SULTAN-UL-ULOOM
COLLEGE OF PHARMACY

PRIDE

Pharmaceutical Research in Drug Evolution

Volume I Issue I R & D Newsletter 2018-19

Special points of interest:

- Abstracts & Review articles from Department of Pharm. Chemistry, Pharmaceutics, Pharmacy Practice, Pharmaceutical Analysis and Pharmacology.
- Interesting review on Toxic Venoms as pain killers
- Patents Filed

Inside this issue:

Editorial

Sultan-ul-Uloom College of Pharmacy is located in the heart of Hyderabad city. The mission of college of pharmacy is to provide excellence in teaching, research, and service. We are dedicated to the success of our students and the strong research base of our faculty allows us to provide individualized research experience for undergraduates in pharmaceutical sciences, as well as biomedical science. Qualified undergraduates actively participate in our lab courses as Lab Assistants, thus gaining valuable learning and teaching experience. Our commitment is always to our students, so we offer B.Pharam, M.Pharm, Pharm.D. and Pharm.D. (PB) courses. The Department is recognized for the excellence in teaching and research, and attracts both high-quality staff and well-qualified students. There are about 458 undergraduate students, 137 postgraduate students and 60 staff who form a close-knit, friendly department. We have a personal tutor system whereby each student has a member of staff to whom they can go to seek advice and guidance on any problem. The Department runs five highly respected postgraduate masters' degree programs in Pharmaceutical sciences include Pharmaceutics, Pharmaceutical chemistry, Pharmacology, Quality Assurance, and Pharm.D. (PB).

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:

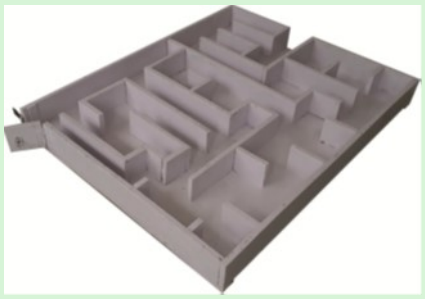
- ♦ Ensuring high standards in imparting quality pharmacy education effectively integrating critical thinking, problem solving, team spirit and leadership skills.
- ♦ Promoting the academic, entrepreneurial and career growth of the students with ethical values and social commitment for sustainable development.
- ♦ 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.

PATENTS FILED BY SULTAN-UL-ULOOM COLLEGE OF PHARMACY

Title of the invention: ***NOVEL ACETYL CHOLINESTERASE INHIBITORS TO TREAT NUERO-DEGENERATIVE DISORDERS***.
Name of the Patent Applicant: Dr. Nemala Appala Raju. Professor. Sultan-ul-Uloom College of Pharmacy, Hyderabad.
Application No: 201741009498 A.
Date of filing of Application: 18/03/2017 and Publication Date: 14/07/2017
Abstract: The synthesis of a novel acetyl cholinesterase inhibitors to treat neurodegenerative disorders is disclosed. The novel indolopyrazoline derivatives (P_1-P_4 and Q_1-Q_4) has been characterized and evaluated as potential anti-Alzheimer agents through in vitro Acetylcholinesterase (AChE) inhibition and radical scavenging activity (antioxidant) studies. The molecular docking studies provide a prospective evidence to identify key interactions between the active inhibitors and the AChE that furthermore led us to the identification of plausible binding mode of novel indolopyrazoline derivatives. Additionally, in-silico ADME prediction using QikProp shows that these derivatives fulfilled all the properties of CNS acting drugs.

