generally greatest when the drug is administered with, shortly before, and after a meal, e.g., the bioavailability of penicillin improves when given in fasting condition with a large volume of water. Although the gastric transit time may be affected by very many factors, the scientific community suggests that under "ordinary" condition the transit time for a regular meal is about 2 hours. This is the basis of recommendation for taking a drug, which may interact with food, at least one hour before or two hours after the meals.

Unlike gastric transit time, small intestinal transit time is not affected by the nature and presence of food. It is notable that small intestinal transit time is considered to be about 3-5 hours. Large intestinal transit, as opposed to small intestinal transit time, is significantly variable (Matcalf et al., 1987; Chaussade et al., 1986) and it can be affected by the presence of food. In healthy adults colonic transit time of single unit dosage systems has been reported to be a few hours to a few days (Hardy 1989). Presence of food may insignificantly reduce the colonic transit time. It has been well established that eating increases the motor activity in the colon (Bazzocchi, 1990). Dietary fiber is a substrate for colonic bacterial metabolism. The fiber increases the fecal bulk, which is associated with the reduction of colonic transit time. It has been reported that in a healthy subject, an additional 20 g of bran per day increases fecal weight by about 127% and decreases mean transit time from 73 ± 24 hours to 43 ± 7 hours (Cummings et al., 1978).

Table 1. Effects of different types of foods on gastric emptying.

Food factor	**Influence on gastric emptying**
Volume of food	-The larger the initial vol., the greater the initial rate of emptying; after this period, the larger the original vol., the slower the rate of emptying.
Type of food:	
Fatty acids	-Reduction in rate of emptying is directly proportional to their concentrations and carbon chain length.
Triglycerides	-Reduction in rate of emptying; unsaturated triglycerides are more effective than saturated ones.
Carbohydrates	-Reduction in rate of emptying, primarily as a result of osmotic pressure.
Amino acids	-Reduction in rate of emptying, possibly due to osmotic pressure.

EFFECTS ON GASTROINTESTINAL PH AND SECRETIONS

The dissociation constant of the drug and pH of the gastrointestinal tract are primary determinants for the extent of ionization of ionizable drugs. Because of the lipid bilayer structure of the biological membranes, highly charged or ionized drug cannot readily pass through it. Like many physiological parameters, gastrointestinal (GI) pH is neither uniform nor constant throughout the system. Instead, it is influenced by various factors like diet, disease, presence of gases, fatty acids, and other fermentation products (Rubenstein, 1990). The variation in pH may significantly influence the performance of orally administered drugs. Heidelberg capsule, a noninvasive Radiotelemetry device, has been used to measure the gastrointestinal pH in human (Mojaverian, 1987). The pH of empty stomach ranges between 1.7 in young people to 1.3 in elderly. Ingestion of food sharply increases gastric pH to 5 to 6 and the pH decreases to basal level in about 2 to 4 hours (Dressman et al., 1990). In addition, it has been reported the mean value of gastric pH in fasted healthy volunteers as 1.1 ± 0.15. On the other hand, the mean gastric pH in fed state healthy males has been reported to be 3.6 ± 0.4 (Mojaverian & Chan, 1988).

The effects of gastrointestinal secretions of the GIT are also important aspects that need to be considered when referring to drug absorption. Cholecystokinin (CCK) is a secretion in the GIT that regulates both the absorption and digestion rates by controlling the rate of gastric emptying (Schneeman, 2002). CCK can decrease the gastric emptying rate, which has the potential to affect drug absorption.

COMPLEXATION OF DRUG WITH DIETARY COMPONENTS

When certain drugs are taken orally, they are susceptible to binding with dietary

components in the GIT. For instance, a high fiber content can reduce the bioavailability of certain drugs due to the binding of the drug with the fiber. The extent of absorption of a drug can be decreased due to physical or chemical binding of the drug with food components. A good example is amsacrine, an antineoplastic agent, which has shown decreased bioavailability in the fed state administration. Binding of amascrine with food particles in the GI tract is attributed to its reduced bioavailability when administered with food. Other notable examples include the chelation between tetracylines and dietary calcium (Martin, 1979), iron and tannic acid in tea (de Alarcon et al 1979), which interfere with the absorption of those drugs. In addition, the food contents, especially the fat may develop an impervious barrier between the drug particles and the gastrointestinal media, and thereby reduce the boiavilability of the drug.

