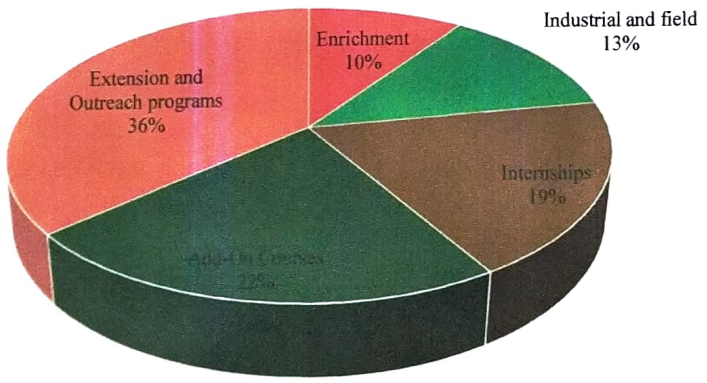
Student centric methods such as experiential learning, participative learning and problem-solving methodologies.

Experiential learning			
Sl. No.	**Type of Activity**	**Outcome of Activity**	**Number of events**
1.	Enrichment Program	Students benefitted with the hands-on training and enhanced the skills in a specific field.	11
2.	Industrial and field visits	Students acquired first-hand formulation, quality and control and quality assurance experience and gained insight into the practical aspects of pharmacy field.	14
3.	Internships	This provided clinical exposure to the clinical practice of medicine in hospital and clinical pharmacies at various medical departments.	21
4.	Add-On Courses	These add on courses enhanced the knowledge along with core curriculum in respective disciplines.	25
5.	Extension and Outreach programs	These programs give a platform to gain valuable experiences and get engaged in the activities to being social change.	40

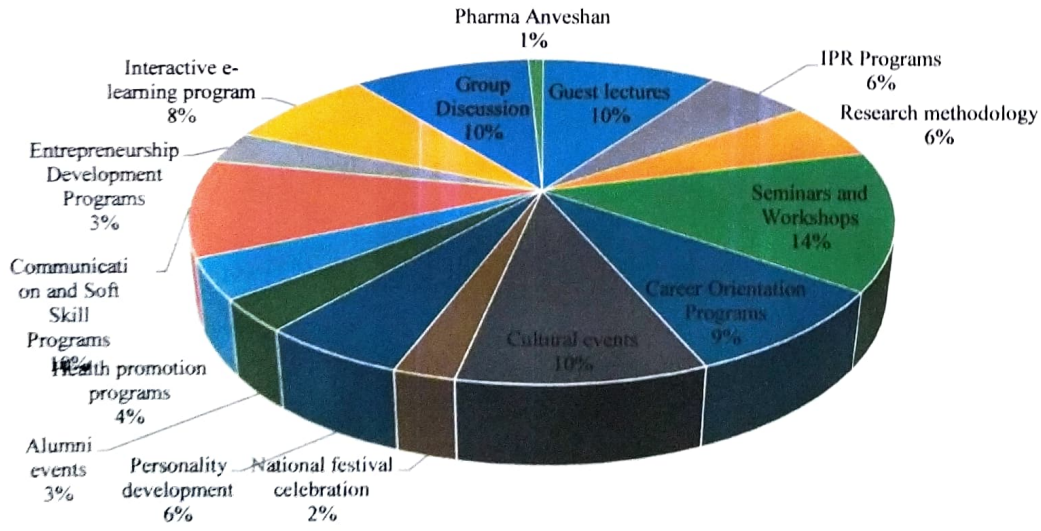
Experiential Learning



Participative learning			
Sl. No.	**Type of Activity**	**Outcome of Activity**	**Number of events**
1.	Guest lectures	Helped the students to acquire the knowledge from industrial and clinical experts and develop a deeper understanding and appreciation for the subject matter.	12
2.	IPR Programs	Participation in these programs offers students how to protect their innovations, foster a culture of research and creativity	7
3.	Research methodology Programs	Participation promotes students with the necessary tools andknowledge to conduct rigorous and impactful research in their chosen fields.	7
4.	Seminars	Seminars benefitted the students to learn from the industry and clinical competent experts.	17
5.	Career Orientation Programs	This benefitted the students to understand the academic and professional ethics and get to know the facilities and equipment's available in the college for their academic and research activities. These programs helped the students to be informed about the various career opportunities, higher education, scholarships programs, grants, and fellowships which played a crucial role in helping students.	11
6.	Cultural events	These cultural and sports events provide enriching experiences to the overall development of the students that go beyond the classroom and help in developing team spirit.	12
7.	National festival celebration	Participation in these events helps in developing the value of cultural richness and historical awareness, unity in diversity and a sense of belonging.	3
8.	Personality development	These programs enhance self-confidence, improve communication and interpersonal skills, emotional intelligence, leadership quality and decision-making skills.	7
9.	Alumni events	These events helped the students to gain the knowledge from their alumni in choosing their professional career and other opportunities which can guide their career.	4

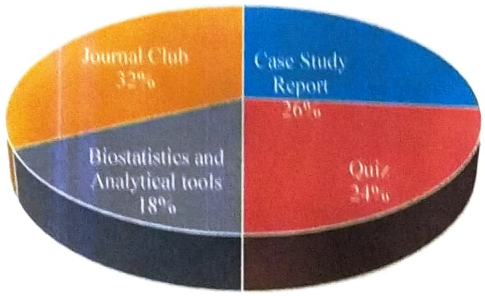
10.	Health promotion programs	Participation promoted awareness on physical health, mental health, emotional well-being, and maintain personal hygiene and self-care.	5
11.	Communication and Soft Skill Programs	Through these programs students learnt essential skills such as communication, teamwork, problem-solving, time management, adaptability, and leadership quality.	12
12.	Entrepreneurship Development Programs	This program empowered students to become successful entrepreneurs, create their own opportunities, and make a positive impact in their respective fields.	04
13.	Interactive e-learning program	This method enables the students to actively engage in the learning through digital tools and activities.	10
14.	Group Discussion	This method plays a vital role in the academic and professional settings, as they encourage the students to exchange of ideas, critical thinking, and collaborative problem-solving.	12
15.	Pharma Anveshan	Pharma Anveshan, an event organized by the Pharmacy Council of India (PCI) to celebrate and promote pharmacy education and the profession. The event is held annually and includes various activities, workshops, and discussions aimed at enhancing the knowledge and skills of pharmacy professionals and students.	1

Participative Learning



Problem solving methodologies			
Sl. No.	**Type of Activity**	**Outcome of Activity**	**Number of events**
1.	Case Study Report	These studies helped the students in gaining various techniques in diagnosing, and interpreting the clinical investigations and designing rational drug therapies to the specific diagnosis, and also reporting the risks, management of adverse drug events, reactions, and to provide evidence based medicine with effective patient counselling.	22
2.	Quiz	Encouraged learning methods while also enhancing general knowledge.	20
3.	Biostatistics and Analytical tools	These tools helped in analysing the vast research data sample data in a quantitative manner.	15
4.	Journal Club	This program helped the student to gain experience in writing research and review papers.	27

Problem solving methodologies



PRINCIPAL
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The Oxford College Of Pharmacy
No 619, 1st Cross, Begur Road, Hongasandra
Bangalore - 560 068

Children's Education Society (Regd.)
The Oxford College of Pharmacy
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Approved by Pharmacy Council of India, New Delhi)

Date: 02/05/2024

CIRCULAR

This is to inform all students and staff that, The Oxford College of Pharmacy is organizing one day soft skill training on Autodock Vina- **'In-Silico Docking Studies and Their Application'** for students on May 11th 2024. All interested students are requested to attend the program.

P Padwe
PRINCIPAL

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Cc

1. Office
2. All Departments

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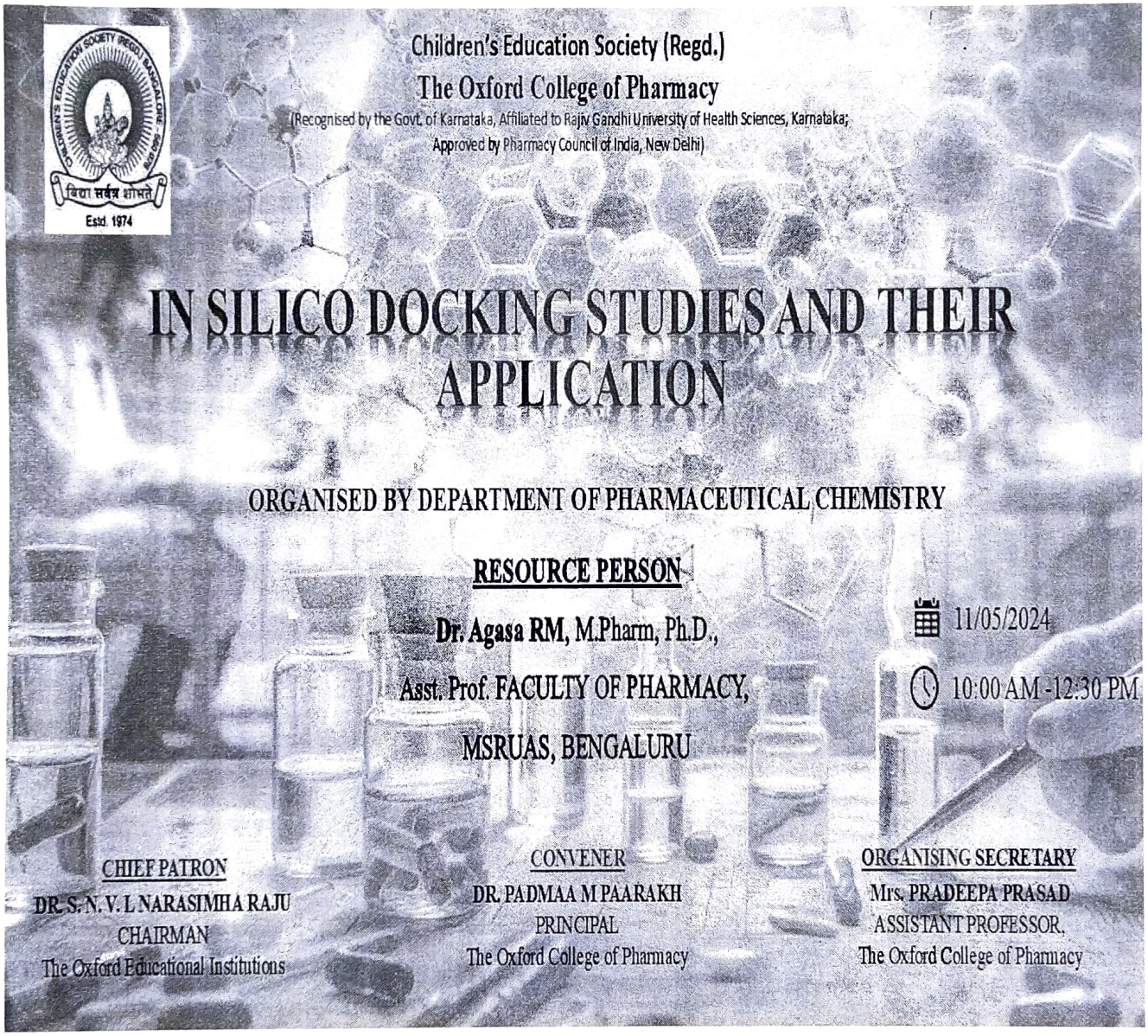
✆: +91- 80 - 61754694; Fax: +91- 80 -61754699; www.theoxford.edu
e-mail: pharmacyprincipal@theoxford.edu; info@theoxford.edu;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The Oxford College of Pharmacy
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Approved by Pharmacy Council of India, New Delhi)
IN SILICO DOCKING STUDIES AND THEIR APPLICATION
ORGANISED BY DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
RESOURCE PERSON
Dr. Agasa RM, M.Pharm, Ph.D.,
Asst. Prof. FACULTY OF PHARMACY,
MSRUAS, BENGALURU
11/05/2024
10:00 AM -12:30 PM
CHIEF PATRON
DR. S. N. V. L NARASIMHA RAJU
CHAIRMAN
The Oxford Educational Institutions
CONVENER
DR. PADMAA M PAARAKH
PRINCIPAL
The Oxford College of Pharmacy
ORGANISING SECRETARY
Mrs. PRADEEPA PRASAD
ASSISTANT PROFESSOR,
The Oxford College of Pharmacy