Title of the Invention: ***"FOOD COMPOSITION COMPRISING Cinnamomum obtusifolium BARK EXTRACT".***
Name of the Patent Applicants: Dr. N. Anitha, Professor and Head of the Department, Dr. Anupama Koneru, Professor and Principal, Ms. Yusra Shakeel, Sultan-ul-Uloom College of Pharmacy, Hyderabad.
Application No: 201841037324
Date of filing of Application: 03.10.2018 and date of Publication 12.10.2019.
Abstract: The present invention relates to a food composition comprising an extract of *Cinnamomum obtusifolium* bark. The food composition is used for the treatment and prevention of neurodegenerative diseases. When the aqueous and methanolic extract of *cinnamomum obtusifolium* administered in scopolamine induced memory impaired Swiss albino mice, there is a significant improvement in memory and locomotor activity. The levels of acetyl choline, catalase, glutathione reductase, superoxide dismutase (SOD) were increased and lipid peroxidation decreased indicating that these extract of *cinnamomum obtusifolium* can be used in treatment of Alzheimer disease. When the methanolic extract of *cinnamomum obtusifolium* administered in beta-amyloid protein induced Alzheimer's disease in shsy5y cell lines, there is a significant increase in cell viability. The levels of catalase, glutathione reductase, superoxide dismutase (SOD) were increased and lipid peroxidation reduced resulting in decreased levels of molandialdehyde, indicating that methanolic extract of *cinnamomum obtusifolium* can be used in treatment of Alzheimer disease. Among the two extracts methanolic extract possess highest amount of carbohydrates, phenolic compounds, tannins, phytosterols, triterpenes, flavonoids and saponins which exhibits antioxidants activity thereby increases the memory, locomotor activity, acetyl choline, catalase, glutathione reductase, superoxide dismutase and reduce the lipid peroxidation. This property indicates that these extracts can be indicated in the treatment of Alzheimer's disease.

Title of the Invention: ***"MAZE"*** **(Design Patent – Medical and Laboratory Equipment)**
Name of the Patent Applicants: Dr. T. Mamatha, Professor and Head of the Department, Dr. Anuapama Koneru, Professor and Principal, Sultan-ul-Uloom College of Pharmacy, Hyderabad.
Application No: 309759
Date of filing the Application:
Design of the Patent:



TOXIC VENOMS AS PAIN KILLERS - AN UPDATE

Venoms are a treasure trove of peptides that may provide a bounty of novel painkillers. There are currently six US Food and Drug Administration (FDA)-approved drugs derived from animal venom peptides and proteins. The gene **SCN9A** plays a significant role in human pain perception. **SCN9A** is responsible for encoding a voltage-gated sodium channel ($Na_v1.7$) present in pain-sensing neurons (nociceptors). The team was investigating individuals with a congenital inability to feel any pain, finding that this was caused by **SCN9A** mutations that resulted in a complete loss of function of $Na_v1.7$. The disruption of this single gene rendered these individuals unable to feel any pain. Developing drugs to block **$Na_v1.7$** function could potentially lead towards novel, safer analgesics. 'It seemed to be an incredibly exciting target for treating people with chronic pain – if you could find a drug that targets this channel then this drug might be useful for all sorts of pain. **ProTx-II,** from the venom of the Peruvian green velvet tarantula, was identified as a selective inhibitor of the $Na_v1.7$. It is one of the most potent $Na_v1.7$ blockers found so far and demonstrates more than 80-fold selectivity over other sodium channel subtypes tested. Pn3a, a highly selective spider venom peptide, obtained from the venom of a South American giant blue bloom tarantula. Pn3a potently inhibits $Na_v1.7$ with 1000-fold selectivity over all other Na_v subtypes. Originating from the venomous cone snail species *Conus magus*, ziconotide is used to treat severe chronic pain. Its active ingredient ω-conotoxin first attracted attention during the mid-1970s when Baldomera Olivera, a biologist from the University of Utah, US, wanted to understand the pharmacology behind cone snail stings killing humans. ω-Conotoxin potently and selectively blocks N-type voltage-gated calcium channels ($Ca_v2.2$) and shows strong analgesic effects in humans when injected directly into the spinal fluid. Although intrathecal administration is far from ideal, it's the only way for the drug to reach optimal analgesic efficacy while also reducing the potential for serious side-effects, over more traditional routes such as oral or intravenous administration.

Dr. N. Appala Raju, Professor
Dept. of Pharm. Chemistry

SCREENING OF NEUROPROTECTIVE AND ANTIOXIDANT EFFECTS OF *Luffa cylindrica* (L) Roem AGAINST SCOPOLAMINE INDUCED MEMORY IMPAIRMENT IN MICE

Neuroprotection can be considered as a treatment approach that involves inhibition of the pathophysiological processes that cause neuron damage in neurodegenerative disorders like Alzheimer's.