EFFECTS ON TRANSPORT SYSTEMS

The transport systems in the body can also be involved in food-drug interactions. Absorption of certain drugs may be increased when ion pair transport is increased, which occurs when bile salts form ion pairs with hydrophilic drugs (Schmidt & Dalhoff 2002). Also, the absorption of poorly water soluble drug like griseofulvin significantly increases when administered with a fatty meal (Ogunbona et al 1985). Certain food can directly inhibit the antitransporter or efflux protein, e.g., p-glycoprotein (P-gp) and thereby increase the bioavailability of those drugs that are substrates for P-gp. For example, grapefruit juice contains bioflavonids, which interact P-gp and multidrug resistance protein 2 (MRP2), increase bioavailability of certain drugs (Honda et al 2004). Again, grapefruit juice can decrease the oral absorption of a few drugs that rely on organic anion transporting polypeptides (OATP) in the gastrointestinal tract for their uptake (Hanley et al 2011). A food contains multiples components and their effects on drug absorption may not always be possible to generalize based on one example. Nevertheless, it is advisable to stay away from the foods that are known to cause unpredictable bioavailability of certain drugs.

CONCLUSION

Food can affect the absorption of certain drugs form the gastrointestinal tract. Various mechanisms including changing in gastrointestinal transit time, pH, and secretion or binding drugs with food constituents may be involved in food-drug interaction. It is notable that not all food-drug interactions are clinically significant. Some food-drug interactions are desirable and others are not. When a food-drug interaction is therapeutically beneficial emphasis must be given so that patients take those drugs with food to derive maximum benefit. When the absorption of a drug is known or suspected to be negatively affected by the presence of certain food, patient and relevant individuals must be counseled accordingly. There is no easy way to exactly predict the interaction between food and a drug. Thus, an understanding of the underlying mechanisms of food and drug interactions is helpful in identifying the significant food-drug interactions. It is important that pharmacists be up to date with the knowledge of food and drug interactions, which will help them identify, prevent, and manage potential harmful interactions and improve the overall patient care.

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Health Care Reform – Turning Sick Care into Health Care

Written by: Tasmiya Khan

Edited by: Sara Chowdhury

For some time now we have all heard numerous stories regarding the Health Care Reform put forth by President Obama, but what does it all really mean? Who will this effect? What are the intended outcomes?

There are 2 major problems with our current health care system. One is "*Cost*" and the other is the "*Holes*". The number one problem is *COSTS*. The current health insurance policies are simply too expensive. For families, the average premium is $14,000 per year and it is still growing. Premiums have doubled over the last 9 years, growing *much* faster than inflation. One of the reasons why this is happening is because the population is growing thus leading to a larger aging population presenting with more health related issues. Health care costs are the fastest growing part of the federal budget. Another problem is that the system is full of holes. People can be turned down for having pre-existing conditions such as heart disease, asthma and cancer. This is a ridiculous policy especially considering those patients are in need of proper healthcare the most!

Small businesses are also affected by these unreasonable policies due to the fact that they are charged higher fees to provide for employees that present with health problems, making health insurance a very expensive investment for small business owners. Many of you are small business owners and have employees that need health insurance. Some people have a "lifetime limit" which means there is a maximum on how much benefits the individual can receive. This limited policy makes health insurance virtually useless. Furthermore, 1 in 7 of us does not have any health insurance coverage and the more often than not, the rest can only afford the bare minimum. The current state of healthcare insurance is costly, putting a large strain on the federal budget and the people are not being provided sufficient healthcare. We need a solution as soon as possible.

The new Health Care Reform consists of several different phases to remedy these problems. The first phase is currently in progress from now until 2014. The first goal is to make Health Care more affordable. The plan is for Medicaid to expand and cover all low-income individuals. For individuals that lose their job or are employees of companies that do not offer health benefits, then alternative health insurance will be available through your tax coverage. Also, there will be a program set up called "The exchange". It will be somewhat of a virtual mega-mall which will introduce competition throughout private insurance companies to prevent mega-corporations from developing and overcharging. The second phase will be targeted to fix the holes in the system. Insurance companies will no longer be able to turn down or charge people higher fees (with a few exceptions). Individuals without insurance will get taxed and this also applies to larger businesses.

