Sultan-ul-Uloom College of Pharmacy, Hyderabad

R & D Newsletter
2014-15

P R I D E

Pharmaceutical Research in Drug Evolution

Editor's Desk

Since our founding as a state-of-the art Pharmacy College in 1997 as a Public Private Partnership entity, our College has emerged as one of the Andhra Pradesh's leading and most respected institute. Today, SUCP engage with commitment and enthusiasm in College, Research and Community Services.

The Institution was established in the year 1997, approved by AICTE, Pharmacy Council of India and Affiliated to Jawaharlal Nehru Technological University Hyderabad. The college has successfully completed 17 years of existence with excellent results year after year. The college has special distinction of producing 8 University Gold Medalists. The faculty and non- teaching associates have demonstrated teamwork in carrying innovations to upgrade the standard of quality improvement in the areas of Pharmacy education. The School continues to evolve and grow. What remains constant is our commitment to preparing students to be agents of change within their field, seeking to apply their knowledge and skills to improve the lives of people nationwide and around the world.

Truly effective learning involves unrestrained curiosity, deliberate investigation, careful analysis and critical inquiry. Our faculty embodies these traits and our curriculum will hone them in you. When you graduate, you will have the knowledge and skills to think critically and communicate effectively as a contributing member of a health care team. **You will be an exceptional pharmacist**!

Jonathan Roberts, First Hospital Pharmacist who served until 1755.

Bowl of Hygeia with Serpent of Epidaurus

Inside this issue:

Vision & Mission

Vision:

Sultan-ul-Uloom College of Pharmacy aspires to emerge as an internationally acclaimed institute of excellence imparting holistic pharmacy education along with innovative research, industry interface and patient care with a humane touch.

Mission:

Our mission is to be an institute of academic excellence in nurturing outstanding pharmacists by:

Ensuring high standards in imparting quality pharmacy education effectively integrating critical thinking, problem solving, team spirit and leadership skills.

Promoting the academic, entrepreneurial and career growth of the students with ethical values and social commitment for sustainable development.

Quenching intellectual thirst and fostering scientific temper for cutting edge research in pharmaceutical and clinical sciences that translates into health care and caters to the needs of the society at large.

Building a collaborative environment with pharmaceutical industries, academic, clinical and research organizations that values and rewards innovation, productivity and life-long learning.

USP-Specifications for Storage conditions of drug products

L: Protects from light)

S: (Protects from solvent loss/leakage)

M: (Protects sterile products)

W: (Protects from water vapor)

G: (Protects from reactive gases)

A container closure system should provide the dosage form with adequate protection from factors (e.g., temperature, light) that can cause degradation in the quality of that dosage form over its shelf life. Common causes of such degradation are: exposure to light, loss of solvent, exposure to reactive gases (e.g., oxygen), absorption of water vapor, and microbial contamination. A drug product can also suffer an unacceptable loss in quality if it is contaminated by filth. Not every drug product is susceptible to degradation by all of these factors. Not all drug products are light sensitive. Not all tablets are subject to loss of quality due to absorption of moisture. Sensitivity to oxygen is most commonly found with liquid-based dosage forms. Laboratory studies can be used to determine which of these factors actually have an influence on a particular drug product.

Light protection is typically provided by an opaque or amber-colored container or by an opaque secondary packaging component (e.g., cartons or overwrap). Loss of solvent can occur through a permeable barrier (e.g., a polyethylene container wall), through an inadequate seal, or through leakage. Water vapor or reactive gases (e.g., oxygen) may penetrate a container closure system either by passing through a permeable container surface (e.g., the wall of a low density polyethylene (LDPE) bottle) or by diffusing past a seal. Protection from microbial contamination is provided by maintaining adequate container integrity after the packaging system has been sealed. The Table depicted in attachment will summarizes typical packaging suitability considerations for common classes of drug products.

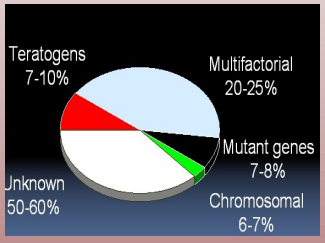
Compatibility: Case 1c: Liquid-based dosage form that conceivably could interact with its container closure system components.
Case 2c: Solid dosage form until reconstituted; greatest chance for interacting with its container closure system components occurs after it is reconstituted.
Case 3c: Solid dosage form with low likelihood of interacting with its container closure system components.
Safety:
Case 1s: Typically provided are USP Biological Reactivity Test data, extraction/toxicological evaluation, limits on extractables, and batch-to-batch monitoring of extractables.
Case 2s: Typically provided are USP Biological Reactivity Test data and possibly extraction/toxicological evaluation.
Case 3s: Typically, an appropriate reference to the indirect food additive regulations is sufficient for drug products with aqueous based solvents. Drug products with non-aqueous based solvent systems or aqueous based systems containing co-solvents generally require additional suitability information.
Case 4s: Typically, an appropriate reference to the indirect food additive regulations is sufficient.
Case 5s: Typically, an appropriate reference to the indirect food additive regulations for all components except the mouthpiece for which USP Biological Reactivity Test data is provided.
Performance:
Case 1d: Frequently a consideration.
Case 2d: May be a consideration.
Case 3d: Rarely a consideration.