This study aims to screen the antioxidant and neuroprotective effects of the Ethyl acetate and Aqueous extracts of *Luffa cylindrica* (L) Roem fruit.

The ethyl acetate and aqueous extracts of luffa fruit were analysed to identify the phytochemical constituents present. TLC and phytochemical screening revealed the presence of carbohydrates, steroids, saponins, triterpenes, phenolics, flavonoids, and alkaloids.

In vivo effects of the ethyl acetate and aqueous extracts of luffa fruit were seen in scopolamine induced memory impairment in mice through exteroceptive behavioural studies; AChE activity and antioxidant parameters of the brain were performed and assessed in Control, Scopolamine, Donepezil and Extract treated groups.

Groups that were administered Ethyl acetate and Aqueous extracts of luffa fruit showed improved retention in elevated plus maze model of memory assessment, reduction of brain AChE activity and increased activity of brain antioxidant enzymes like catalase, glutathione, super oxide dis mutase, and reduced activity of lipid peroxidation at varying levels.

Hence it can be asserted that both Ethyl acetate and Aqueous extracts of *Luffa cylindrica* fruit demonstrates good antioxidant and neuroprotective effect in scopolamine-amnesia mouse model.

Dr. Anupama Koneru, Professor & Principal
Dr. N. Anitha, Professor
Dept. of Pharmacology

BIOPHARMING

Biopharming is the harvesting of specific bioactive molecules from organisms and crops that are mass-cultured. Biopharming nowadays is different from the conventional practices for deploying genetically engineered transgenic crop plants and domesticated animals. Modern biopharming has an important advantage, now that vaccines and antibodies are able to be produced in crop plants, without having to use embryonate eggs and cell cultures. Biopharming as the second wave of agricultural biotechnology is quite a recent phenomenon and presents a fascinating array of benefits and risks. The genes can be put into the cells of the plant, such as, tobacco, corn, and alfalfa, and the plant will do all the hard work transcribing and folding the protein. They do all of that by using the Earth's natural materials-- water, carbon dioxide, and soil. The use of targeted gene transfer for the expression of the transgene in the mammary gland of large farm animals like cow, pigs, goats and sheep offers advantages like easy isolation of the product secreted into the milk and low cost-large scale production. The first product derived from a transgenic animal is a recombinant antithrombin called ATryn ®. It is used for the prophylactic treatment of deep vein thrombosis in patients with hereditary antithrombin deficiencies. FDA has developed several regulations and guidelines for safe production and commercialization of recombinant products using transgenic animals. . All transgenic application of livestock requires compliance to the standards of genetic security and reliability of method applied in genetic modification.

Dr. T. Mamatha, Professor
Dept. of Pharmaceutics

EVALUATION OF ANTI PARKINSON'S ACTIVITY OF NOVEL UNANI FORMULATION CASTOREUM IN CHLORPROMAZINE INDUCED EXPERIMENTAL ANIMAL MODEL

The present study was undertaken to evaluate the Anti-Parkinson's Activity of the Unani crude drug molecule Jund Bedastar (Castoreum) in chlorpromazine induced Parkinson's disease in Wistar albino rats. Castoreum, in Unani literature is used for the treatment of tremors (Ra'asha). The aqueous extract of the drug was used as a test drug in a dose of 200mg/kg body weight and 400mg/kg body weight respectively. Chlorpromazine caused significant increase in the levels of malondialdehyde, while the treatment with Castoreum as oral administration significantly decreased the lipid peroxidation in the diseased animals. Administration of the extract also produced a significant elevation ($p<0.05$) in anti-oxidant enzymes such as superoxide dismutase, catalyses, and reduced glutathione in the diseased animals when compared to the negative control that did not receive any treatment. The results of the behavioural analysis were also significant ($p<0.05$) as documented from the results of block test, pole test and beam traversal task test. The presence of many anti-oxidants in the Castoreum could be the possible reason for its significant neuroprotective activity.