It is understandable when individuals are hesitant to accept this phase of the process due to the fact that we do not want to be forced into purchasing insurance policies. However, many people do not understand the absolute necessity of health insurance. Many individuals complain that 'it is not fair that we have to help fund universal coverage'. The problem is that they don't see we are paying for it anyway and paying more then we need to! For example, when people don't have insurance and they get sick, they go to the emergency room. The emergency room costs are WAY more expensive then health insurance. Guess who pays for those visits? You and I! Our tax dollars are paying for it anyway, why not save some of that money, regulate how much of our money is going towards it and keep people from becoming sick all at the same time. The best way to cut increasing costs in the future of healthcare is to practice preventative medicine; and that will only be possible if these regulations come in to offer better primary healthcare.

The United States Government will provide credits, expanded programs and new rules so by 2019, resulting in an expected amount of 32 million to be NEWLY insured. However, there will still be a large number of individuals that will still be uninsured. Some of these individuals may be those who do not have documents and are illegal immigrants, which counts for about 23 million people. For many of us this may not be such a big deal because health insurance is not something we ever had to worry about. This was true for my family and I until very recently. When my father passed away 2 years ago, our lives were completely changed. One of the major issues we faced was health insurance. My mother and I will be uninsured as of September of this year. My sister has accidental health coverage, which is better than nothing, but still not as good as it should be. We fall into the middle bracket where we aren't eligible for Medicaid, yet are unable to afford decent health coverage. Millions of other families, many of whom you know and care about are stuck in this same situation.

You all are probably thinking, "How are we going to pay for all of this?" According to the congressional budget office (also known as "Impartial Referee" when congress debates things), the estimated cost for this is about 938 billion dollars over the next 10 years. That is 2% of our federal budget and only 3% of how much we will spend on health care over-all. The Federal deficit is over 7 trillion (over 10 years) so the President and Congress insisted these new costs will be paid for so that they don't push the budget deficit up any further. This means the money will come out of someone's pocket. This will come from medical providers and insurers in the Medicare program. The fees the government pays the Medicare hospitals won't be allowed to rise as fast as they have been. Insurance companies that provide services to people on Medicare will be paid less. Medicare will also create a bunch of experiments through out the country to find different ways of paying doctors and hospitals and other providers to make health care more efficient and improve the quality of care. With luck, some of these experiments will work and then be adopted by the private sector, which then will lower costs for employers and families too. A new federal advisory board will make recommendations about other ways to deal with increases in health care costs. Some taxes will go up too. People with high earning will pay higher Medicare taxes. There will be new taxes on insurers and businesses that offer high-end benefit plans, on companies that make medical devices and drug, and on anyone who visits a tanning salon will have to pay taxes too.

The whole package will actually REDUCE the federal deficit over the next 10 years by

$124 billion dollars. The federal deficit is expected to be in the trillions so that this reform will not solve that problem but it will start the process to attacking the problem. This is not a perfect solution and there is still a lot of work ahead but these are the basic ideas that will be structured into better goals and programs. My intentions in writing this article are to encourage you all to be advocates for preventative medicine, Health Care Reform, and the better well-being of all people.

REFRENCE:

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Hospital Pharmacy Practice in Bangladesh: The Present Scenario

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Hospital pharmacists work in a hospital pharmacy service and responsible for ensuring the safe, appropriate and cost-effective medicines. They work collaboratively with other health care professionals to devise the most appropriate drug management for patients. Hospital pharmacy practice is one of the most vital parts of a hospital for better patient care and drug safety management. [1]

World Health Organization (WHO) recommends that standard hospital pharmacy practice should be carried out under the super vision of a professionally competent and legally qualified graduate pharmacist. WHO clearly recommends that the management of drug procurement, storage and distribution should be the responsibility of the pharmacy graduates.[2]

Bangladesh National Drug Policy (NDP) 1982 suggests that retail sale of drugs and medicines shall be allowed only under the supervision of qualified pharmacist and no person, being a retailer, shall sell any drug without the personal supervision of a pharmacist registered in any category of the Pharmacy Council of Bangladesh.[3] While Bangladesh National Drug Policy (NDP) 2005 states that only registered drugs should be allowed to distributed and sold throughout the country under person having professional qualification or holding valid professional license.[4]

News from the National Academies showed that medication errors injure 1.5 million people and cost billions of dollars annually in US.[5] Such consequences of medication error in US is really a panic for the world especially in the third world like Bangladesh where healthcare system less equipped and any medicines from pain killer to antibiotics are sold from pharmacy with or without prescription. The changing of brands and generics by the pharmacy retailers or medicine shop keepers are a regular phenomenon in Bangladesh. So, the lack of appropriate pharmaceutical care by the professionals is obvious. Recently, published in a daily newspaper, a boy was suffering from malnutrition. He is 18 months old. He is too weak to walk and even he can not speak well other than the words 'Abba' and 'Amma'. The local pharmacy retailer changed his medicine without prior permission of his doctor.[6] Such kinds of suffering are in all most all rural areas of Bangladesh. Only proper education and training to the retailers and employment of registered pharmacist in the pharmacy department in government hospitals can eliminate such unethical practice in health acre system through proper distribution, dispensing and control.