BROCHURE

PREAMBLE

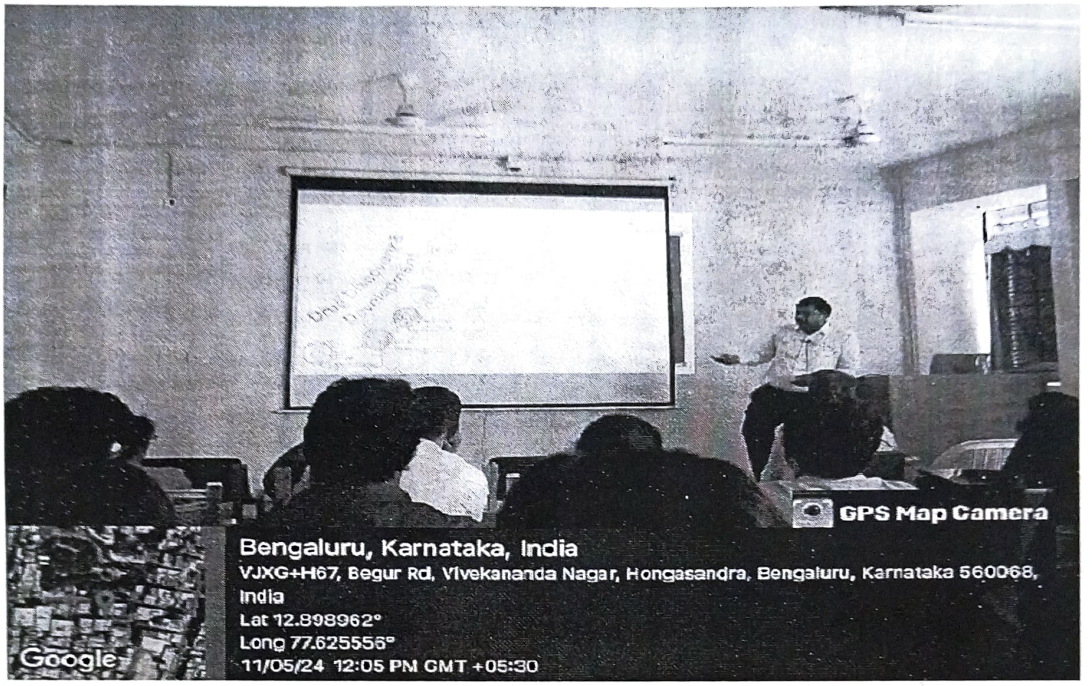
On 11th May 2024, the Department of Pharmaceutical Chemistry at The Oxford College of Pharmacy held a soft skill training on **"IN SILICO DOCKING STUDIES AND THEIR APPLICATION."** Dr. Agasa R M delivered the lecture to 53 B. Pharm and M. Pharm students. During the session, Dr. Agasa R M introduced students to the concept of in silico docking studies and highlighted their application in drug discovery and development. The lecture concluded at 12:30 PM, and the attending students found Dr. Agasa's informative and engaging presentation to be valuable. The Department of Pharmaceutical Chemistry was pleased to have hosted such an insightful event, which undoubtedly provided students with a better understanding of in silico studies and helped them develop soft skills in using docking software and interpreting results

CONTENT OF THE SESSION

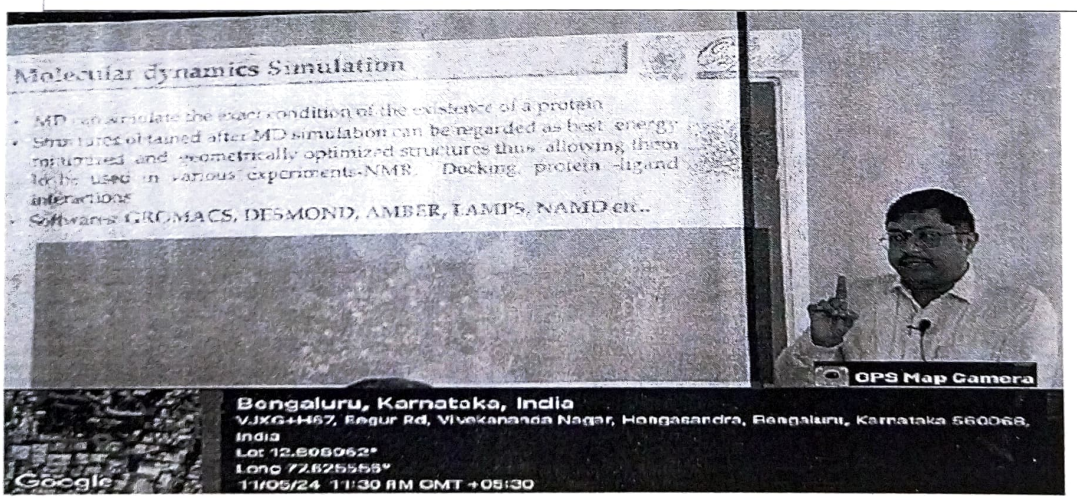
Dr. Agasa R M, a distinguished expert in the field, delivered an engaging and informative lecture on in silico docking. During the session, Dr. Agasa R M introduced the students to the fundamental concepts of in silico docking studies, a crucial technique in modern drug discovery and development. He explained how these computational methods allow researchers to predict the interaction between small molecules (potential drugs) and their target proteins, thereby accelerating the drug development process. The lecture covered various aspects of docking studies, including target identification, virtual screening, and binding affinity prediction.

Speaker also highlighted the practical applications of docking studies in pharmaceutical research, emphasizing their role in identifying promising drug candidates and optimizing their efficacy and safety profiles. The session was interactive, with students actively participating and asking insightful questions, which Dr. Agasa R M addressed with clarity and depth.

The lecture concluded at 12:30 PM, leaving the students with a comprehensive understanding of in silico docking studies. The feedback from the attendees was overwhelmingly positive, with many appreciating Dr. Agasa R M's ability to simplify complex concepts and make the session engaging. The Department of Pharmaceutical Chemistry was pleased with the success of the event, which not only enhanced the student's technical knowledge but also developed their soft skills in using docking software and interpreting results. This training session undoubtedly contributed to the students' overall professional development, preparing them for future challenges in the field of pharmaceutical research.



Dr. Agasa R M explaining the fundamentals of in silico docking studies to an attentive audience.



A snapshot of Dr. Agasa R M highlighting the Molecular dynamics simulation

Students of B.Pharm and M.Pharm actively participating in the interactive session

LIST OF PARTICIPANTS

S. NO	STUDENTS NAME	SIGNATURE
1	AMIT SINGH	
2	BADEPALLI REDDAIAH REDDY	
3	BENGULURI RAMESH TEJASWINI	
4	HARSHA K M	
5	JAWAHAR MANIYA RASAN S	
6	MANOJ	
7	MOHAMMAD AMIN YATOO	
8	MULLA UZMA RIYAZ	
9	NALLAGATLA SUNANDA	
10	R NAVYASREE	
11	RANJITHA RAMESH SHETTY	
12	SNEHA M	
13	SONALI MILAN NALAWADE	
14	SWETHA YOGANANDAN	
15	VIJAY KUMAR R	
16	ANIKET BIPIN BELLAD	
17	BALRAJ.M	
18	DEEPAK.S	
19	DHUSHYANTH.G	
20	HARISH KUMAR K	
21	REESHITA JHANAK	
22	SANTHALA CHAITHANYA PRASAD	
23	SNEHA SURESH SALUNKHE	
24	SOURAV CHARAN	
25	THEJASWINI.B	
26	PRIYA RAJ KUMAR	
27	KARTHIK M	
28	RAKESH A M	
29	SHIVACHAVAN HR	
30	BHAVYA SHREE	
31	DHANASEKHAR M K	
32	HEMANTH KUMAR E	
33	NISHA S	
34	PRATIK JAIN	
35	SRI VIGNESH	
36	GOKUL RAJ . M	
37	HALASWAMY.D.B	
38	HARIPRASAD	
39	INDUSHREE.G. L	

40	INITHA.V	
41	JEEVAN.U.H	
42	KHALEEL.E	
43	KISHAN K	
44	LIKITHA GOWDA	
45	PAVAN KUMAR B	
46	RAJESHWARI.B	
47	SARANYA.R	
48	SOMASHEKAR.G	
49	SUJAN KUMAR	
50	SWETHA P	
51	VIGNESH.C	
52	AARTHI S	
53	AIMEN BASHIR	

OUTCOME

The Oxford College of Pharmacy hosted a soft skill training. 53 B Pharm and M. Pharm students took part in the event. The speaker Dr. Agasa's talk covered various in silico docking studies, hands-on experience in using docking software and their application. The one-day soft skill training on "In silico Docking studies and their application" was a success, with students gaining valuable knowledge and hands-on experience in docking studies. The training will help students in their future research endeavours and applications in drug discovery and development.

END OF THE REPORT

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THE OXFORD COLLEGE OF PHARMACY

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CERTIFICATE

OF PARTICIPATION

This is to certify that

AMIT SINGH

has participated "IN SILIOCO DOCKING STUDIES AND THEIR APPLICATION", Organized by the Department of Pharmaceutical Chemistry on 11/05/2024.

MRS. PRADEEPA PRASAD
ORGANIZING SECRETARY

DR PADMAA M PAARAKH
PRINCIPAL

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Estd. 1974

CERTIFICATE

OF PARTICIPATION

This is to certify that

VIGNESH . C

has participated "IN SILIOCO DOCKING STUDIES AND THEIR APPLICATION", Organized by the Department of Pharmaceutical Chemistry on 11/05/2024.

MRS. PRADEEPA PRASAD
ORGANIZING SECRETARY

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Estd. 1974

CERTIFICATE

OF PARTICIPATION

This is to certify that

DEEPAK. S

has participated "IN SILIOCO DOCKING STUDIES AND THEIR APPLICATION", Organized by the Department of Pharmaceutical Chemistry on 11/05/2024.

MRS. PRADEEPA PRASAD
ORGANIZING SECRETARY

DR PADMAA M PAARAKH
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विद्या सर्वत्र शोभते

Estd. 1974

CERTIFICATE

OF PARTICIPATION

This is to certify that

HARSHA . K.M

has participated **"IN SILIOCO DOCKING STUDIES AND THEIR APPLICATION"**, Organized by the Department of Pharmaceutical Chemistry on 11/05/2024.

MRS. PRADEEPA PRASAD

ORGANIZING SECRETARY

DR PADMAA M PAARAKH

PRINCIPAL

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DATE: 28/06/2024

CIRCULAR

All the teaching, non -teaching and students of The Oxford College of Pharmacy are hereby informed that a workshop on **"UV-Visible Spectrophotometer- Hands-on Training"** for the Academic Year 2023-24 will be conducted on 05/07/2024. We look forward for the active participation for the same. All interested students are requested to give your name to the event coordinator.

P. Padma
PRINCIPAL

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Bangalore - 560 068

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e-mail: pharmacyprincipal@theoxford.edu; info@theoxford.edu;

CHILDREN'S EDUCATION SOCIETY (REGD.)

THE OXFORD COLLEGE OF PHARMACY

1st Main Rd, Hongasandra, Bengaluru, Karnataka 560068

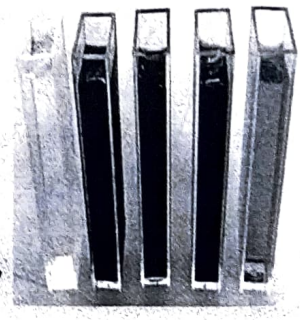
Workshop

on

"UV-VISIBLE SPECTROPHOTOMETER- HANDS-ON TRAINING"

Organized by
Department of Pharmaceutics
Date: 05/07/2024
Venue: Room No.001

RESOURCE PERSON
MR VENKATESH PAWAR
ZONAL MANAGER-BUSINESS DEVELOPMENT
BIOERA LIFE SCIENCES PVT. LTD.
Time :01.00-3.00PM



CHIEF PATRON	CONVENER	CO-ORDINATOR
Dr. S.N.V.L NARASIMHA RAJU Chairman The Oxford Educational Institutions	Dr. PADMAA M PAARAKH Principal The Oxford College of Pharmacy	DR. GURURAJ S KULKARNI HOD Department of Pharmaceutics The Oxford College of Pharmacy

PREAMBLE

The Department of Pharmaceutics, The Oxford College of Pharmacy organized a workshop on **"UV-Visible Spectrophotometer- Hands-on Training"** in association with BIOERA LIFE SCIENCES PVT. LTD. The workshop provided participants with enhanced practical knowledge and skills in using the UV-Visible spectrophotometer.

The content of the session

On 05/07/2024, Department of Pharmaceutics, The Oxford College of Pharmacy organized a workshop on **"UV-Visible Spectrophotometer- Hands-on Training"**. The session started with welcome note by Dr Vikram T, who introduced the resourse person, Mr Venkatesh Pawar, Zonal Manager-Business Development, Bioera Life Sciences Pvt. Ltd.