Mr. Syed Hussain S.K, Asst. Professor
Dept. of Pharmacy Practice

MATRIX EFFECT DETERMINATION IN BIO ANALYTICAL METHODS

Bioanalytical profile is an essential part in drug discovery and development, subsequently in therapeutic drug monitoring (TDM) to adjust dose and frequency of dosing. In the analysis of biological samples, different matrix of sample can cause decrease in sensitivity and affect the assay result and reproducibility. Matrix effect and selectivity issues have long been associated with bioanalytical technique. Main reason for matrix effect is ion suppression. It is not always possible to remove matrix effect completely but can quantify matrix effect. To minimize the effect of matrix many methods are employed like dilution, reducing injection volume and stable isotope labeled internal standard etc. In the view of regulatory guidelines, matrix effect in quantification of drug in biological samples is essential validation parameter as a part of approval process. Matrix effect is directly dependent on chromatographic performance.

Mr. S. Imam Pasha, Asst. Professor
Dept. of Pharmaceutical Analyis

S. No	Name of the Faculty	Title of the Research Paper	Name of the Journal
1.	Dr. D. Saritha	Analysis of Particle Size Distribution of Some Powders and Dosage Forms by Skewness and Kurtosis	Journal of Chemical and Pharmaceutical Research, June 2017, Vol 9, Issue 6, Page Nos. 113-119, ISSN: 0975-7384
2.	Mr. Syed Hussain S.k Mr. S Imam Pasha Mr. Mohammed Abdul Farhan	Analytical method development and validation for Residual Solvent Dichloromehtane in Vilazodone by Gas Chromatography Technique	World Journal of Pharmaceutical Research, May 2018, Vol 7, Issue 11, Page Nos. 1385-1405, ISSN: 2277-7105
3.	Dr. N. Anitha	A Review of Endothelins: An Update	Asian Journal of Pharmaceutical and Clinical Research, January 2018, Vol 11 Issue 4, ISSN (print): 0974-2441, ISSN (online): 2455-3891
4.	Dr. V. Murali Balaram Mr. S. Imam Pasha	Chromogenic Spectrophotometric Estimation of Brivaracetam in Bulk Drug & its Formulation with Folin Ciocalteu Reagent	IOSR Journal of Pharmacy, December 2017, Vol 7, Issue 12, Page Nos. 44-48, ISSN (print): 2319-4219, ISSN (online): 2250-3013
5.	Dr. Y. Rajesh Babu	Elucidation of chemosensitization effect of acridones in cancel cell lines: Combined pharmcophore modelling, 3D QSAR, and molecular dynamics studies	Computational Biology and Chemistry, February 2018, Vol 74, Issue 2018, Page Nos. 63-75 DOI: https://doi.org/10.1016/j.compbiolchem.2018.02.04
6.	Dr. T. Mamatha	A Novel RP HPLC Method for Development and Validation of Cinidipine in Bulk and Pharmaceutical Dosage Form	Asian Journal of Pharmaceutical Technology & Innovation, June 2017, Vol 5, Issue 4, Page Nos. 72-81, ISSN: 2347-8810
7.	Dr. T. Mamatha	Enhancement of the Dissolution Rate of Nateglinide Tablets using Liquisolid Compact Technique	Asian Journal of Pharmaceutical and Clinical Research, June 2017, Vol 10, Issue 10, ISSN (print): 0974-2441, ISSN (online): 2455-3891