In Bangladesh 80% people live in village and seeking their treatment at Govt. hospitals. The current hospital pharmacy set up in the government hospital is very weak. None of the government hospital has any graduate pharmacist. Only diploma pharmacists (grade B) are recruited there to dispense medicines only. Due to lack of adequate professional knowledge, these pharmacists are unable to address medication errors which not only raise patients' treatment cost but also increase hospital stay of the patients thus far from achieving National Health Policy. Two professional associations of pharmacists PGA (Pharmacy Graduate Association) and BPS (Bangladesh Pharmaceutical Society) work intensely with the government to implement community pharmacy practice for Community Health Clinic. Even there have a lacking of coordination among the integrated health care professionals like, physicians, nurses and others health care professionals. Moreover, the regulatory authority is very weak to create such professional environment, which is solely responsible for executing their activities.

Study has shown that higher level of hospitalization for patients who have poor adherence compared to patients who have proper adherence.[7] Another study has revealed significant improvement on patient's knowledge and attitude when clinical pharmacist provide health education to patients and thus offer a positive impact on treatment outcome.[8]

PGA and BPS for last one and half decade tried their best to convince the Govt. to start hospital pharmacy services under the supervision of graduate pharmacist at least in the medical college hospitals level. According to the association if graduate pharmacist involved in hospital pharmacy services, the total medicine budget can be abridged remarkably.[9, 10]

Some private hospitals like Square Hospital, Apollo Hospital and United Hospital started hospital pharmacy practice. Other hospital e.g. Lab Aid Hospital, Green Life Hospital etc. started recruiting graduate pharmacist at their pharmacy department.[9]

The tertiary level private hospitals like Square Hospital, Apollo Hospital and United Hospital started pharmacy practice under the supervision of graduate pharmacist at different scale. The pharmacists have their own job description. Here in-patient drug is distributed following the American unit dose system. Pharmacists in different hospitals involve in prescription reviewing, drug dispensing, medication checking, drug information services, inventory management, formulary preparation, extemporaneous preparations and parenteral admixtures etc. Besides these pharmacists are taking part in the clinical round with the consultants. They check patients' profile and intervene the prescription medication where needed though it is in a limited scale especially for intensive care unit, uremic patients those who are on dialysis and others. Medical services

department of these hospitals are extremely happy with the role of pharmacists in the clinical settings as they are suggesting them to change the medication, dosage regimen, dose size etc for the individual patient.

The professional interaction among pharmacists', doctors and nurses should be strong to provide health services. Hospital and Community Pharmacy profession is a very dignified, trusted and royal profession throughout the world, but in Bangladesh most of the people do not know about the role of hospital and clinical pharmacist. We do believe that the situation will be changed if Government takes initiatives to establish hospital pharmacy setting under the graduate pharmacist, at least in the medical college hospital level and give them the opportunity to work with doctors, nurses and other health professionals to ensure safe use of medications. [9, 10]

We must keep in mind that pharmacist and pharmacy service is a vital part of heath care system. To attain the standard healthcare service doctor, pharmacist, nurse and other health professionals should work together. We should remember that any interruption in the team work will jeopardize the whole health system and proper patient care service will never be achieved.

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Prediabetes and Diabetes: The New Epidemic

How to Approach Naturally

Kazi Anam

Globally diabetes and prediabetes is on the rise at an alarming rate. Sedentary lifestyle, processed food, excessive consumption of refined sugar, high BMI (body mass index), stress, heredity all these are contributory factors in becoming a prediabetic and eventually, a diabetic.

Type 2 diabetes is more prevalent in adults 45 and up. However,there is a rise in the cases of teen (under 20) prediabetes and diabetes. Normal fasting blood glucose is below 100 mg/dl. A person with prediabetes has a fasting blood glucose level between 100 and 125 mg/dl. If the blood glucose level rises to 126 mg/dl or above, a person has diabetes.