The speaker gave valuable insights on the principles and applications of UV Visible spectrophotometry. He also briefed about the components of the spectrophotometer, how to carry out calibration and maintenance for its effective usage. Later the participants were divided into small groups and given hands on training on the instrument usage from preparation of sample, running samples and recording the data. Participants were further briefed regarding the interpretation of data obtained. The workshop was attended by 20 students from B. Pharm and M. Pharm, along with staff in Room No 001 (Machine room). Dr. Gururaj S Kulkarni the organizer, concluded the event with a vote of thanks, expressing gratitude to Chairman Dr. S.N.V. L. Narasimha Raju, The Oxford Group of Institutions, and Dr. Padmaa M Paarakh, Principal, for their encouragement and support.

CHILDREN'S EDUCATION SOCIETY (REGD.)

THE OXFORD COLLEGE OF PHARMACY

1st Main Rd, Hongasandra, Bengaluru, Karnataka 560068

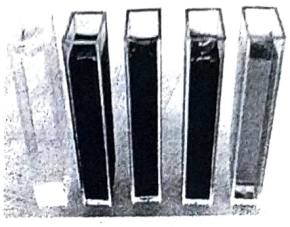
Workshop

on

"UV-VISIBLE SPECTROPHOTOMETER- HANDS-ON TRAINING"

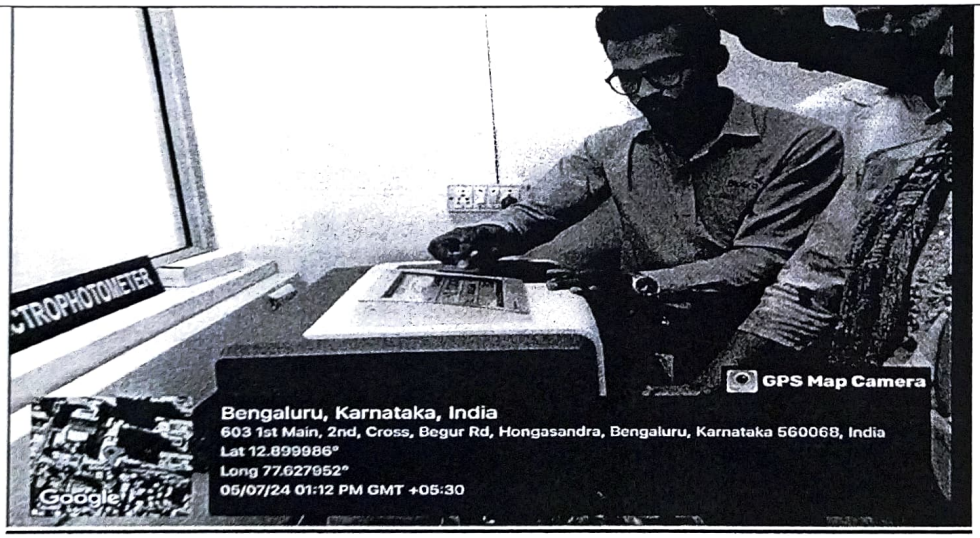
Organized by
Department of Pharmaceutics
Date: 05/07/2024
Venue: Room No.001

RESOURCE PERSON
MR VENKATESH PAWAR
ZONAL MANAGER-BUSINESS DEVELOPMENT
BIOERA LIFE SCIENCES PVT. LTD.
Time :01.00-3.00PM

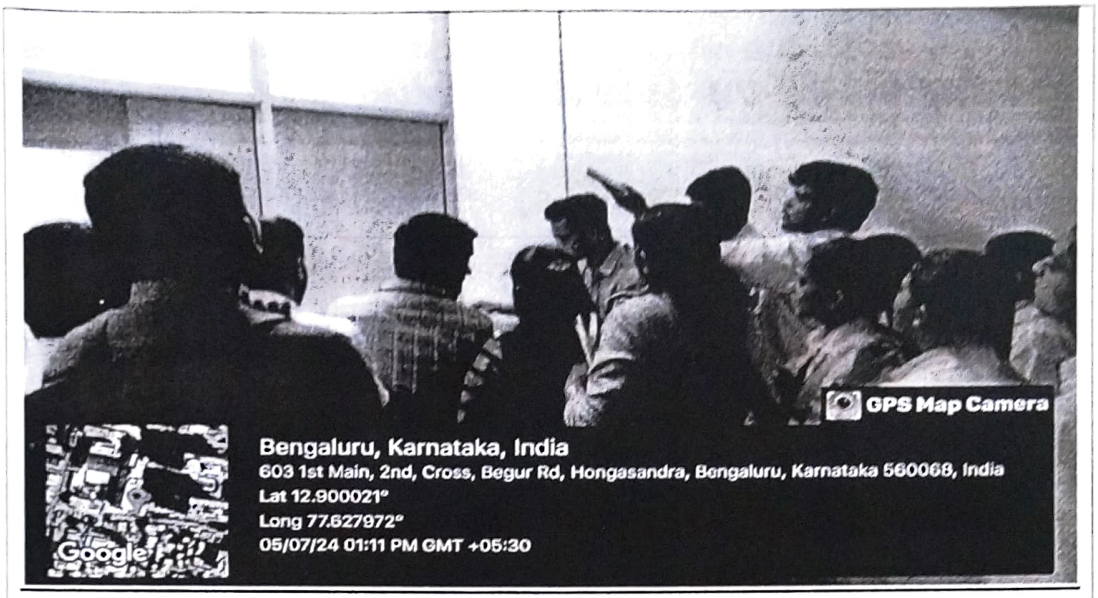


CHIEF PATRON	CONVENER	CO-ORDINATOR
Dr. S.N.V.L NARASIMHA RAJU Chairman The Oxford Educational Institutions	Dr. PADMAA M PAARAKH Principal The Oxford College of Pharmacy	DR. GURURAJ S KULKARNI HOD Department of Pharmaceutics The Oxford College of Pharmacy

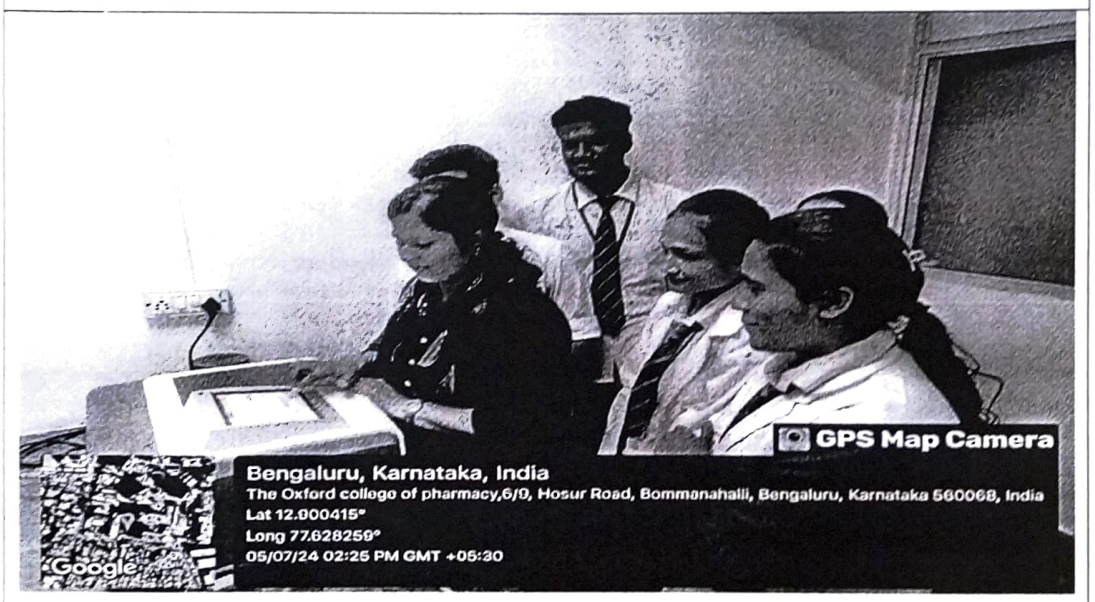
Brochure of the workshop: "UV- Visible Spectrophotometer-Hands On Training"



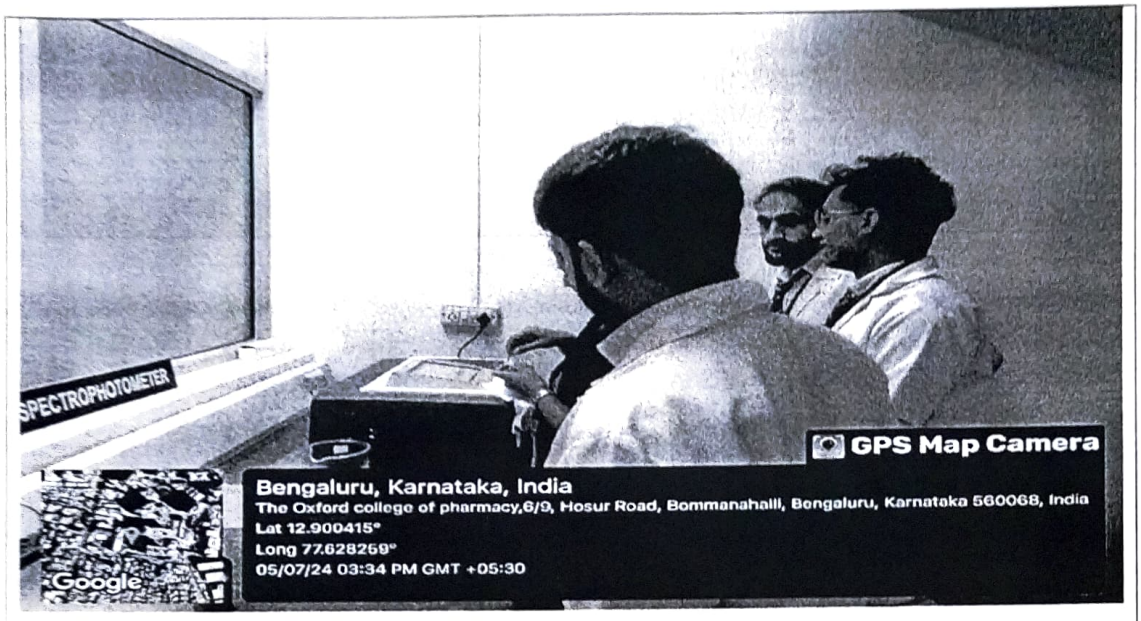
Demonstrating the usage of UV Visible Spectrophotometer



Students listening to the instructions for usage of UV Visible Spectrophotometer



Faculty and Students in small groups handling the instrument



Students in small groups handling the instrument

LIST OF PARTICIPANTS

S. No	Name of Participants	Signature
1.	Aniket Bipin Bellad	
2.	Balraj. M	
3.	Deepak. S.	
4.	Dhushyanth. G	
5.	Harish Kumar K	
6.	Priya Rajkumar	
7.	Rakesh A M	
8.	Reeshita Jhanak	
9.	Santhala Chaithanya Prasad	
10.	Thejaswini. B	
11.	Sneha Suresh Salunkhe	
12.	Amit Singh	
13.	Benguluri Ramesh Tejaswini	
14.	Sneha M	
15.	Nalagatla Sunandha	
16.	Ranjita Ramesh Shetty	
17.	Vijay Kumar R	
18.	Mohammad Amin Yatoo	
19.	Jawaharmaniyarasan. S	
20.	R.Navya Sree	

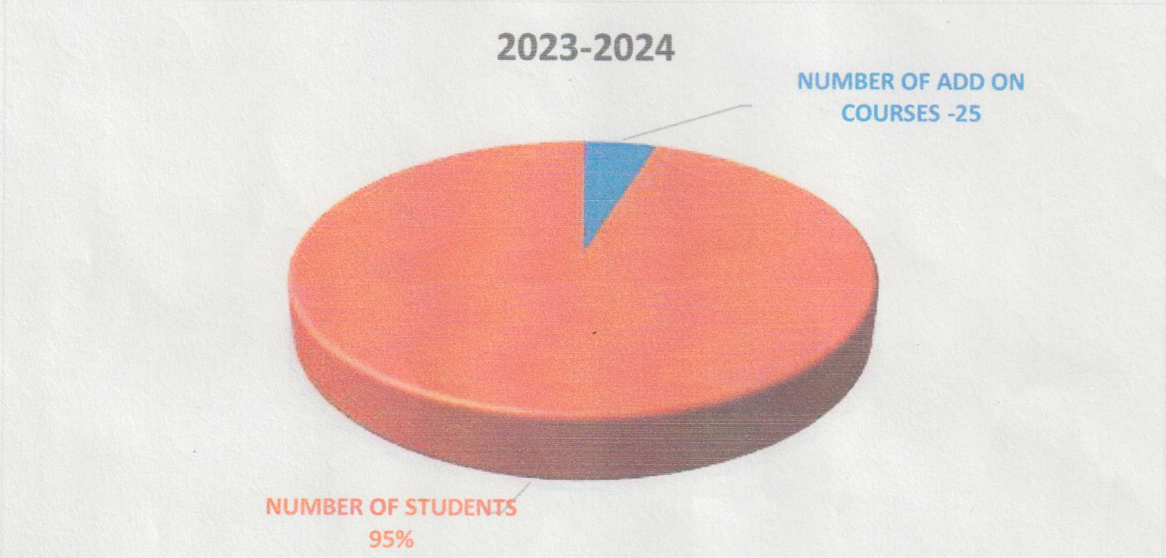
OUTCOME OF THE PROGRAM

The outcome of the workshop on "UV-Visible Spectrophotometer- Hands-on Training" concluded by providing valuable insights and and helped to enhance practical knowledge and skill to participants for handling UV Visible spectrophotometer efficiently. These 20 participants were gained the knowledge of using new BIOERA UV Spectrophotometer by the exposure in handling the instrument which will be also useful as part of their upcoming research work. The event concluded with a vote of thanks from organizer Dr. Gururaj S Kulkarni acknowledging the enthusiasm of participants throughout the workshop.