Drugs Categorized by FDA for Gestation Period

It is important for the pharmacist to know which categories the pregnant client should avoid:

- Category A: No risk to fetus.
- Category B: Insufficient data to use in pregnancy.
- Category C: Benefits of medication could outweigh the risks.
- Category D: Risk to fetus exist, but the benefits of the medication could outweigh the probable risks.
- Category X: Avoid use in pregnancy or in those who may become pregnant. Potential risks to the fetus outweigh the potential benefits.

Teratogen is defined as:
Any agent that can disturb the development of an embryo or fetus. Teratogens may cause a birth defect in the child. Or a teratogen may halt the pregnancy outright. The classes of teratogens include radiation, maternal infections, chemicals, and drugs.



Birth Defects in Childhood

LC method development and validation for the determination of Ropivacaine hydrochloride in bulk drug and pharmaceutical formulations

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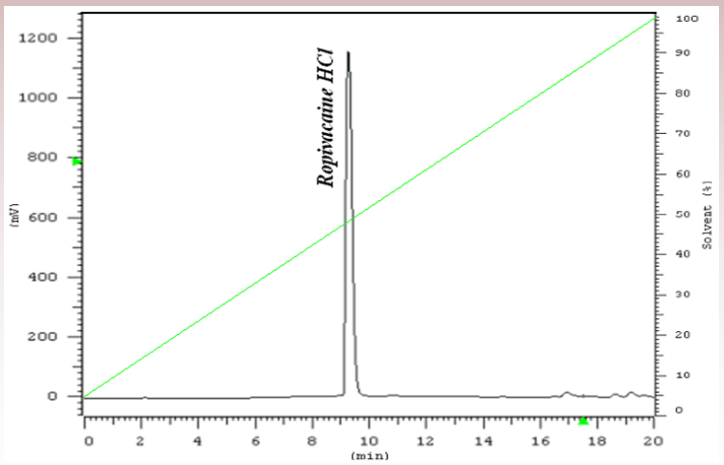
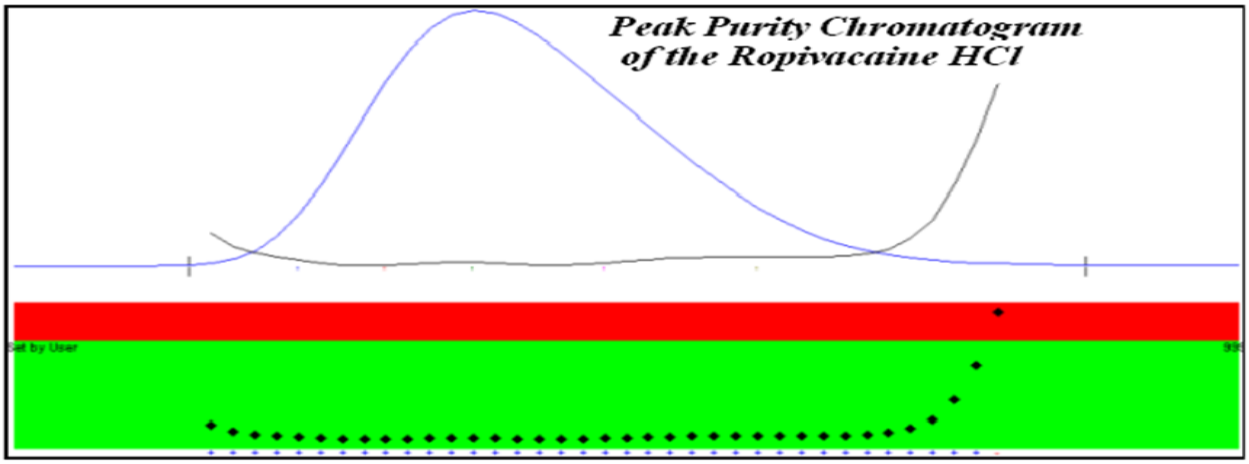
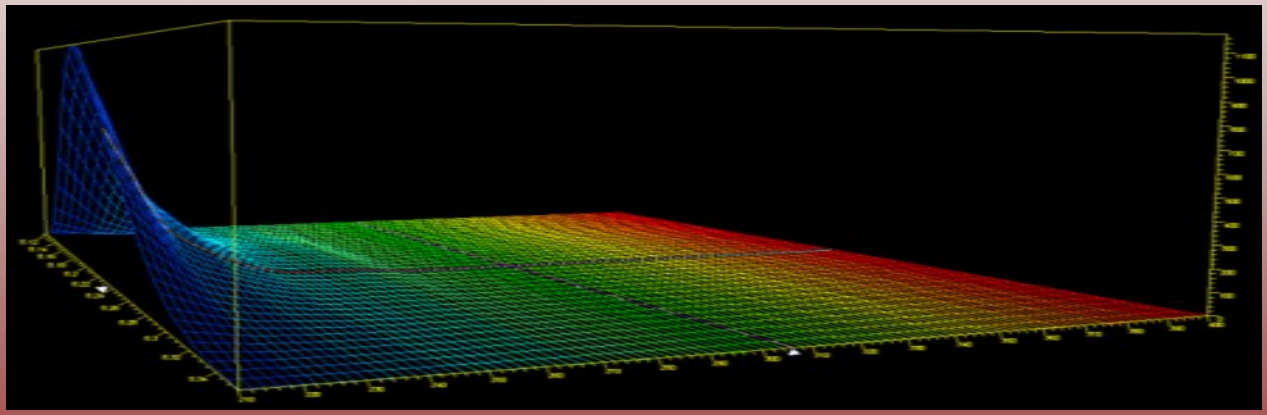
A simple LC method has been developed for the assay of ropivacaine hydrochloride in raw material and finished product. The chromatographic separation employs a gradient elution using C_8 column, mobile phase consisting of solvent [A] (monobasic phosphate buffer, adjusted to pH 2.5) and solvent [B] (acetonitrile) delivered at a flow rate of 1.0ml/min. The analytes were detected at 220nm and peak purities were examined using photo diode array (PDA) detector. The developed method was further validated to demonstrate its selectivity, accuracy, precision, robustness and linearity within a given range. The limits of detection and quantitation were 0.1µg/ml and 0.5µg/ml respectively. The specificity of the method was investigated under different stress conditions including hydrolysis, heat, oxidation, and photolysis. Stress testing showed degradants, which were well separated from the parent compound proving the stability indicating capacity of the method.