In the Glucose Tolerance Test (GTT), a person's blood glucose is measured after a fast and 2 hours after drinking a glucose-rich beverage. Normal blood glucose is below 140 mg/dl 2 hours after the drink. In prediabetes, the 2-hour blood glucose is 140 to 199 mg/dl. If the 2-hour blood glucose rises to 200 mg/dl or above, a person has diabetes.

Fast food, TV, computer game, physical inactivity are affecting the urbanized, younger generation. Diabetes is also considered as the silent killer as its ill affects are not immediately felt or known. It is a risk factor in the development of atherosclerosis, glaucoma, cataract, heart disease, kidney disease, peripheral neuropathy and a myriad of other complications.

Diabetes Fact Sheet

United States

Ages 20 years or older	25.6 million, or 11.3 percent, of all people in this age group
Ages 65 years or older	10.9 million, or 26.9 percent, of all people in this age group
Men	13.0 million, or 11.8 percent, of all men ages 20 years or older
Women	12.6 million, or 10.8 percent, of all women ages 20 years or older
Non-Hispanic whites	15.7 million, or 10.2 percent, of all non-Hispanic whites ages 20 years or older
Non-Hispanic blacks	4.9 million, or 18.7 percent, of all non-Hispanic blacks ages 20 years or older

INTERNATIONAL:

The International Diabetes Federation estimates that there are approximately 246 million adults with diabetes. The highest prevalence rates are found in North America (9.2%) and Europe (8.4%). The five countries with the largest number of diabetics are India, China,the United States, Russia and Germany.The four countries in the middle east with the highest prevalence rates are United Arab Emirates,Saudi Arabia, Bahrain and Kuwait. Diabetes is on the rise in Bangladesh as well. It is estimated that currently there are approximately 5.7 million adults with diabetes and it is growing at a significant rate.

Recent research shows that very tight glycemic control with medication only is not the best way to approach diabetes or prediabetes. A comprehensive program of meal plans, exercise, lifestyle modification and supplementation should be incorporated in the management of diabetes. In the meal plan, stress should be given to reduce carbohydrate consumption and avoid refined sugary products including juices. It is usually better to choose foods with low glycemic index - where glucose is absorbed at a much slower rate. Also it is important to avoid a big meal to limit sudden surge of blood glucose.

Here is a list of supplements that are very useful in the treatment of type 2 diabetes:

1.Cinnamon (1000mg - 1500mg)/day

2.Gymnema Sylvestre (400mg - 600mg)/day

3. R-Alpha lipoic Acd 600mg/day

4. Vanadium 10mg to 100mg /day (doses over 40mg should be supervised by a health care practitioner)

5. Chromium (200mcg/day)

6. Vitamin C powder (8000mg/day) mixed into low sodium vegetable juice.

7. Zinc 50mg/day

8. Vitamin D3 5000 units/day or more (need to maintain 25- Hydroxy Vitamin D blood level to 50 - 70ng/ml)

9. High potency B-complex

10. Good multi-vitamin

11. Fish oil or flaxseed oil (2000mg/day)

Research shows that with the appropriate meal plan, lifestyle modification,exercise and supplementation will bring blood sugar level to a comfortable level for about 95% of the subjects who will adhere to the plan. However, if someone does need medication to treat diabetes, the first line of therapy should begin with Metformin.

In conclusion, any one who is prediabetic or diabetic should take this silent killer seriously and should mount a full-blown effort with lifestyle changes such as a good meal plan, exercise, supplementation, stress management and more.

Content Uniformity and Stability of Compounded Oseltamivir Suspension

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ABSTRACT

Purpose
Extemporaneous compounding of Oseltamivir suspension from Tamiflu® capsule is recommended by FDA[1] during shortage of Tamiflu® suspension. Tamiflu® capsule contains inert excipients which are not soluble in suspension vehicles. As a result the undissolved materials quickly form sediment at the bottom and may cause under dosing or over dosing. The purpose of this study was to verify the content uniformity of the suspension and to make sure that the sediment does not have potential for over dosing. Another purpose was to verify stability of the compounded suspension.

Methods
The contents of 12 Tamiflu® capsules (approximately 1.976 g powdered blend), strength 75 mg/capsule, were triturated using a ceramic mortar and pestle. Sugar free syrup with suspending agent was gradually added to make a smooth paste and then to a pourable mixture, which was then transferred to a pre-calibrated dispensing bottle. The mortar and pestle was rinsed with more syrup and added to the bottle. Finally sufficient syrup was added to make 75 mL suspension. Nominal expected strength of this suspension was 12 mg/mL. Standard stock solution was prepared dissolving 50 mg Oseltamivir from approximately 110 mg capsule blend in 5 mL methanol and adjusted to 50 mL, adding enough water, after sonication for 5 minutes. Four standard solutions were prepared within concentration range of 100 ±50% of the expected concentration of the diluted suspension (approximately 200 μg/mL). One percent syrup in water was used as the diluent.