END OF REPORT

LIST OF ADD-ON COURSES

Sl No	Academic Year	Number of Courses	Number of Students
1	2023-2024	25	491



LIST OF ADD-ON COURSES 2023-2024

SL NO	Department	Name of add on Course	Course Code	Number of students
1	Department of Pharmacognosy	DNA typing in forensic science	DNATFC 2023-24	30
2	Department of Pharmacognosy	Biodegradation and bio remediation of Nicotine and Quercetin	BDRNQ 2023-24	25
3	Department of Pharmacognosy	Advances in Cytogenetic technique	ACGT 2023-24	22
4	Department of Pharmacognosy	Conservation of ebony and red sandal wood endangered plant species	CERSEPS 2023-24	10
5	Department of Pharmacognosy	Mycology and plant pathology of Ashwagandha and Ocimum Sanctum.	MPPAO 2023-24	10
6	Department of Pharmaceutical chemistry	Quantum Mechanics in medicinal Chemistry	QMMC	24
7	Department of Pharmaceutical chemistry	Chemical hazards and their control	CHC 2023-24	30

8	Department of Pharmaceutical chemistry	Cheminformatics and molecular modeling	CMM 2023-24	20
9	Department of Pharmaceutical chemistry	Chiral Phytochemical Isolation and Characterization	CPIC 2023-24	15
10	Department of Pharmaceutical chemistry	Electrochemical Synthesis and Processing	ESP 2023-24	30
11	Department of Pharmacology	Medical Writing and Communications	MWC 2023-24	30
12	Department of Pharmacology	Digital Health and Pharmacy Informatics	DHPI 2023-24	15
13	Department of Pharmacology	AI in Pharmacy: Enhancing Student Learning	AIP 2023-24	15
14	Department of Pharmacology	Symptom Management in Palliative Care	SMPC 2023-24	14
15	Department of Pharmacology	Biomarkers in Neurodegenerative Disease	BND 2023-24	20
16	Department of Pharmacy practice	Adverse event reporting with emphasis on PV practice	AERPP 2023-24	25
17	Department of Pharmacy practice	Nutrition and Dietetics management for patients	NDM 2023-24	13
18	Department of Pharmacy practice	Introduction to basic life support methods	IBLSM 2023-24	30
19	Department of Pharmacy practice	Design of Questionaries' and scoring methods for Clinical assessment	DOQ 2023-24	15
20	Department of Pharmacy practice	Application of drug information softwares in Pharmacy Practice	ADISP 2023-24	23
21	Department of Pharmaceutics	Modernization in Pharma manufacturing techniques	MPMT 2023-24	12
22	Department of Pharmaceutics	Economic aspects of Pharmaceutical Inventions	EAPS 2023-24	11
23	Department of Pharmaceutics	Pharma logistics trends challenges and opportunities	PLTCO 2023-24	10
24	Department of Pharmaceutics	Sustainable and green pharmacy based pharmaceutical formulations	SGPF 2023-2024	21
25	Department of Pharmaceutics	Digital therapeutics and smart DDS	DTSD 2023-24	21

P Padwa
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DATE: 16/01/2024

CIRCULAR

All the students, teaching and non-teaching staff of The Oxford College of Pharmacy are hereby informed that program on "**NATIONAL GIRL CHILD DAY 2024"** for the Academic Year 2023-24 will be conducted on 25/01/2024. We look forward for the active participation for the same. All interested students are requested to give your name to the event coordinator.

P. Padwe

PRINCIPAL

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The Oxford College Of Pharmacy
No 6\9.1st Cross, Begur Road, Hongasandra
Bangalore - 560 068

Cc

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2.All department

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e-mail: pharmacyprincipal@theoxford.edu; info@theoxford.edu;

CHILDREN'S EDUCATION SOCIETY (REGD.)

THE OXFORD COLLEGE OF PHARMACY

1st Main Rd, Hongasandra, Bengaluru, Karnataka 560068

CORDIALLY INVITE YOU FOR THE AWARENESS PROGRAMME ON

"NATIONAL GIRL CHILD DAY"

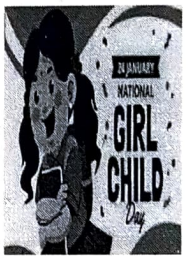
"Digital Generation, Our Generation, Our Time is Now—Our Rights, Our Future"

Organized by

NSS Committee, TOCP, Bangalore

On

25TH JANUARY 2024, AT 10:00 AM.



CHIEF PATRON	CONVENER	NSS CO-ORDINATOR
Dr. S.N.V.L. NARASIMHA RAJU	Dr. PADMAA M PAARAKH	Mrs. NAGALAKSHMI R
Chairman	Principal,	Assistant Professor
The Oxford Educational Institutions	The Oxford College of Pharmacy	The Oxford College of Pharmacy

BROCHURE

Children's Education Society (Regd.)

The Oxford College of Pharmacy

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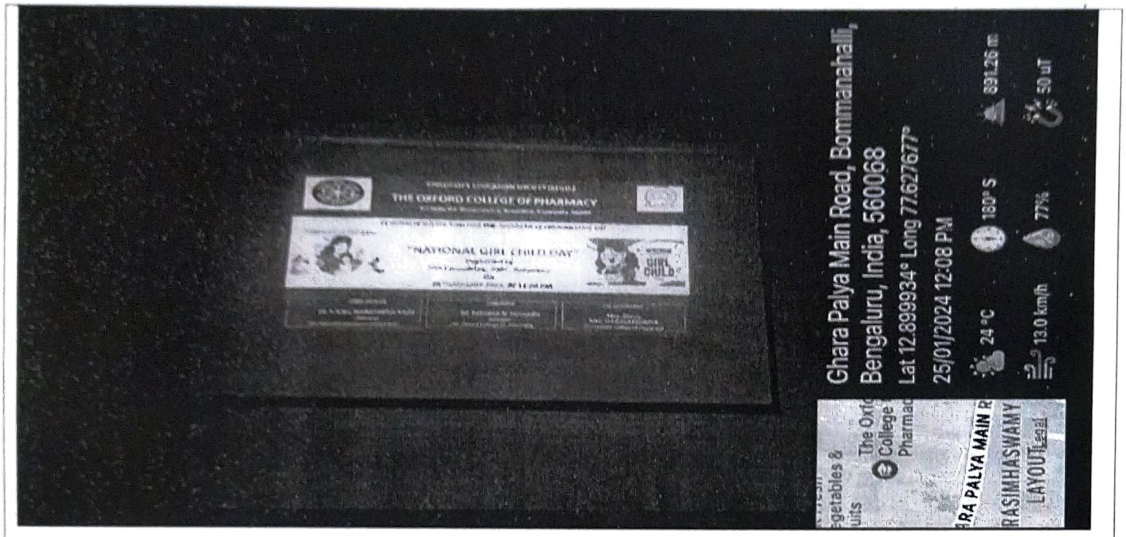
Approved by Pharmacy Council of India, New Delhi)



Few moments captured on National Girl Child Day 2024

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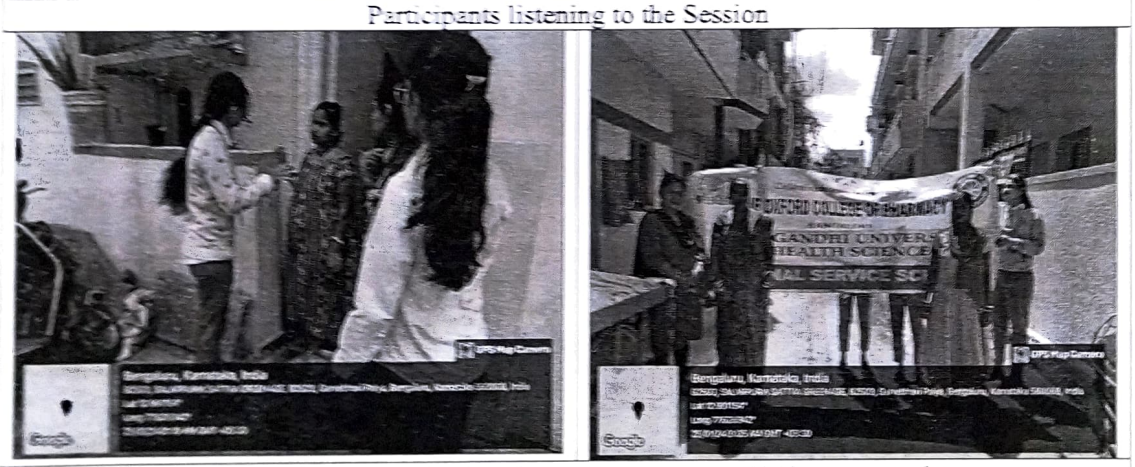
Participants listening to the Session



Students Outreach to the Society -- Interacting with the community

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OUTCOME OF THE PROGRAM

The importance of celebrating National Girl Child Day and its significance of bringing equality, eliminating any kind of discrimination, and to provide a safe environment for their growth successfully reached the participants and increased the awareness about it in them. All the 350 participants in and out of the campus were benefitted as it gave a new insight regarding the ways to protect and safe guard the rights of girl child in the society. The equality and freedom start from the family and helps in building a better society. These guiding principles through initiatives like "Beti Bachao Beti Padhao" to effect behavioural change in society's attitude towards girl child and inspire a collective effort towards their holistic development. The students who participated this program were keen to spread awareness to the society via their neighbours, community by passing this information gained. Few students got involved within their residential community and arranged awareness program as part of this program of spreading awareness.

END OF REPORT

PREAMBLE

The Department of Pharmaceutics under NSS Committee, The Oxford College of Pharmacy, Bangalore celebrated "National Girl Child Day" on 25th January 2024. Mrs R Nagalakshmi and Mrs. Divya S Kumar, Assistant Professor, Department of Pharmaceutics, initiated the celebration of the program along with students. There were around 350 participants.

The content of the Session:

"National Girl Child Day" celebration was organized by The Oxford College of Pharmacy, Bangalore on 25th January 2024" with the theme "Digital Generation, Our Generation, Our Time is Now—Our Rights, Our Future". The program started with the welcoming of the audience and briefed about the history and significance of observing this day. Mrs R Nagalakshmi, Assisstant Professor delivered speech regarding the importance of 'Beti Bachao Beti Padahao' and also informed about various schemes for welfare of girl child by the government. The National Girl Child Day was first observed on January 24, 2008 by the Ministry of Women and Child Development. It was decided to observe the day to tackle issues related to inequalities that girls face in society. The main objectives for observing this day is to provide support and opportunities to girls, by raising awareness regarding inequalities faced by girl children, regarding the importance of female education, health care and nutrition and also to raise awareness regarding the importance of their empowerment. The main objective of National Girl Child Day 2024 is to promote the welfare of girl children in India. However, there are various factors that need to be taken into consideration which is being emphasized on National Girl Child Day 2024 were also briefed by the speaker such as

- To create awareness among people to protect and raise girl child with equality in terms of education, health and other opportunities in life.
- To promote the idea of the elimination of any form of discrimination against the girl child at home or outside home.

- To accept girl child/children and welcome them into homes and live with respect and love and abandon the evil ideology of killing girl children in the womb and female infanticide.
- To educate people at large about the importance of girl children and the declining sex ratio in India and eventually to change their mindset.
- To create a safe environment for girls to live safely inside and outside their homes.