This work is a typical example for a stability indicating LC method development & validation in accordance to ICH/USP and FDA guidelines. It is rare investigation where all possible forced degradation studies were performed on ropivacaine hydrochloride (raw material and pharmaceutical formulations), and all the degradants were well separated from the parent compound with R_s>3.0 in a single







Formulation and Evaluation of Oro Dispersible Tablets of Fosinopril Sodium

The purpose of present research was to formulate and evaluate oro dispersible tablets (ODTs) of fosinopril sodium (FS). It has been developed at 20 mg dose and was prepared using different types of superdisintegrants such as (sodium starch glycolate, AcDiSol, crospovidone (CP), different types of subliming agents such as ammonium bicarbonate (AB) and camphor at different concentrations by direct compression method. The formulations were evaluated for uniformity of weight, content, hardness, friability, wetting time, *in vitro* dispersion time and dissolution rate. All formulations showed satisfactory mechanical strength, uniform weight, uniform drug content, and lesser wetting time and dispersion time. All the formulations showed more than 90% of drug release within 15 minutes. Among 10 formulations, formulation A5 (consisting of 2 % CP) and F4 (consisting of 15 % AB) were found to yield best results in terms of wetting time, *in vitro* dispersion time and dissolution rate.

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Pharmaceutics & Pharmacology

Screening of Antiulcer Activity of Alprazolam in Experimentally Induced Ulcer Models in Rats

Ulcer is a disruption of mucosal integrity of stomach and/or duodenum leading to a local defect or excavation due to inflammation. Experimentally, ulcer protective role have been attributed by benzodiazepines which are used commonly as sedative and hypnotics. Ulcers were induced in Wistar albino rats by two methods namely aspirin and ethanol administration. Aspirin treated animals were divided into four groups. To Group 1 and 2 Aspirin (200mg/kg orally) and (Aspirin 200mg/kg + Ranitidine 10mg/kg) were administered orally. To group 3 and 4 (Aspirin 200mg/kg + 0.5mg/kg Alprazolam and Aspirin 200mg/kg + 1.0mg/kg Alprazolam) were given respectively. Ethanol treated animals were divided into four groups. To group 1-control (Ethanol 1ml/kg), Group 2 - Standard (Ethanol 1ml/kg + Ranitidine 10mg/kg) were administered. To Group 3 and 4 (Ethanol1ml/kg + 0.5mg Alprazolam and Ethanol 1ml/kg + 1.0mg Alprazolam were given respectively. Aspirin and ethanol induced ulcers in rats. Free acidity, total acidity and ulcer index were calculated. The standard drug ranitidine caused decrease in the ulcers formation. The ulcers were significantly reduced by treating the animals with 0.5mg/kg and 1.0 mg/kg alprazolam. The results produced by these doses were statistically significant when compared with control group and similar to that of standard drug ranitidine. On the basis of the present study it can be concluded that the antiulcer activity of benzodiazepine alprazolam could be mainly due to combination of sedative, anxiolytic and antisecretory activity.