Suspension was shaken vigorously and samples were either centrifuged or filtered to get clear liquid, which was diluted (1:60). Similarly, samples were taken without shaking the suspension. Samples were analyzed by measuring absorbance at 254 nm using UV Spectrometer[2]. Samples were analyzed immediately after compounding and then once per week for 4 weeks, storing at room temperature and in the refrigerator.

Results
Oseltamivir concentrations in all samples were within 100 ±5% of the expected nominal concentrations.

Conclusion
The samples from undisturbed suspension and from the thoroughly shaken suspension did not show any statistically significant difference in Oseltamivir concentration. This reveals that the Oseltamivir contents of the capsule blend was dissolved in the syrup and the sediments presumably did not contain any drug. The product was stable for 4 weeks in both the conditions.

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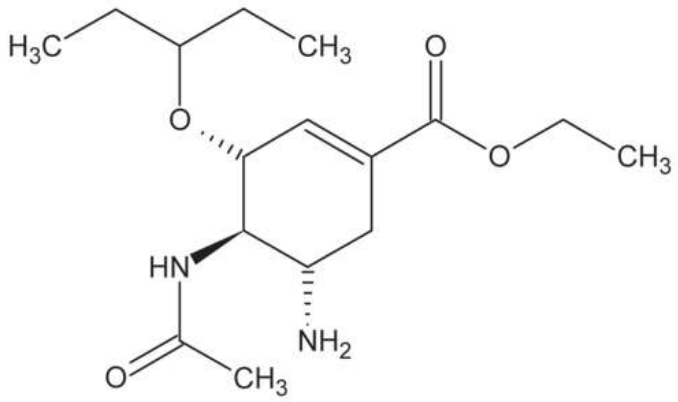
BACKGROUND

Oseltamivir is approved by the Food and Drug Administration (FDA) for use in controlling both influenza A and B viruses[3]. Oseltamivir phosphate is the active ingredient in Tamiflu® (Hoffmann-La Roche Ltd., Basel, Switzerland) and is available in 75 mg, 45 mg, and 30 mg capsules and a liquid form for patients who may have difficulty in swallowing capsules. The active pharmaceutical ingredient in Tamiflu® capsule is Oseltamivir Phosphate. Its basic structure is shown below:



Children and elderly patients are more vulnerable to infections compared to the healthy adults. Tamiflu® suspension is the preferred dosage form for this selected population because of swallowing difficulty of solid dosage forms. Tamiflu® oral suspension shortage create enormous toll on these referred population. Because of the high demand of this vaccine, and because of relatively less availability of oral suspension, counterfeit Tamiflu® has already been intercepted by FDA. During previous dry spells of Tamiflu® oral suspension, Tamiflu® capsules were always available. Therefore, the need for a compounded suspension from Tamiflu® capsules becomes inevitable. Although FDA has approved procedure for compounding oral suspension, dosing error has been noted by ISMP[4]. In this work we have reproduced the FDA guided suspension in our compounding lab and found a flocculated suspension with undissolved solid residues from excipients in the capsule. Our objective was to investigate the potential of sub-therapeutic or toxic doses due to the presence of undissolved Oseltamivir in the solid residue, if any.

METHODS

Reagents and Apparatus

All reagents were of analytical or reagent grade. Freshly distilled and deionized water was used for all aqueous solutions. We purchased Tamiflu® 75 mg capsules (Lot number U4110-01, Expiration 06, 2016, Roche) from a local Community Pharmacy for this work. We have also purchased sugar free syrup base, (Lot number 2490205 from PCCA, Houston, Texas).

Absorbance were measured using a Varian Cary® 50 UV-Vis spectrophotometer with detection wavelength range (nm) 190–1100 nm (Varian Inc.) using 1 cc path-length quartz cuvette. All materials were weighed using Mettler Toledo PB-303-S/FACT Classic Plus electronic balance.