Dr Gururaj S Kulkarni, HOD, Department of Pharmaceutics, The Oxford College of Pharmacy, started his speech with the quote "A girl with a dream can change the world. Let's support and uplift every girl's aspiration." He also shared his views regarding the role of students in spreading awareness and achieve the goal of celebrating the National Girl Child Day. In the session, students too actively shared their thoughts and taken the pledge to have a better society for girls. The students after the indoor session went to the nearby community to spread awareness regarding the Beti Bachhao, Beti Padhao scheme, students went in small group and interacted with the community people. They made them aware of different schemes also available for benefit of girl children in bank as well as education institutes like Sukanya samridhi plan etc.

No. of Participants: 350

Schedule: On 25^{h} Jan 2024

Time Schedule	Programme
10 AM	Speech-Theme:"Digital Generation, Our Generation, Our Time is Now—Our Rights, Our Future"

Children's Education Society (Regd.)

The Oxford College of Pharmacy

(Recognised by the Govt. of Karnataka, Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka;
Approved by Pharmacy Council of India, New Delhi)

DATE: 20/01/2024

CIRCULAR

All the teaching, non-teaching and students of The Oxford College of Pharmacy are hereby informed that an awareness program on "NATIONAL VOTERS DAY 2024" for the Academic Year 2023-2024 will be conducted on 25/01/2024. We look forward for the active participation for the same. All interested students are requested to give your names to the event co-ordinator.

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CHILDREN'S EDUCATION SOCIETY (REGD.)

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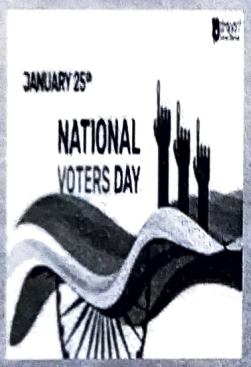


NSS Committee, TOCP & Department of Pharmaceutics

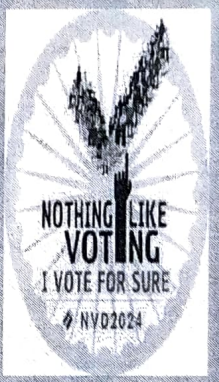
ORGANIZE AWARENESS PROGRAMME ON

"NATIONAL VOTER'S DAY"

THEME: "Nothing Like Voting, I Vote For sure"

on

25TH JANUARY 2024, AT 10:00 AM.



CHIEF PATRON

Dr. S.N.V.L.NARASIMHA RAJU
Chairman
The Oxford Educational Institutions

CONVENER

Dr. PADMAA M PAARAKH
Principal,
The Oxford College of Pharmacy

ORGANISERS

Mrs. NAGALAKSHMI R & DR. VIKRAM. T
Assistant Professor
The Oxford College of Pharmacy

Brochure of National Voter's Day

PREAMBLE

The Oxford College of Pharmacy, NSS Committee, Bangalore organized an awareness programme on "National voters Day" on 25th January 2024. Mrs R Nagalakshmi, Assistant Professor, Department of Pharmaceutics, initiated the program along with students. There were 350 participants and the programme was held at 7th Floor auditorium.

The content of the Session:

"National voters Day" celebration was organized by The Oxford College of Pharmacy, Bangalore on 25th January 2024" with the theme "Nothing like voting, I vote for sure". The program started with the welcoming of the audience and briefed about the history and significance of observing this day. The resource person Mrs. Leeky Mohanty delivered speech to encourage the youth to participate in the voting in the electoral process. It not only encourages the youth to participate in electoral process but also focuses on the fact that the right to vote is a basic right. Later, the participants were involved in a virtual interaction program with Honourable Prime Minister Narendra Modi as part of the programme organised by BJP Yuva Morcha.

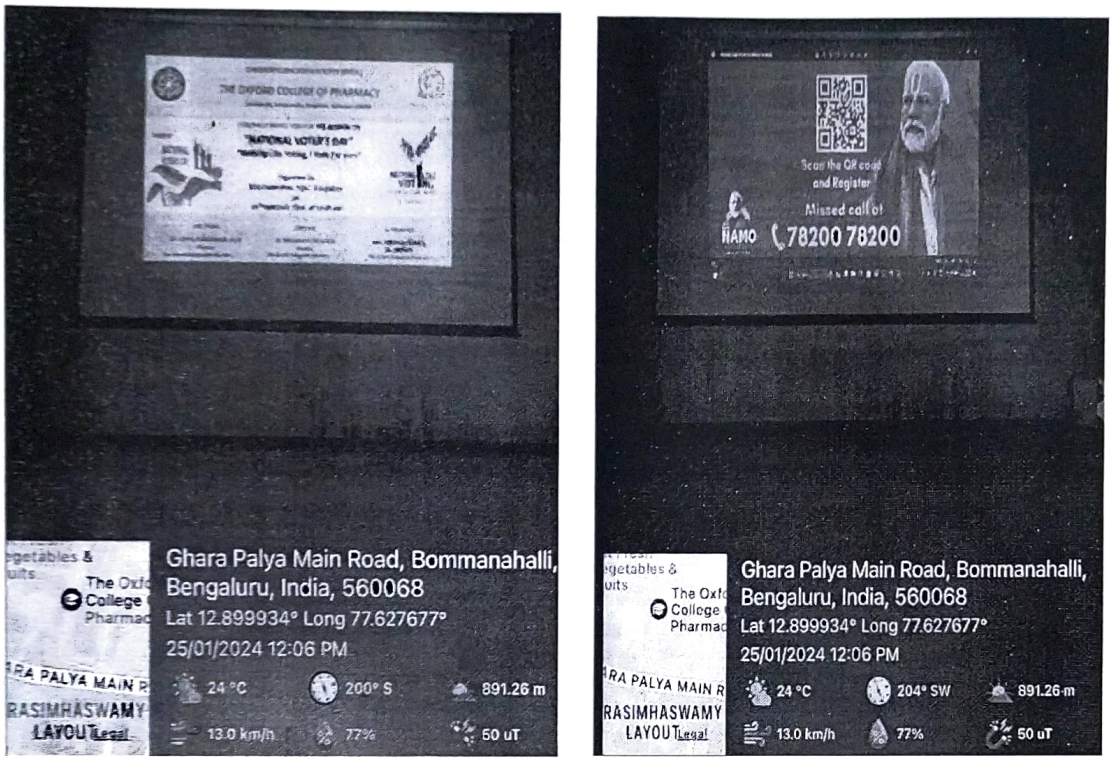
The National Voters Day is celebrated every year as mark of the foundation day of Election Commission of India, i.e. 25th January 1950. The main objectives for observing this day was to encourage, facilitate, and maximize enrolment, especially for new voters. The day has been celebrated since 2011 across the country to mark the foundation of the Election Commission of India, i.e. 25th January 1950. It is celebrated every year with a particular theme. It not only encourages the youth to participate in the electoral process but also focuses on the Right to vote as the basic right. However, there are various factors that need to be taken into consideration which is being emphasized on National voters Day 2024 were also briefed by the speaker such to create awareness among young generation he or she has the right to select his leader to whomever they think is capable of leading the nation, solving the problems of common people, bringing about change, etc. Later PM Narendra Modi addressed nearly 50 lakh first-time

voters virtually. In the session, students too actively shared their thoughts and taken the pledge to have a better society.

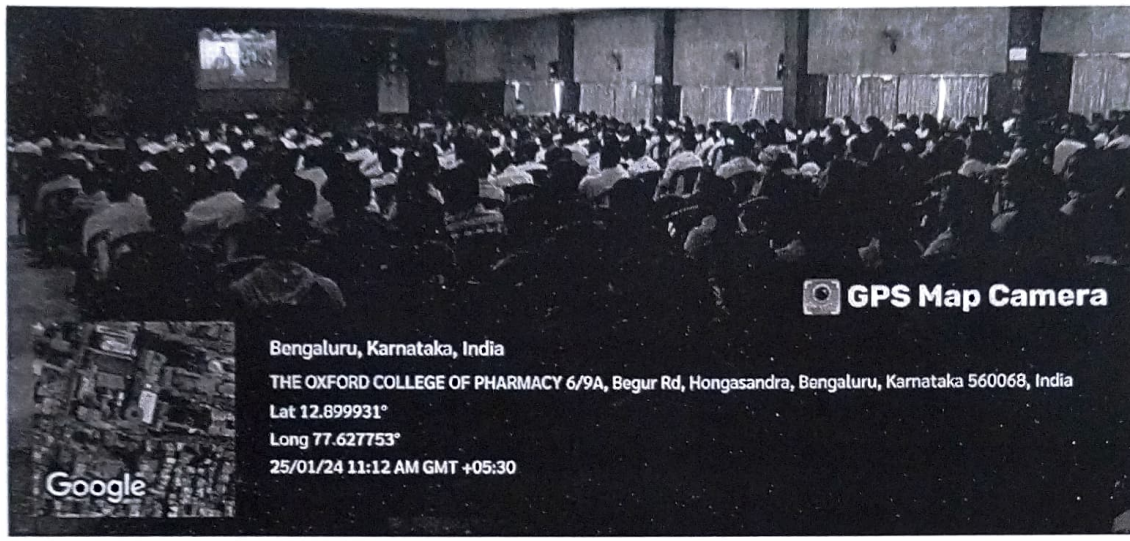
Schedule:

No. Of Participants-350

Timings	**Event Schedule**
10 Am	National Voters Day



Glimpses of the brochure of National Voter's Day and QR Scan code for registration on LED Screen



Participants listening to the virtual interaction of Honourable Prime Minister Narendra Modi

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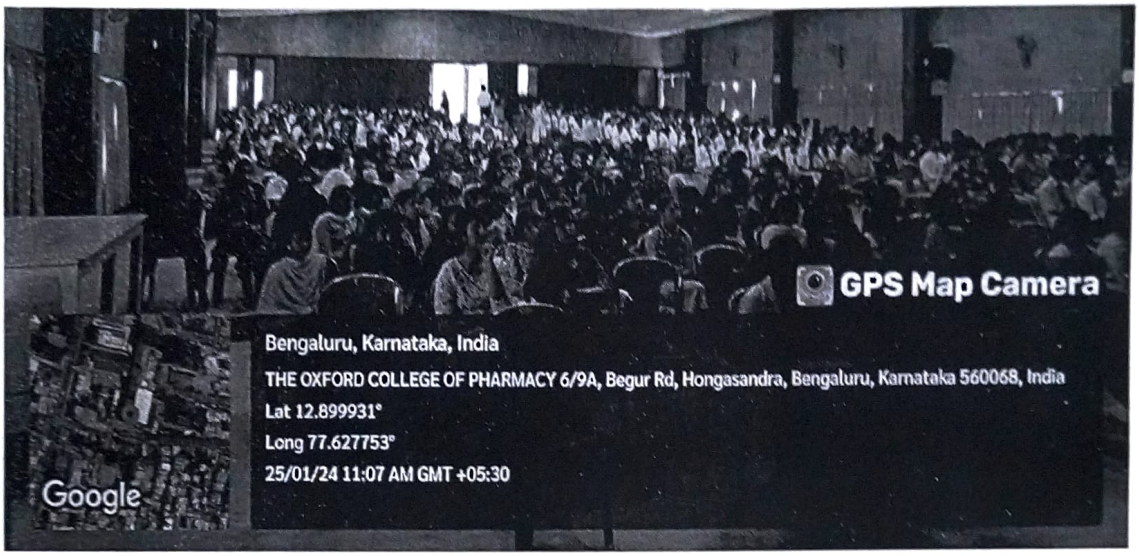

Glimpses of the participants listening to the virtual interaction of Honourable Prime Minister Narendra Modi

OUTCOME OF THE PROGRAM

There were 350 participants in the programme. The importance of celebrating National voters Day and its significance of bringing awareness among younger generation regarding their rights in selecting a proper leader, and to provide a safe environment for their growth successfully reached the participants and increased the awareness about it in them. The students were keen to spread awareness to the society via their neighbor, community by passing this information gained during program. Few students got involved within their residential community and arranged awareness program as part of this program of spreading.

END OF REPORT

Children's Education Society (Regd.)

The Oxford College of Pharmacy

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Approved by Pharmacy Council of India, New Delhi)

DATE: 24/09/2024

CIRCULAR

All the teaching, non teaching staff and students of The Oxford College of Pharmacy are hereby informed that on the account of **"Gandhi Jayanti"**, E poster presentation with the theme "Spreading message of Peace and Nonviolence to the world" for the academic year 2023-24 will be conducted on 01/10/2024, Room No.508 at 11:00 AM .We look forward for the active participation for the same.