8.	Dr. Y Rajesh Babu Dr. N. Appala Raju	A Validated RP-HPLC Method for the Determination of 2-chlorodenosine as Process Related Impurity in Regadenosen Parenteral Dosage Form	Journal of Chemical and Pharmaceutical Research, July 2017, Vol 9, Issue 7, Page Nos. 55-61, ISSN: 0975-7384
9.	Dr. V. Murali Balaram Mr. S. Imam Pasha	Bioanalysis of monomethyl fumarate in human plasma by a sensitive and rapid LC-MS/MS method and its pharmacokinetic application LC-MS/MS determination of monomethyl fumarate in human plasma	Journal of Pharmaceutical and Biomedical Analysis, August 2017, Vol 146, Issue 2017, Page Nos. 109-116, DOI: http://dx.doi.org/10.1016/j.jpba.2017.08.015
10.	Dr. T. Mamatha	Development and Evaluation of Mesalamine-Glutamine Cocrystal Tablets for Colon Specific Delivery	International Journal of Pharmaceutical Sciences and Nanotechnology, September-October 2017, Vol 10, Issue 5, Page Nos. 3866-3874
11.	Dr. Anupama Koneru Dr. N. Anitha	Assessment of Rational Drug Prescribing Pattern in Geriatric Patients in Hyderabad Metropolitan	Indian Journal of Pharmacy Practice, July-September 2017, Vol 10, Issue 3, Page Nos. 174-178, DOI: 10.5530/ijopp.10.3.37
12.	Dr. T. Mamatha	Garlic: An Updated Review on Multipotential Medicinal Applications	Journal of Pharmaceutical Sciences and Research, 2017, Vol 9, Issue 10, Page Nos. 1874-1881, ISSN: 0975-1459
13.	Ms. A. Sushma	Development and Evaluation of Fixed Dose Combination of Fenoverine and Simethicone for treatment of Irritable Bowel Syndrome	International Journal of Innovative Pharmaceutical Sciences and Research, November 2017, Vol 5, Issue 11, Page Nos. 122-133, ISSN: 2347-2154
14.	Dr. V. Murali Balaram Mr. S. Imam Pasha	Chromogenic-Visible-Spectrophotometric Quantification of Acotiamide in Bulk Drug and its Formulation	World Journal of Pharmaceutical Research, December 2017, Vol 6, Issue 17, Page Nos. 1261-1267, ISSN: 2277-7105
15.	Dr. Y. Rajesh Babu	Synthesis and Chemical Characterization of Some Novel Benzopyrans and their Biological Activity Studies	Der Pharma Chemica, 2017, Vol 9, Issue 5, Page Nos. 117-121, ISSN: 0975-413X
16.	Dr. T. Mamatha Dr. N. Anitha	Formulation Development and Characterization of Oxcarbazepine Microemulsion for Intranasal Delivery	Acta Pharmaceutical Sciencia, 2017, Vol 55, Issue 2, Page Nos. 79-94, DOI: 10.23893/1307-2080.APS.05513
17.	Dr. V. Murali Balaram Mr. S. Imam Pasha	Gas Chromatographic-Static head space sampler-fid method development and validation for the determination of residual solvent tertiary butyl acetate (TBA) in bortezomib	European Journal of Biomedical and Pharmaceutical Sciences, 2018, Vol 5, Issue 1, Page Nos. 536-540, ISSN: 2349-8870
18.	Dr. N. Appala Raju Ms. Parbati Kirtania	Development and application of Liquid Chromatographic Method for simultaneous determination of Ombitasvir, Paritaprevir, and Ritonavir in Fixed Tablet Dosage Form	Indo American Journal of Pharmaceutical Research, March 2018, Vol 8, Issue 2, Page Nos. 1459-1467, ISSN: 2231-6876