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Prescription Prone Errors

Some abbreviations, symbols and dose designations are frequently misinterpreted and lead to mistakes that result in patient harm. The ISMP-FDA campaign seeks to promote safe practices and prevent serious and even potentially fatal mistakes when communicating medication orders. The Division of Medication Error Prevention and Analysis (DMEPA) reviews medication error reports on marketed human drugs including prescription drugs, generic drugs, and over-the-counter drugs. The DMEPA uses the National Coordinating Council for Medication Error Reporting and Prevention (NCCMERP) definition of a medication error.

Dose Designations and Other Information	Intended Meaning	Misinterpretation	Correction
Trailing zero after decimal point (e.g., 1.0 mg)**	1 mg	Mistaken as 10 mg if the decimal point is not seen	Do not use trailing zeros for doses expressed in whole numbers
"Naked" decimal point (e.g., .5 mg)**	0.5 mg	Mistaken as 5 mg if the decimal point is not seen	Use zero before a decimal point when the dose is less than a whole unit
Abbreviations such as mg. or mL. with a period following the abbreviation	mg mL	The period is unnecessary and could be mistaken as the number 1 if written poorly	Use mg, mL, etc. without a terminal period
Drug name and dose run together (especially problematic for drug names that end in "l" such as Inderal40 mg; Tegretol300 mg)	Inderal 40 mg Tegretol 300 mg	Mistaken as Inderal 140 mg Mistaken as Tegretol 1300 mg	Place adequate space between the drug name, dose, and unit of measure
Numerical dose and unit of measure run together (e.g., 10mg, 100mL)	10 mg 100 mL	The "m" is sometimes mistaken as a zero or two zeros, risking a 10- to 100-fold overdose	Place adequate space between the dose and unit of measure
Large doses without properly placed commas (e.g., 100000 units; 1000000 units)	100,000 units 1,000,000 units	100000 has been mistaken as 10,000 or 1,000,000; 1000000 has been mistaken as 100,000	Use commas for dosing units at or above 1,000, or use words such as 100 "thousand" or 1 "million" to improve readability

Drugs can Cause the obesity:
Obesity isn't just caused by Over Eating!

For most obese people, excess weight is not caused by poor diet and lack of exercise. There are, however, instances when obesity is caused by a specific medical condition or the medications taken to treat it. Anyone can become obese because something unforeseen happens to their body chemistry, through no fault of their own. Certain medicines, including some corticosteroids, medications for epilepsy and diabetes, and some medications used to treat mental illness – including antidepressants and medicines for schizophrenia – can contribute to weight gain.

Drugs that can promote weight gain

- Antipsychotics, especially olanzepine (Zyprexa®)
- Antidepressants: tricyclics, SSRIs, MAOIs, mirtazepine (Zispin®) and lithium
- Corticosteroids: promote weight gain by two mechanisms. (i) Fat redistribution causing truncal obesity, buffalo hump and moon face; and (ii) fluid retention via mineralocorticoid effects
- Oral contraceptive and progesterogenic compounds
- Beta-blockers: not only do these agents cause weight gain, they might also restrict physical activity due to fatigue
- Oral hypoglycaemics: numerous agents have been shown to increase weight, including the glitazones. Sulphonylureas (except glimepiride) have been shown to increase weight by an average of 2–4 kg but by as much as 10 kg in some cases
- Insulin
- Anticonvulsants: weight gain has been documented with some agents (phenytoin, sodium valproate). However, topiramate (Topamax) is weight neutral or may cause weight loss
- Antihistamines: many antihistamines might cause weight gain, although this is more pronounced in older agents
- Pizotifen: a prophylactic migraine treatment, pizotifen increases the appetite and leads to weight gain

Phytochemical Evaluation Employing Advanced Analytical Techniques, Cytotoxicity and Antiulcer Activity of Extracts of *Hedera Helix* Linn