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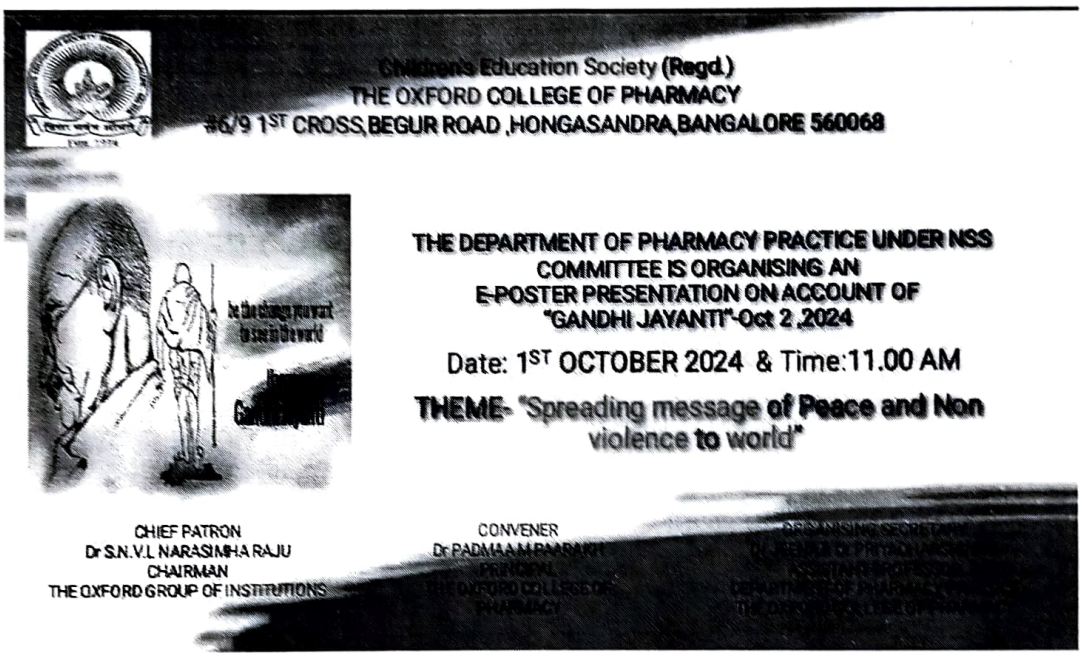

Children's Education Society (Regd.)
THE OXFORD COLLEGE OF PHARMACY
#6/9 1ST CROSS,BEGUR ROAD ,HONGASANDRA,BANGALORE 560068
THE DEPARTMENT OF PHARMACY PRACTICE UNDER NSS COMMITTEE IS ORGANISING AN E-POSTER PRESENTATION ON ACCOUNT OF "GANDHI JAYANTI"-Oct 2 ,2024
Date: 1ST OCTOBER 2024 & Time:11.00 AM
THEME- "Spreading message of Peace and Non violence to world"
CHIEF PATRON
Dr S.N.V.L NARASIMHA RAJU
CHAIRMAN
THE OXFORD GROUP OF INSTITUTIONS
CONVENER

BROCHURE

PREAMBLE

The Department of Pharmacy practice, under NSS committee conducted E poster presentation program on October 1st 2024 in Room No.508 at 11 am with the theme: "Spreading the message of peace and nonviolence to world" on the account of 'Gandhi Jayanti". Dr. Priyadharshini.M, Assistant professor, The Oxford college of Pharmacy, inaugurated the program. There were totally 53 participants.

The content delivered in the seminar is as follows:

Dr Priyadharshini.M, organizing Secretary welcomed the dignitaries and participants to the program. Gandhi Jayanti is a national holiday in India, celebrated annually on 2nd October to honour the birth of Mahatma Gandhi, one of the key leaders of the Indian independence movement and a pioneer of the philosophy and strategy of nonviolence. Gandhi's principles of nonviolent resistance played a crucial role in India's successful struggle for independence from British colonial rule.

On this 155th birth anniversary of Mahatma Gandhiji, this day is celebrated to remember his tireless efforts to free India from British rule and his unwavering commitment to truth and non-violence. Dr G Parthasarathy presented Biography and achievements of Mahatma Gandhiji. Gandhi's philosophy of Satyagraha, or non-violent resistance, inspired movements for civil rights and freedom across the world. He also enlightened about significance of Gandhi jayanti and his emphasis on simplicity, kindness, and truth continues to inspire us today. As we go about our daily lives, let us strive to follow Gandhi's principles and work towards building a more just and peaceful world. Some of the inspiring quotes of Mahatma Gandhiji are:

1. "The best way to find yourself is to lose yourself in the service of others."
2. "An eye for an eye only ends up making the whole world blind."
3. "In a gentle way, you can shake the world."
4. "The weak can never forgive. Forgiveness is the attribute of the strong."
5. "Live as if you were to die tomorrow. Learn as if you were to live forever."

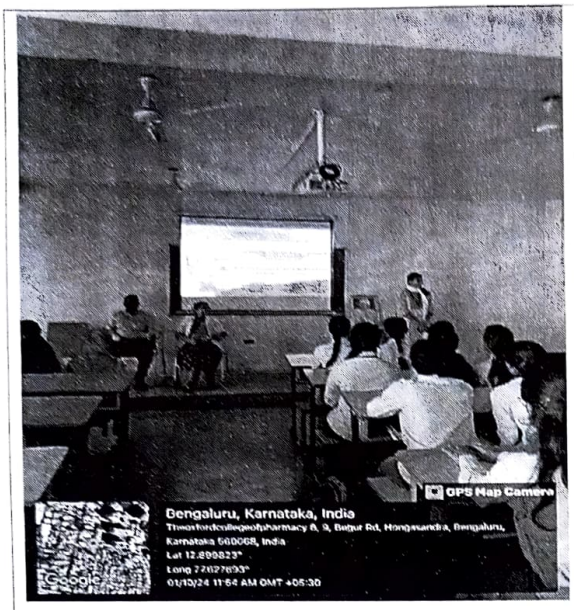
Amidst worldwide turmoil, let us all embrace the strength of unity and international cooperation with the quote "Global unity for global peace". E Poster presentation was organised and conducted to emphasise on importance of global peace and consequences of impatience and worldwide chaos to humanity. In the words of Gandhi, 'Be the change you wish to see in the world.' Let us be that change, and let us continue to walk the path of peace and righteousness that Gandhi showed us. Happy Gandhi Jayanti to all!"

Finally Dr Jeena susan saji delivered the vote of thanks and he thanked Dr. Padmaa M.Paarakh, Principal, The Oxford College of Pharmacy, Bangalore for giving opportunity to commemorate and pay honour to great leader Mahatma Gandhi.

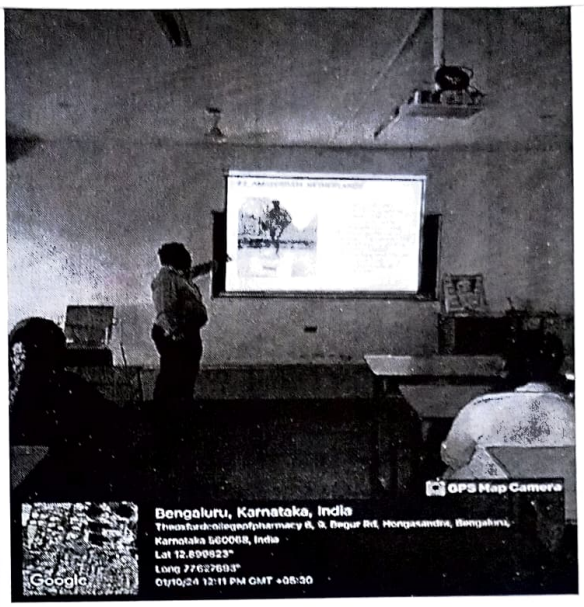
No. of participants-53

Schedule

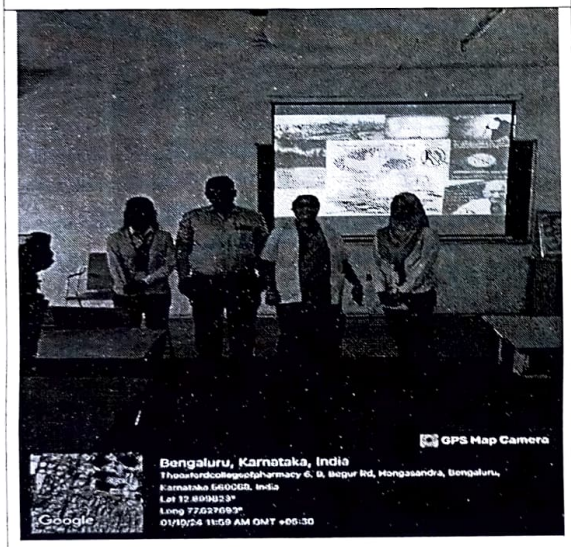
Timings	**Schedule**
11:00am	Dr.G Parthasarathy delivering Speech on **Biography on Mahatma Gandhi**
11.30 am	E poster event



INAUGRAL SPEECH PRESENTED BY DR PRIYADHARSHINI.M ON THE ACCOUNT OF GANDHI JAYANTI



DR G PARTHASARATHY DELIVERING SPEECH ON BIOGRAPHY OF MAHATMA GANDHI



A PHOTO SESSION AT THE END OF PROGRAM WITH PARTICIPANTS

STUDENT PRESENTING E POSTER WITH THEME "SPREADING THE MESSAGE OF PEACE AND NONVIOLENCE TO WORLD"

OUTCOME OF THE PROGRAMME:

On the account of Gandhi Jayanti, to commemorate and pay tribute to the "Father of Our Nation", honouring the legacy of the life of Mahatma Gandhi, E poster presentation on the theme "Spreading message of Peace and Nonviolence to the world "was conducted. Dr G Parthasarathy presented the biography and achievements of Mahatma Gandhi for Independent India with principles of nonviolence and peace. There were 53 participants who took part in the program. Participants enthusiastically took interest and participated in the E poster. The speaker highlighted the contributions of Gandhiji and his principles of truth, nonviolence and peace, hence let us all strive to walk in path of peace and harmony by Gandhiji's words.

END OF REPORT

LIST OF PARTICIPANTS

S NO	NAME OF THE PARTICIPANTS	SIGNATURE
1.	DR PADMAA M PAARAKH	
2.	DR PRIYADHARSHINI.M	
3.	DR JEENA SUSAN SAJI	
4.	ABINAYA SANGAVI	
5.	AISHWARYA K	
6.	AJAY KUMAR N	
7.	ANU R	
8.	BARANIDHARAN G	
9.	HEMA S REDDY	
10.	IMLIBENBA OZUKUM	
11.	J.JEEVITHA	
12.	JYOTHIRMOY GHOSH	
13.	KRISHNAJITH S	
14.	LAKSHMI . P	
15.	MAIVANNAN K	
16.	MD. SAIF KHAZI	
17.	NAYANA RAI A	
18.	RAAFI JAMAL J	
19.	RUPKUMAR DAS	
20.	SAM SHERMAN S	
21.	SAVITHA TV	

22.	SHREE DEVIKA RANI	
23.	UDAY SAHA	
24.	UDDIPAN RAI	
25.	WEIZEL PEARL BARRETTO	
26.	VARSHA M	
27.	ABHIRAMI P PILLAI	
28.	AFRAH FATHIMA	
29.	AIJINGHUN UMSONG	
30.	AKSHAYA S	
31.	AMIT KUMAR JENA	
32.	ARUSHI NAIR	
33.	BHAVANA M REDDY	
34.	HARSHITHA GS	
35.	HASHUBA.N	
36.	HEENA K	
37.	KEERTHI REDDY M	
38.	KIRUBA EVANJALIN M	
39.	MOHAMMED SHADAAB	
40.	MONISH T	
41.	RAHIB S	
42.	RAKSHITHA.K.C.	
43.	SRI NILASH KUMAR N	
44.	UTTARA. S	
45.	VEDHA SHREE KS	

46.	VENCY V	
47.	VISHWATHEJA B	
48.	SWARUPAM SARKAR	
49.	SOURASHISH BADIYA	
50.	MOLUNGZANG AIER	
51.	HARSHDEEP SARVA	
52.	KATHIRMANI RAJA S	
53.	ZOMBARKAR MUSKAN	

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The Oxford College of Pharmacy
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Approved by Pharmacy Council of India, New Delhi)

DATE: 22/01/2024

CIRCULAR

REPUBLIC DAY CELEBRATIONS 2024

All the teaching, non-teaching and students of The Oxford College of Pharmacy are hereby informed that 75th Republic Day 2024' for the Academic Year 2023-24 will be celebrated on 26-01-2024 (Friday). Republic Day holds immense significance in our Nation's history, symbolizing the adoption of the Constitution and marking the establishment of our democratic republic.