Suspension Preparation

Very carefully 12 Tamiflu capsules were opened and the capsule blend was weighed on a tared weighing boat. The total weight was 1.976 g. The weighed quantity of the capsule blend was triturated to very fine powder using a ceramic mortar and pestle. Sugar free syrup with suspending agent was gradually added to make a smooth paste and then to a pourable mixture, which was then transferred into a pre-calibrated 3-oz dispensing bottle. The mortar and pestle was rinsed with more syrup and added to the bottle. Finally sufficient syrup was added to make 75 mL suspension. Nominal expected strength of this suspension was 12 mg/mL. The content was shaken intermittently but vigorously for about 10 minutes. The suspension was labeled for storage at room temperature (uncontrolled Lab counter) and in the refrigerator. Suspensions were prepared in triplicates.

Standard Solution Preparation

Based on average weight of capsule blend per capsule and the strength of the capsule, we determined that each 2.2 mg capsule blend contained 1 mg Oseltamivir Phosphate. Standard stock solution was prepared dissolving 50 mg Oseltamivir from approximately 110 mg capsule blend in 5 mL methanol and adjusted to 50 mL, adding enough water, after sonication for 5 minutes. The stock solution was filtered through Fisherbrand filter paper. Four standard solutions were prepared within concentration range of 50 µg/mL – 300 µg/mL (inclusive) to intrapolate the expected nominal concentration (200μg/mL) of the diluted suspension. One percent sugar – free syrup in water was used as the diluent.

Content Uniformity Sample Preparation

Assay of the Supernatant Layer

Analytical samples for assay were prepared transferring 1 mL suspension from the clear supernatant layer into a 100-mL beaker and its weight is adjusted to 60 g with the same diluent. This solution was filtered.

Assay of the Resuspended Layer

Sample was prepared by exact dilution as above with the exception of shaking the suspension thoroughly just before sampling.

Samples were prepared in triplicate.

Stability of Suspension

Compounded suspensions were stored at room temperature and samples were assayed once weekly following the above mentioned technique.

Compounded suspension was also stored in the refrigerator and assayed weekly, after pulling out of the refrigerator and equilibrating at room temperature before sampling. In both the cases samples were taken from supernatant layer as well as from thoroughly suspended layer.

Spectrophotometric Assay

Samples were assayed by measuring absorbance at 254 nm using UV Spectrometer[2]. Samples were analyzed immediately after compounding and then once per week for 4 weeks, storing at room temperature and in the refrigerator. A four – point calibration curve was used to intrapolate the absorbance of the assay samples.

RESULTS AND DISCUSSION

Table 1 shows the assay results of the samples Oseltamivir suspension taken from the supernatant layer as well as the re-suspended layer. These are initial assay results performed in triplicate prior to storage.

Table 1: Assay of Compounded Oseltamivir Suspension

Statistics	Supernatant Layer	Re-suspended Product
	100.1	96.5
	99.5	97.6
	102.1	97.2
Average	99.8	97.1
Standard Deviation	0.3	0.6

Oseltamivir concentrations in all samples were within 100 ±5% of the expected nominal concentrations. This indicates that from efficacy point of view patient is expected to get similar pharmacological effect whether they shake the bottle before use or not. Solubility of Oseltamivir phosphate is readily soluble in water[4] to be more specific, its reported solubility is >500 mg/mL in water[5]. It is probable that the undissolved sediments are just the excipients. If this is the case probably the better way of compounding would be dissolving Oseltamivir Phosphate in an aliquot of syrup, filtering through the glass fiber filter and adjusting the volume of the filtrate with sugar free syrup. This definitely would improve the esthetic appeal of the compounded product.

The compounded suspension was stable under both storage conditions, i.e. at room temperature and in the refrigerator during the experimental period of 4 weeks. The stability profiles are shown in Figure 1 and Figure 2.