Hedera helix Linn. is a flowering climber belongs to Araliaceae family. Qualitative, quantitative evaluations of the plant were done by phytochemical analysis, physico-chemical properties, HPTLC, microbial load &Aflatoxin analysis. Spectral characterizations such as IR, 1HNMR, Mass spectroscopy were done for identification of isolated components. The preliminary phytochemical evaluation of the *Hedera helix* extract revealed the presence of triterpenoids,saponins, glycosides, tannins, phenols and flavanoids. *Invitro* cytotoxicity on breast cancer cell lines was evaluated for both aqueous and methanol extracts using MTT colorimetric assay.
The current work also includes the comparative study of antiulcer activity of aqueous and methanol extracts of *Hedera helix* leaves in aspirin induced ulcer model in rats using ranitidine (20 mg/kg b.w.) as a standard drug. Aqueous extract of *Hedera helix* showed significant protection against peptic ulcer at a dose of 200 mg/kg b.w. as compared to methanol extract. Histopathology study showed 68.8% and 63.9% ulcer protection, exhibited by aqueous and methanol extract respectively. Further research has to be done to screen the active phytoconstituents responsible for antiulcer activity, teratogenicity and other toxicological effects.

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Phytochemical Evaluation And Pre Clinical Studies of *Pouteria Tomentosa* (Roxb.) Baehni

Pouteria tomentosa (Roxb.) Baehni is the plant species of family Sapotaceae. Triterpenoids and flavonoids are the major phyto constituents. The present study correlates the anthelmintic, anti oxidant, anti bacterial activities and also their spectral analysis .The stem extracts of ethanol and n-hexane were used. The compounds were isolated in a column using methanol and water (3:1) as mobile phase. The ethanol extract showed the maximum antibacterial activity at 80 µgm/ml. Anthelmintic activities was maximum at 80 mg/ml with paralysis time of 15.8 mints and death time was 25.3 mints. Also, the stem extract showed free radical scavenging activity in DPPH radical assay(IC50 0.53mg/ml), but was less active than ascorbic acid (IC50 0.34mg/ml).IR interpretations had shown the stretching and bending of various C-C,C-H and N-H bonds. Ethanol extract isolated the molecular ion peak in ESI mass spectra at 367m/z. 1HNMR spectral analysis of compound was done with CDCl3 and presence of protons was studied.

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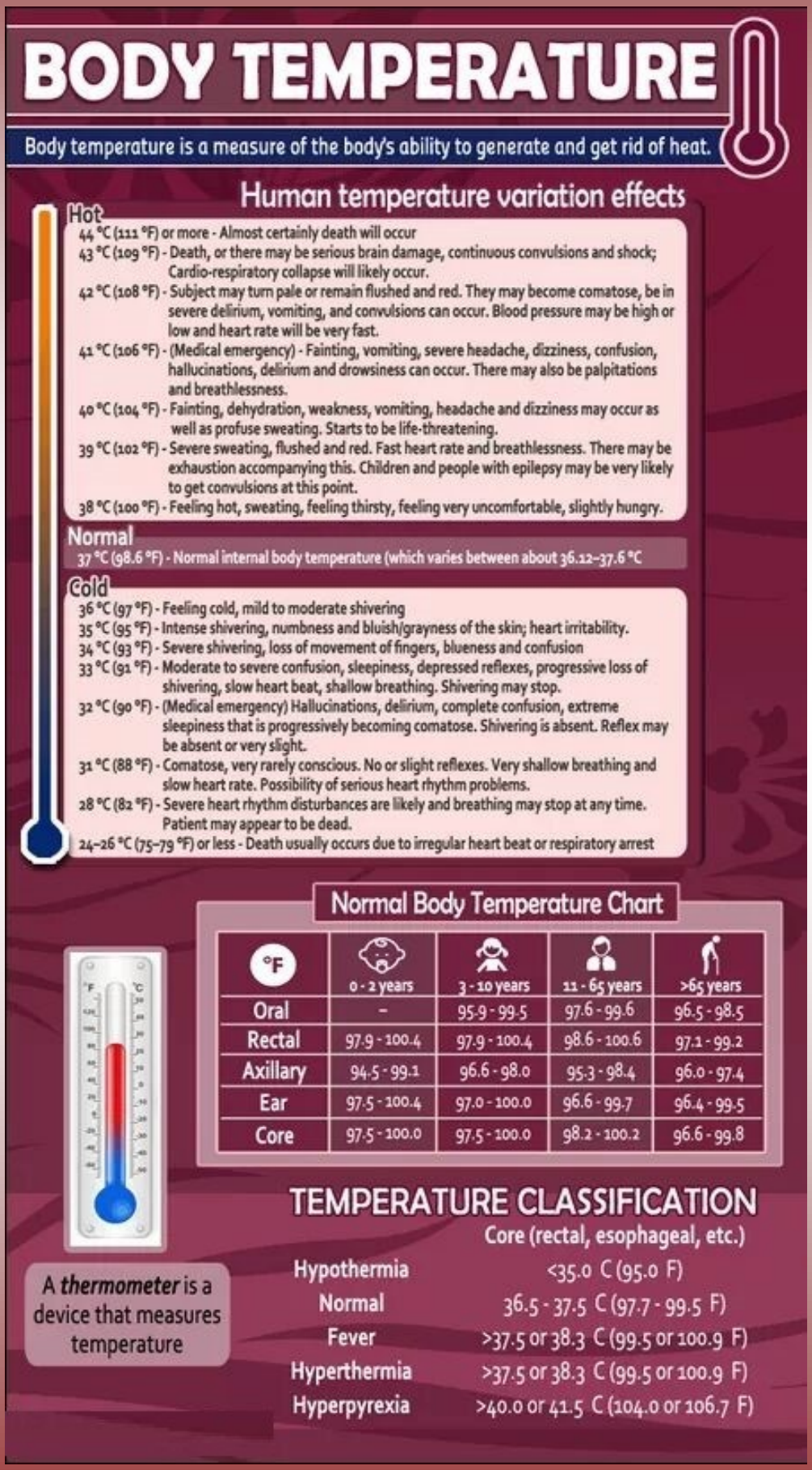
Adult Immunization