We encourage everyone to actively participate and contribute to making this event a memorable and meaningful experience for our college community. We look forward to your enthusiastic participation in the Republic Day celebrations.

Jai Hind!

P. Padma

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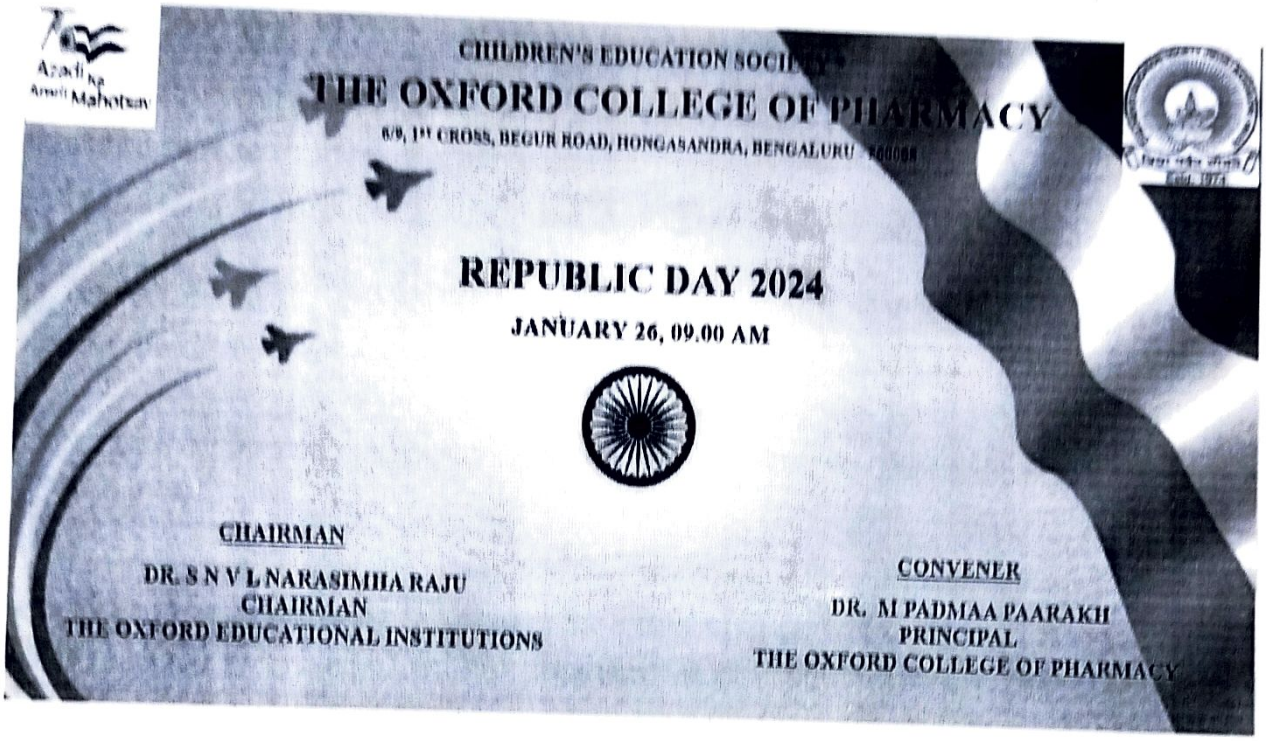

BROCHURE

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PREAMBLE

Republic Day in India is celebrated every year on the 26th of January. It was on this day that the constitution of India came into being, replacing the Government of India Act 1935 and making India a Republic Nation. To commemorate this day, The Oxford College of Pharmacy, Bangalore, under NSS committee celebrated the 75th Republic Day on January 26, 2024. The programme started at 9.00 a.m.

It was the matter of great pride for all of us. The principal, teachers and the students didn't want to leave any stone unturned in making this monumental day a memorable one. Republic Day is always a proud moment for every Indian to celebrate, which is celebrated throughout India and every corner of the country on 26th January every year irrespective of caste, creed and religion. While India gained independence from the British Raj in 1947, it wasn't until January 26, 1950, that the Indian Constitution came into effect, and India became a sovereign state, declaring it a republic. Dr. BR Ambedkar headed the Drafting Committee of the Constitution. Additionally, Constitution Day is celebrated in India on November 26 every year, as on November 26, 1949, the Constituent Assembly of India adopted the Constitution of India.

The campus was beautifully decorated with flags and rangoli to commemorate the day. Our beloved principal Dr Padmaa Paarakh welcomed all the members present for the function. She requested Dr. Parthasarathy, Vice Principal & HOD, Department of Pharmacy Practice, The Oxford College of Pharmacy to do the flag hoisting ceremony, which was attended by students, faculty, and staff, creating a sense of unity and pride among everyone present.

Following the flag hoisting, the program continued with a variety of cultural performances showcasing the rich cultural heritage of our nation. Students presented traditional dances, patriotic songs, captivating the audience with their talent and creativity.

She extended her warm greetings on the occasion. After that our principal madam hoisted the Flag and we sang flag song and National Anthem together.

After that Dr. Jyoti Shrivastava, HOD, Professor, Department of Pharm Chemistry, The Oxford College of Pharmacy, gave an in-depth speech on how we got freedom.

Dr. Noopur Srivasthava, Associate Professor, HOD (Incharge), Department of Pharmacology, The Oxford College of Pharmacy, also gave a speech on the importance of Republic Day to Indians. He talked about the date was specifically chosen as it marks the anniversary of Purna Swaraj Day, which was held on January 26, 1930. The Purna Swaraj resolution made on January 26, 1930, called for "complete freedom from the British rule".

Mrs. Suvarnalakshmi, Asst. Professor, Department of Pharmaceutical Chemistry, The Oxford College of Pharmacy, gave the vote of thanks. The function was concluded by thanking teachers, students, and non-teaching staff.

The program ended with the message to create a great nation through collective efforts from all individual. Sweets were distributed amongst all.

No.of participants- 400 students

Schedule :

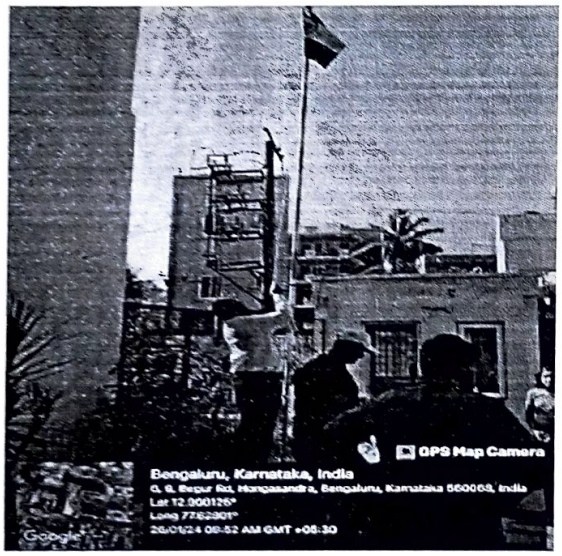
26th January 2024 :76th republic day celebration

Children's Education Society (Regd.)
The Oxford College of Pharmacy
(Recognised by the Govt. of Karnataka, Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka,
Approved by Pharmacy Council of India, New Delhi)

GLIMPSE OF 75th REPUBLIC DAY on 26th January 2024.

Students participated in Republic Day

Dr. Noopur Srivasthava addressing participants



Dr. Parthasarathy proudly hoists the flag, symbolizing our unity and strength

THE Oxford COLLEGE OF PHARMACY
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OUTCOME OF THE PROGRAM

The outcome of a Republic Day program was multifaceted, encompassing commemoration, education, and fostering national pride. Totally more than 400 students were participated in the program and through cultural performances and patriotic displays, participants reflected on the significance of the day and honour the founding principles of the republic. These celebrations served as an opportunity to educate the students, particularly youth, about the nation's constitution and its journey towards republicanism. Republic Day programs also emphasize unity in diversity, showcasing the nation's cultural richness and highlighting achievements across various fields. Furthermore, the event inspired citizens to contribute positively to the country's progress and uphold the values enshrined in the constitution. The Republic Day programs served as a platform to showcase the nation's achievements and cultural heritage, fostering diplomatic ties and showcasing national identity on the global stage.

----------END OF THE REPORT----------

Children's Education Society (Regd.)
The Oxford College of Pharmacy
(Recognised by the Govt. of Karnataka, Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka;
Approved by Pharmacy Council of India, New Delhi)

DATE: 04/03/2024

CIRCULAR

It is to inform all the students, teaching, non-teaching staff that The Oxford College of Pharmacy, Bengaluru is going to organize PHARMA ANVESHAN on 6th March 2024. All the teachers, students and non-teaching staffs are requested to attend the session.

Date: 6th March 2024
Time: 10.00-04.00 PM
Venue: Auditorium

P. Padua
PRINCIPAL
PRINCIPAL
The Oxford College Of Pharmacy
No 6/9,1st Cross, Begur Road, Hongasandra
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CC

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2. All Departments

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REPORT ON PHARMA ANVESHAN 2024 PROGRAM

The Oxford College of Pharmacy wholeheartedly thanked **Honorable President Dr Montu M Patel** for shortlisting our institution for granting financial assistance for conducting Pharma Anveshan, 2024 on 6th March, 2024

The Oxford College of Pharmacy in Bengaluru, organised the PHARMA ANVESHAN 2024 on the 122nd birth anniversary of **Prof M.L. Schroff**, the Father of Pharmacy Education in India on Wednesday, 6th March 2024.

The basic objective of this event was to understand how to implement NEP 2020 policy in academics as per requirement of Industry to make student competent. The theme coined by Pharmacy Council of India was "**Leveraging Synergism: Industry- Academia Partnership for Implementation of National Education Policy, 2020**" in the pharmacy education with collaboration with pharma industries. This event was sponsored by Pharmacy Council of India.

This program was attended by various eminent personalities from different professionals, industries, academics and PCI executive members, students of different institutions in the Bangalore. The total number of participants were 238 and we came to know about organizing this event only on Sunday evening. We have made the best possible efforts to organize the function in a grand way.

The program was started with prayer song by our students followed by lighting the lamp. All the Delegates from various industries and academic institutions, students are welcomed by our beloved principal, Dr. Padmaa M Paarakh. Before welcoming Principal appreciated that **Honourable Dr Montu M Patel young and dynamic leader** who has thought about celebrating the birthday of Prof M L Schroff and thanked the president for selecting our college to conduct this Pharma Anveshan 2024. The eminent personalities **Dr. S N V L Narasimha Raju, Chairman, The Oxford Educational Institutions, Dr. M D Karvekar, Director Academics, Krupanidhi College of Pharmacy, Professor (Dr) Munir Ahmed R, Domain consultant; L&D in HPE, Dr. Saleemulla Khan, Principal, P.A College of Pharmacy, Mangalore & Central Council Member, PCI and Dr. M Khalid Ahmed Khan, Deputy Drug Controller, Karnataka**, addressed the gathering in the inaugural program. All these eminent personalities expressed the importance of NEP 2020, and how its implementation effectively in pharmacy education will benefits to the students, industry and finally to the society. All these people address revolved around the theme "Leveraging Synergism: Industry-Academia Partnership for Implementation of National Education Policy, 2020. They also stressed on the importance of industry and institution collaborations in the research development in new drugs and in the formulation development. They encouraged students to approach the industries through the

institution to carry out their project work in the industry, which will beneficial for both. Bharat (India) has become the global hub for manufacturing of dosage forms and supplying finished products to more than hundred countries across the globe.

Dr. Saleemulla Khan, a Central Council Member of PCI in New Delhi, shared his thoughts on Pharma Anveshan 2024. As a distinguished personality in pharmacy education, his insights on the event will likely be significant. Organizing events like Pharma Anveshan is crucial to honour the legacy of pioneers like Prof. M.L. Schroff and encourage the growth of pharmacy education. Dr. Saleemulla Khan's talk motivates more individuals to become involved in pharmacy education and make meaningful contributions to the field. He also shared that the Pharmacy Council of India has selected two colleges from Karnataka state to sponsor Pharma Anveshan 2024, and one of those colleges is our The Oxford College of Pharmacy. Dr. Saleemulla Khan also highlighted the growth of India's pharmacy sector and the many opportunities available to students. It's excellent news that the Oxford College of Pharmacy has been selected for this initiative as a sponsored college from Karnataka.