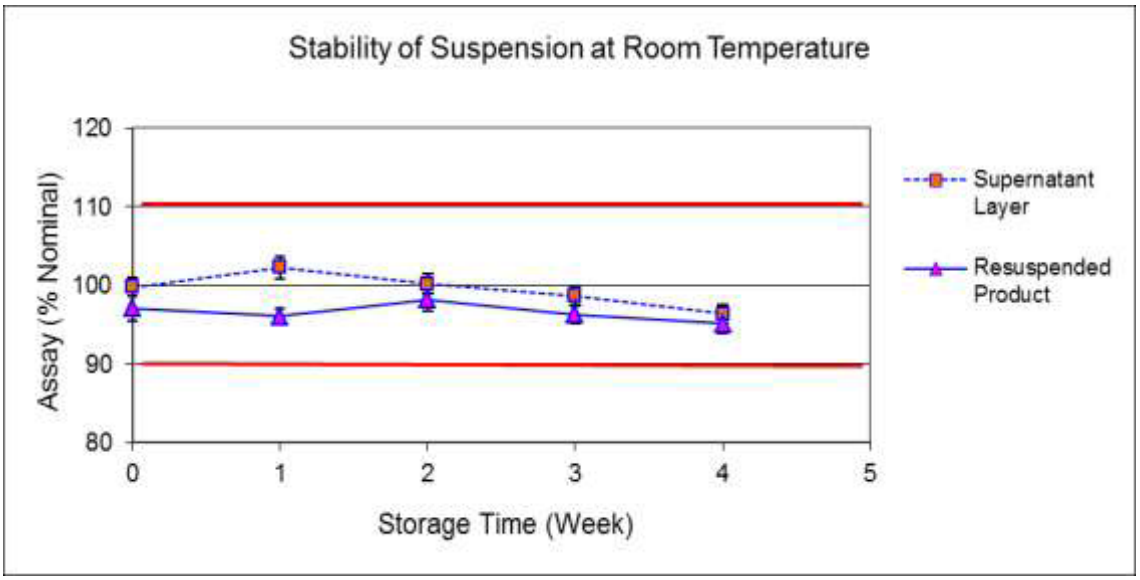


Figure 1: Oseltamivir Phosphate content in compounded suspension over 4 weeks, stored at room temperature.

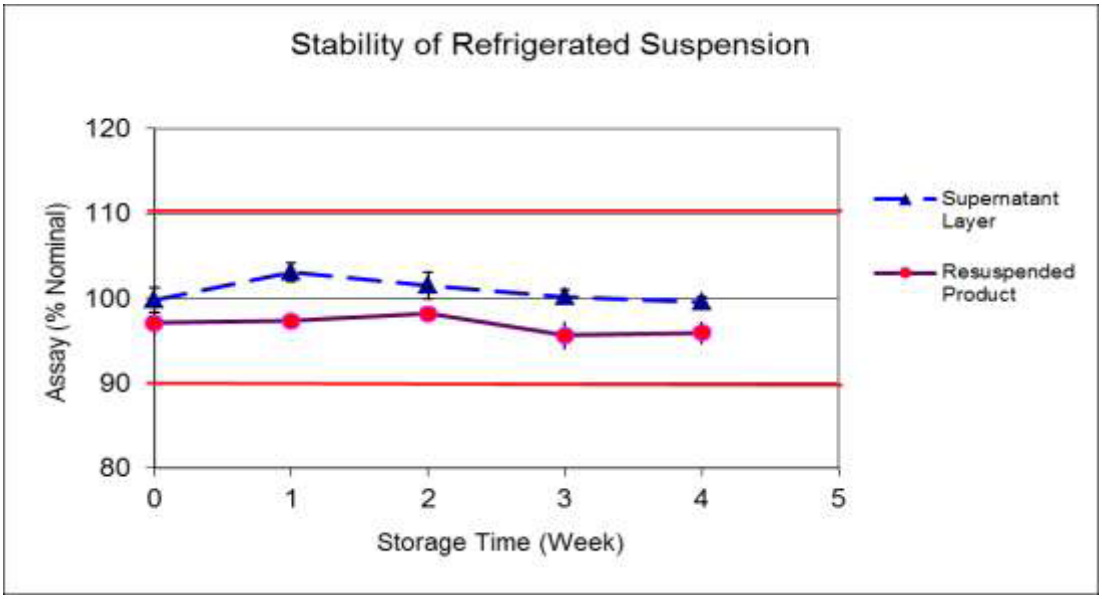


Figure 2: Oseltamivir Phosphate content in compounded suspension over 4 weeks, stored in the refrigerator.

Quantitative analyses revealed that the storage conditions do not have any impact on the stability of the compounded suspension. Moreover, once compounded, the product is supposed to be consumed within 5 days in most of the cases.

CONCLUSION

The current study demonstrated that extemporaneously prepared Oseltamivir suspension contains equivalent proportion of Oseltamivir Phosphate throughout the suspension layers. Neither the supernatant layer, nor the solid sediments statistically poise any potential of inappropriate dosing. This probably is due to higher solubility of Oseltamivir in aqueous environment. Storage conditions also do not have any impact on the stability of Osaltamivir suspension.

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