You're not a kid anymore, so you don't have to worry about shots. right? Wrong. Getting immunized is a life-long, life-protecting job. You're never too old to get immunized! You never outgrow the need for vaccines. The specific immunizations you need as an adult are determined by factors such as your age, lifestyle, high-risk conditions, type and locations of travel, and previous immunizations. Don't leave your healthcare provider's office without making sure you've had all the vaccinations you need. Check this:

Vaccine	Do you need it? Consult your healthcare provider to determine your level of risk for infection
Hepatitis A (HepA)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatitis A virus infection* or simply want to be protected from this disease. The vaccine is usually given in 2 doses, 6–18 months apart.
Hepatitis B (HepB)	***Maybe.*** You need this vaccine if you have a specific risk factor for hepatitis B virus infection* or simply want to be protected from this disease. The vaccine is given in 3 doses, usually over 6 months.
Human papillomavirus (HPV)	***Maybe.*** You need this vaccine if you are a woman age 26 years or younger or a man age 21 years or younger. Men age 22 through 26 years with a risk condition* also need vaccination. Any other man age 22 through 26 who wants to be protected from HPV may receive it, too. The vaccine is given in 3 doses over 6 months.
Influenza	***Yes!*** You need a dose every fall (or winter) for your protection and for the protection of others around you.
Measles, mumps, rubella (MMR)	***Maybe.*** You need at least 1 dose of MMR if you were born in 1957 or later. You may also need a 2nd dose.*
Meningococcal (MCV4, MPSV4)	***Maybe.*** You need this vaccine if you have one of several health conditions, or if you are 19–21 and a first-year college student living in a residence hall and you either have never been vaccinated or were vaccinated before age 16.*
Pneumococcal (PPSV23, PCV13)	***Maybe.*** You need 1 dose of PPSV23 at age 65 years (or older) if you've never been vaccinated or you were previously vaccinated at least 5 years ago when you were younger than age 65 years. You also need 1–2 doses if you smoke cigarettes or have certain chronic health conditions. Some adults with certain high risk conditions also need vaccination with PCV13. Talk to your healthcare provider to find out if you need this vaccine.*
Tetanus, diphtheria, whooping cough (pertussis) (Tdap, Td)	***Yes!*** All adults need to get Tdap vaccine (the adult whooping cough vaccine) and women need to get a dose during each pregnancy. After that, you need a Td booster dose every 10 years. Consult your healthcare provider if you haven't had at least 3 tetanus- and diphtheria-containing shots sometime in your life or have a deep or dirty wound.
Varicella (Chickenpox)	***Maybe.*** If you've never had chickenpox or were vaccinated but received only 1 dose, talk to your healthcare provider to find out if you need this vaccine.*
Zoster (shingles)	***Maybe.*** If you are age 60 years or older, you should get a 1-time dose of this vaccine now.