LIST OF EVENTS IN THE ACADEMIC YEAR 2018-2019

S.No.	DATE	EVENT	DETAILS
1	28.04.2018 To 29.04.2018	**Scientific Program By Indian Association of Colleges of Pharmacy**	Indian Congress of Pharmacy Practice-2018 & 3rd Convention of the Indian Association of Colleges of Pharmacy At Novotel Hyderabad Convention Centre, Hyderabad
2	30.06.2018	**Interactive seminar "Present & Future Needs of Pharma Industry from Academia & Regulatory"**	Jointly Organized by The Indian Pharmaceutical Association & Pharmexcil Telangana State Branch In Co-ordination with NIPER, Hyderabad
3	21.07.2018	**Seminar On Pharmacovigilance (Argus safety)**	By **Mr. G.V.L.P. Subbarao**, CEO, Biomed Informatics, Hyderabad & **Mrs. G.M. Rajeshwari,** Faculty, Biomed Informatics, Hyderabad
4	25.07.2018	**Orientation for B.Pharm students by TASK**	**Mrs. Sravanthi** Cluster Manager, TASK
5	20.08.2018	**Motivational Speaker & Interaction For B.Pharm, IIIrd & IVth Year students**	**By Mr. Mirza Sibtine Raza,** Motivational speaker
6	25.08.2018	**Graduation Day & Orientation Program**	**By Mr. Shahnawaz Qasim, IPS,** CEO, Waqf Board & **Dr. Shashi Bala Singh** Director, NIPER-Hyderabad
7	02.09.2018	**Great Britain**	**Mr. Andrew Fleming**, British Deputy High Commission for Telangana & Andhra Pradesh
8	10.09.2018 To 12.09.2018	**Continuing Education Program** Sponsored by **Pharmacy Council of India**	Chief Guest Dr. C. K. Kokate Chairman, Expert Panel Committee for approval of FDCs, **Ministry of Health, GOI** & Chairman, **Pharmacy Accreditation Committee of NBA** Former President, **Pharmacy Council of India** Guest of Honor Dr. V. Venkateswarlu Managing Director, **Neuheit Pharma Technology Pvt. Ltd**
9	25.09.2018	**Red Cross Blood Donation Camp**	By **Mrs. Shikha Goel,** IPS Add. Comm. Of Police (Crimes and SIT), Hyd. City & **Smt. Lakshmi Manchu Ji** Swachh Bharat- Ambassador, Actress, Producer

S.No.	DATE	EVENT	DETAILS
10	29.09.2018	**RUBARU** **Empowering Young Global citizen**	**Mr. Andrew Fleming**, British Deputy High Commission for Telangana & Andhra Pradesh & **Mr. AK Khan IPS** (Retd) (Advisor, Minority Affairs, Govt of Telangana),
11	11.10.2018	**Guest Lecture on** **Migraine Awareness Program**	By **Dr. Swetha,** MD DM (Neurology), Assistant Professor, Department of Neurology, Nizam's Institute of Medical Sciences, Hyderabad
12	26.10.2018	**BITS PILANI Quiz**	At BITS Pilani, Hyderabad
13	27.10.2018	**BITS PILANI Conference & Workshop**	At BITS Pilani, Hyderabad
14	02.11.2018	**Organ Donation awareness Program**	By **Time of India**
15	02.11.2018	**Voter Awareness Program**	By **Eenadu Daily Newspaper**
16	15.11.2018	**Telangana State Kanti Velugu**	By **Dr. Laxmi Narsimha,** Kanti Velugu Medical Officer, UPHC, Showkathnagar & **Dr. Marziya Fatima** Optometrist
17	09.11.2018	**State Level IPA Elocution Competition**	At VIPER
18	15.11.2018	**Seminar on** **Pharmacovigilance**	At Sultan ul Uloom College of Pharmacy
19	23.11.2018	**IPA NEC**	Sri Indu College of Pharmacy, Ibrahimpatnam
20	23.11.2018	**IPA Online Quiz**	At Sultan ul Uloom College of Pharmacy
21	24.11.2018 To 26.11.2018	**IACP CONFERENCE** **Pharmacy Practice Module – Advanced Learning Series**	At JSS College of Pharmacy, Mysore
22	01.02.2019 To 02.02.2019	SYNCHROPHARMA 2019	Two Day National Conference on **"Advances, Challenges & Future Strategies in Pharmaceutical Industry and Pharmaceutical Care"** In Association with Indian Pharmaceutical Association—Telanagana State Branch

Graduate Program Outcomes of Sultan-ul-Uloom College of Pharmacy

At the end of the program 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.

SULTAN-UL-ULOOM
COLLEGE OF PHARMACY

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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

Committed to Nurturing Outstanding Pharmacists

MoUs with:

- **Aster Prime Hospitals, Hyderabad**
- **Central Research Institute of Unani Medicine (CRIUM), Hyderabad**
- **KIMS Foundation and Research Center, Hyderabad**
- **Omdurman Islamic University, Sudan**

Courses Offered:

B.Pharm (4 Years)

M.Pharm (2 Years)

- Quality Assurance
- Pharmaceutical Chemistry
- Pharmaceutics
- Pharmacology

Pharm.D. (6 Years)

Pharm.D. (PB) (3 Years)