Effect of Human Body Temperature on Health

Normal human body temperature, also known as normothermia or euthermia, depends upon the place in the body at which the measurement is made. Temperature control (thermoregulation) is part of a homeostatic mechanism that keeps the organism at optimum operating temperature, as it affects the rate of chemical reactions. In humans the average internal temperature is 37.0 °C (98.6 °F), though it varies among individuals. However, no person always has exactly the same temperature at every moment of the day. Temperatures cycle regularly up and down through the day, as controlled by the person's circadian rhythm. Check the following image



Garlic: A Simple Super Food

Garlic, a small and humble-looking vegetable, plays a huge role in the major cuisines of the world. It's hard to imagine Italian, French, or Asian cooking without garlic. The big news on garlic isn't its ability to flavor a dish, but rather its considerable role as a health promoter. Indeed, recent findings on the power of garlic to fight cancer and cardiovascular disease, as well as its anti-inflammatory and antiviral properties, give garlic the bona tides to elevate it to Super Food status. Garlic's power as a heath promoter comes from its rich variety of sulfur containing compounds. Of the nearly one hundred nutrients in garlic, the most important in terms of health benefits seems to be the sulfur compound allicin—an amino acid. Allicin is not present in fresh garlic, but it is formed instantly when cloves are crushed, chewed, or cut. Allicin seems to be responsible for the super biological activity of garlic as well as its odor. In addition to allicin, a single clove of garlic offers a stew of compounds with potential health benefits, including saponins, phosphorus, potassium, zinc, selenium, polyphenols, and arginine. In addition to these compounds, garlic is a good source of vitamin B6 and also of vitamin C. As with most whole foods, garlic's antioxidant and anti-inflammatory abilities are probably due to the sum of the whole rather than a single agent.

Garlic Oils: These products offer minute amounts of garlic essential oil in a large amount of vegetable oil. They often express their "potencies" in theoretical amounts of raw garlic used to obtain the distilled garlic oil. There is no scientific data to show that the oil fraction represents all of the benefits of garlic.

Garlic Powders: Chemically, there is almost no difference between the garlic flavoring powders sold at grocery stores and the garlic supplements made of garlic powder and then sold at health food stores. Often these manufacturers claim that their products deliver allicin into the body.

Garlic Oil Macerates: There are two types of oil macerate products on the market and both are packaged in soft gel capsules. One is made by simply mixing a garlic flavoring powder with vegetable oil.

KYOLIC® Aged Garlic Extract™: KYOLIC begins with only organically grown garlic bulbs. This is essential for growing naturally balanced garlic because organic fertilizers produce an ideal ratio of essential nutrients in the raw garlic without any contamination by harmful chemicals including herbicides and pesticides. Then KYOLIC is gently aged to convert the harsh and irritating compounds in raw garlic to mild, stable and beneficial compounds. KYOLIC Aged Garlic Extract, is a totally balanced garlic supplement containing large amounts of essential water-soluble compounds and small amounts of oil-soluble compounds. KYOLIC is a sociable garlic and its safety and benefits have been confirmed by over 600 scientific studies. Furthermore, the bioavailability of its key compound, S-allyl cysteine, has been substantiated.

Conclusion: Garlic has been used over thousands of years for medicinal purposes, and health claims credited to the ingestion of garlic have predominantly come from anecdotal evidence and traditional use. The scientific evidence for garlic supplementation for most health conditions is limited, and in most cases inconclusive. There is no evidence that garlic supplementation will enhance athletic performance, and only one study assessed the supplementation of garlic for the prevention and treatment of exercise induced muscle damage. This study stands alone and further research is required among athletic populations.

List of Events Conducted by Sultan-ul-Uloom College of Pharmacy, Hyderabad

DATE	EVENT	GUEST(S)
15.07.2014	**Graduation Day &** Launching of **Pharm D. Program**	**Prof. L. Venugopal Reddy**, Chairman, APSCHE **Mr. Sanjay Singh**, Sr. Vice President, Operations Aurobindo Pharma Ltd.
30.08.2014	Guest Lecture on **Challenges Confronting the Indian Youth : Solution and Responsibilities**	**Dr. Mohan Kanda**, IAS Former Chief Secretary, Govt. of AP. **Prof. Kancha Alaiah**, Former HOD, Political Sciences, OU. **Apna Watan, NGO**
25.09.2014	**Blood Donation Camp** in collaboration with **Red Cross Blood Bank**	**Mr. Chintala Ramachandra Reddy**, MLA, Khairatabad **Mr. Bala Subramanyam**, IAS, Secretary, Red Cross **Dr. Satish Reddy**, MD, Prime Hospitals
22.10.2014	**Orientation Programme**	**Mr. Mohd. Waliullah**,Vice Chairman, SUES **Mr. Zafar Javeed**, Hony. Secretary, SUES
24.10.2014 to 17.11.2014	**Comprehensive Eye Checkup Camp** in collaboration with **Brien Holden Vision** & **LV Prasad Eye Institute**	**Mr. Zafar Javeed**, Hony. Secretary, SUES. **Dr. Kalika Bandamwar**, Research Optometrist, for Principal Investigator, Brien Holden Vision Pvt. Ltd.
11.11.2014	**National Education Day** Campus Inter College Competitions in Elocution & Essay Writing	**Dr. Mir Akbar Ali Khan**, Chairman Governing Council, SUCP
18.12.2014	**Dental Camp** in collaboration with **Brite Dental Hospital** & **Phenomenal Group**	**Dr. Mir Akbar Ali Khan**, Chairman Governing Council, SUCP. **Dr. Nikhil & Dr. Lalitha**, Brite Dental Hospital, Madhapur.
23.12.2014 to 28.12.2014	**Pharmathon 2015 – Sports Week**	Inter Class Sports Competitions
31.12.2014	**MOU with KIMS Foundation & Research Centre (KFRC)**	**Dr. Kakarla Subba Rao**, Chairman, KFRC & Former Director Nizam's Institute of Medical Sciences. **Dr. K. Kanaka Bhushanam**, CEO, KFRC & Former Director ESI Hospital, Erragadda.
19.01.2015	**MOU with Omdurman Islamic University, Sudan**	**Prof. Hassan Abbas Hassan Ibrahim**, Vice Chancellor, **Dr. Ahmed Musa Siyam**, General Manager & General Directorate of Planning, Development & Investment, Omdurman Islam,ic University, Sudan
25.02.2015 to 26.02.2015	**Pharmathon 2015 – College Fest**	Inter Class Literary & Cultural Activities Competitions
07.03.2015	**Industrial Tour to M/s. BARIS Pharmaceuticals Pvt. Ltd.** Kothapet, Hyderabad	**B.Pharm Final Year Students**
24.03.2015	**College Day**	**Dr. J.A.S. Giri,** Chairman, Sangfroid Group of Companies **Mr. M. Amrutha Rao,** Drug Controller, Telangana State

Graduate Programme Outcomes of Sultan-ul-Uloom College of Pharmacy, Hyderabad

At the end of the programme the graduates shall

a. Acquire fundamental knowledge of pharmaceutical, clinical and life sciences, their practical applications, relevant historical landmarks and political issues.

b. Learn the basic principles of drug treatment, disease modifications, formulation development, manufacturing, quality assurance and analytical techniques.

c. Understand drug designing, cellular mechanism, molecular biology and molecular modelling.

d. Demonstrate knowledge of current regulatory guidelines and intellectual property rights.

e. Have thorough knowledge of pharmacovigilance, ADR–monitoring and pharmacogenetics.

f. Master the key concepts in modern pharmaceutical tools, software, equipments and their validation.

g. Greatly enhance their practical skills, scientific approach, analytical and critical thinking potential accomplishing the real time requirements of all stake holders.

h. Immensely benefit in organizing proficiency and knowledge dissemination in seminars, symposia and workshops.

i. Interact with industries, academic, clinical and research organizations widening their intellectual horizons and entrepreneurial skills.

j. Gain ability for sustainable development through team participation, communication, planning, time management, leadership and interpersonal skills.

k. Be groomed on societal, health and environmental safety, legal, cultural, ethical, moral and social practices for a better professional identity and lifelong learning.

l. Training graduates to achieve global competence to succeed competitive examinations in employment and higher education.

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Programme Educational Objectives

Academic Excellence: Graduates of this program shall gain profound knowledge in various disciplines viz., applied mathematics & sciences, anatomy, physiology, pharmacology, pharmaceutics, pharmaceutical chemistry, pharmaceutical analysis, phytochemistry, biotechnology and regulatory affairs to cater to the requirements of pharmaceutical industries, professional pharmacy practice, clinical research organizations, medical transcription and data management companies.

Core Competence: Graduates to be developed into highly competent individuals with practical skills by igniting scientific temper and promoting intellectual quest to gear ahead towards competitive examinations and diverse careers in the field of pharmaceutical sciences through the process of continuous learning.

Personality Development and Professionalism: To inculcate discipline, professionalism, team spirit, communication skills, social and ethical commitment in the graduates in order to adorn leadership roles facilitating improvement in healthcare sector with a distinct professional identity, business acumen, global recognition and sustainable development.

Collaboration: To benefit graduates through industry – institute interface and collaboration works with other academic, clinical and research organizations resulting in confidence building, knowledge advancement and entrepreneurial competencies.

Regulatory Affairs: Graduates to be trained in current acts and regulations governing good manufacturing practices, good laboratory practices, good clinical practices and environmental safety, thereby enhancing integrity and ethical values in their profession.

Courses Offered:

B.Pharm (4 Years)

M.Pharm (2 Years)

- Quality Assurance
- Pharmaceutical Chemistry
- Pharmaceutics
- Pharmacology

Pharm.D. (6 Years)

MoUs with:

Prime Hospitals, Hyderabad

Central Research Institute of Unani Medicine (CRIUM), Hyderabad

KIMS Foundation and Research Center, Hyderabad

Omdurman Islamic University, Sudan