Dr. M. Khalid Ahmed Khan, the Deputy Drugs Controller, Bengaluru and Secretary of IPA Karnataka Branch, emphasized the importance of collaboration between the pharmaceutical industry and academia in implementing the National Education Policy (NEP), which aims to transform the education system in India.

Dr. Khan highlighted the key features of the NEP, including the emphasis on interdisciplinary and holistic education, the promotion of research and innovation, and the adoption of technology in education. He stressed the need for the pharmaceutical industry to work closely with academia to identify areas of mutual interest and develop collaborative research projects to address healthcare challenges in India.

Dr. Khan also spoke about the role of the Indian Pharmaceutical Association (IPA) in promoting industry-academia collaboration. He encouraged pharmaceutical companies to partner with academic institutions to establish research and development centres, sponsor research projects, and provide training and internships to students.

The event was graced by two distinguished guests, Dr. MD Karvekar and Prof Dr. Muneer Ahmed R. They shared their valuable insights on implementing the National Education Policy in pharmacy education.

Prof Dr. Munir Ahmed R, Director, RGUHS Karnataka, also expressed his appreciation for the event and discussed the importance of integrating the National education policy into the Pharmacy curriculum. He emphasized that the policy's implementation would require appropriate training for academicians to achieve its objectives. He added that the curriculum should be designed to provide students with a comprehensive understanding of the policy's goals and objectives.

Dr. MD Karvekar, the senior academician and the event's Chief Guest, highlighted the importance of preparedness and adaptation to the upcoming changes in the academic system. He emphasized that implementing the National Education Policy would bring significant changes to the education system and that the faculty members and students should be well- prepared to embrace these changes.

Overall, both the guests emphasized the significance of the National Education Policy in pharmacy education and the need for a collaborative effort between the faculty members, students, and academic institutions to achieve its objectives

Dr. S N V L Narasimha Raju, The Chairman of The Oxford Educational Institutions, emphasized the importance of industry participation in the curriculum. He urged all participants to take a moment to pay homage to Prof M.L.Schroff on his birth anniversary, highlighting the significance of honouring those who have made significant contributions to the pharmacy field.

The Chairman's emphasis on industry participation highlights the need for academia and industry to work together to advance the pharmacy field. By collaborating closely, both parties can ensure that students have the necessary knowledge and skills to succeed in the ever evolving pharmaceutical industry. The Chairman also expressed his gratitude towards

Dr Montu M Patel, the President of the Pharmacy Council of India, for the opportunity to The Oxford College of Pharmacy to host Pharma Anveshan 2024. He extended his thanks to all the delegates who had come from various industries and institutions to participate in the event.

All the eminent personalities were honoured with momento, dry fruit bowl and shawl.

The inauguration session was concluded with Vote of thanks by **Dr. Noopur Srivastava**, Head of the Department of Pharmacology at The Oxford College of Pharmacy, expressed her heartfelt thanks to all the dignitaries, resource persons, industry experts, and students for attending this program. Dr. Noopur expressed her gratitude towards PCI President Dr Montu M Patel and team on behalf of Management, Principal, staff and students for this opportunity. Special gratitude goes to Dr. MD Karvekar, Prof. Dr. Muneer Ahmed R, Dr Saleemulla Khan, and Dr Khalid Ahmed Khan for sharing their insights on implementing the National Education Policy in pharmacy education. Dr. S N V L Narasimha Raju, Chairman of The Oxford Educational Institutions, is also greatly appreciated for his inspiring words and emphasis on industry participation in the curriculum. Furthermore, also assured that such programs will be organised in the institution in coming days.

After the first session, the delegates are allowed for 15 min tea break.II SESSION

The second session was started by

1st Speaker, Prof (Dr). Munir Ahmed, Director, Rajiv Gandhi University of Health Sciences, Domain consultant; L&D in HPE

Prof Munir spoke on the theme of "Need of teacher's education to implement NEP". In his presentation, he gave thrust on the role of teachers in implementing the NEP-2020 effectively to make it success. For this the teachers in all cadre should be trained and educate about the NEP'S rules and regulations, its benefits and how the students will be beneficial in their course year wise. He also expressed that, why students should know about the NEP? Because

of NEP, the students have opportunity to do different courses, if they are willing to do and their potential.

Dr. Munir Ahmed requested Pharmacy Education Institution Heads to interact and guide the students and teachers to discuss more and more about this new education policy, so that they can become familiar. Finally he concluded with appreciation to PCI for its role and support to the education institutions to come with new ideas in research, teaching, and industry institution partnerships for better education to the next generation pharmacists.

2nd speaker Dr. Sangamesh Puranik, Founder & CEO Saskia Labs Pvt. Ltd, Bangalore.

Dr. Puranik started his presentation on the theme of "NEP & its impacts on future of pharmacy" and emphasized on the following points in the interest of pharmacy education and industry collaboration benefits for present and its impact in near future.

National Education policy 2020 will be surely enriching the Pharmacy Education system and Research. Pharmacy Education is an example of multidisciplinary knowledge approaching education system with broad opportunity of research work, which is supported by the principle of National Education Policy 2020. It is crystal clear that any professional technical course of multidisciplinary approach like pharmacy will be enriched in regard to education and research. Knowledge in Pharmacy is already in blood of Indian since long long back and NEP is supporting and respecting this kind of knowledge carry forwarded to modern era.

One can easily observe that the PCI framed syllabus for D. Pharm., B. Pharm and M. Pharm are already supported by the basic demand of NEP. Therefore, in compliance of NEP, Pharmacy Education already touched the principle and advanced in the same pathway as per requirement of NEP. It is therefore a time demand to have a multidisciplinary research laboratory in each pharmacy institute in addition to this, PCI should think to include in the respective regulation.

Basic concept of Research Methodology and knowledge for preparation of Dissertation & presentation, Care your health and serve to community to make conscious about their health, Steps to be an entrepreneur and Startups, Increasing ability to present self in different sector of the pharmacy profession, Concept of laboratory designing. He also emphasized on the pharmacovigilance and eco-pharmacovigilance to prevent the pollution.

After this session the delegates were requested to take a sumptuous lunch break for 45 minutes.

After the lunch break, the session was continued with another young speaker,

3rd Speaker Dr. Kaushik Devaraju, Founder, Map Marketing Solutions

In his presentation Dr Kaushik, explained in detail about the community association benefits for research work in drug development and dosage form designing. How this association will influence the novel drug delivery systems preparations. In today's fast life style, people will accept maximum dosage form compliance and lesser side effects associated with drugs. The community feedback will motivate the researchers to think and work on the newer synthetic drugs and dosage forms. He also explained the recent policy decisions of Central Government

impact on the improvements of pharma industries, enthusiasm in R&D and starting bulk manufacturing plants in different parts of country. Finally he requested education institutions to encourage students to involve and follow the current developments in the pharma industry, AI, hospital services etc. to enhance their job opportunities.

4th speaker Manoj Kumar Yadava, Cluster Head, Medical Communications and Digital Solutions, Pharma Pulse

The session's objective was to create much-needed awareness among the students on NEP 2020 in their career path. The speaker, Manoj explored the traditional and emerging career opportunities for pharmacy students with a focus on industry expectations and career tips. It was worth noting that most students were unaware of many of the upcoming career opportunities discussed during the session such as space pharmacy, genomics and personalized medicines, and radiopharmaceuticals/nuclear pharmacy. There is a strong need to keep conducting career guidance sessions at least 1 year in advance before our pharmacy students complete their course curriculum to make the most out of their career path ahead. Aninteractive Q&A followed the session.

5th speaker Dr. Rajkumar Aland, Vice president Biolife Sciences

Dr Rajkumar has presented with the theme of "Restructuring of pharma education as per NEP and covered the following points with explanation to understand the participants for better pharmacy education in the interest of Community & Nation. National Education Policy (NEP)-2020, a striving policy of Govt of India to revamp the entire education system in India is now under implementation stage at each level including higher education institutions in India. The policy which was released after herculean exercise of eminent academicians and discussions and deliberations thereafter, places a significant emphasis on nurturing the creative potential of every individual. Key points and their possible solutions which can be incorporated while framing the revised academic structure for pharmacy programs: This will be a major change in the pharmacy academia so shall need a well-placed mechanism for institutions running Diploma in Pharmacy programs for smooth transition. Further after three years if a student exits, it should lead to the award of an Advanced Diploma in Pharmacy subject to the mandatory industrial training. The fourth year should be split into B. Pharm (Hons) and B. Pharm (research). The honours' part should have elective subjects like Community

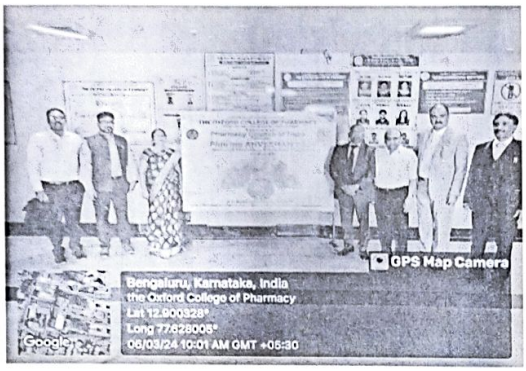
Pharmacy, Industrial Pharmacy, Retail Pharmacy, Marketing and management, Clinical Pharmacy, Regulatory Pharmacy and subjects which will improve the skills as per the interest of the student, the area in which they want to work in future. Multidisciplinary components in pharmacy curriculum, there are already few multidisciplinary subjects covered however, the basket of multidisciplinary courses should be enhanced so that the candidate be able to choose courses of current advances like, artificial intelligence, data analysis, robotics, mechatronics, advanced engineering tools for novel drug development delivery etc. He also emphasized on the institution infrastructure improvements with respect to industry advanced process in technology, so that the students shouldn't face much difficulty in industry jobs.

After the session, the delegates are allowed for 20 min tea break with snacks.

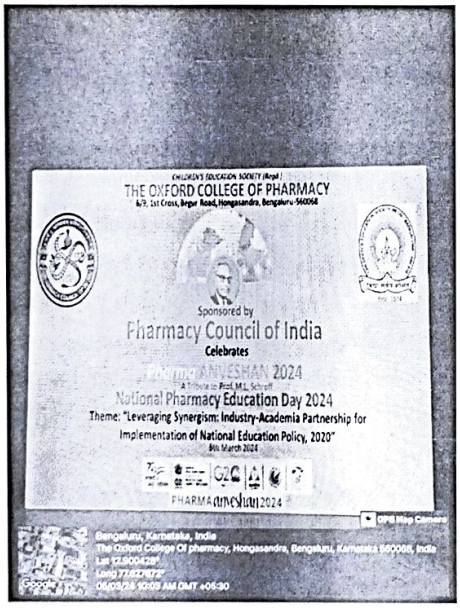
Panel Discussion

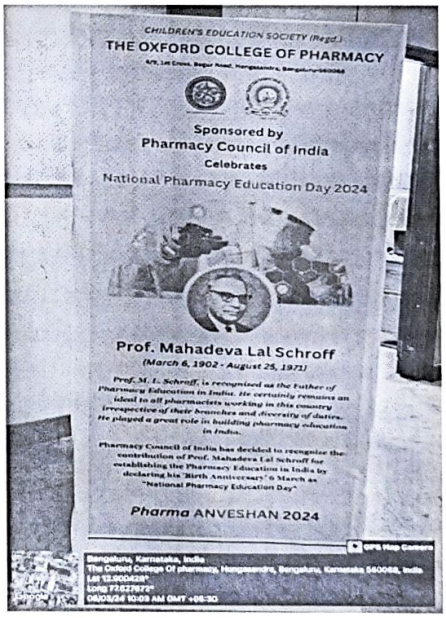
The panel discussion started around 4.45 pm with Dr. Sangamesh Puranik, Dr Kaushik Devraju, Dr Rajkumar Aland, Manoj Kumar Yadava, Mr Shwetal Khopkar, Marketing Manager, Buchi India Private Limited, along with Principal Dr Padmaa M Paarakh and HODS of college.The panel team was headed by one of the most eminent personality **Dr. Ramachandra Shetty, Director(R &D), Rajiv Gandhi University of Health Sciences, Bangalore and Central Council Member, PCI**. All participated very enthusiastically and answered many questions in the discussion from the audience. Dr. Ramchandra Shetty, answered the questions regarding NEP along with panellists in clear and concise way. Participants raised several questions about the pharmacy field. One of the participants asked about the future scope of the pharmaceutical industry in India. Dr. Ramachandra Shetty said that the Indian pharmaceutical industry has a bright future due to the country's large population and increasing healthcare needs. Another participant asked about the role of pharmacists in preventing medication errors. The panellists agreed that pharmacists play a crucial role in medication safety and should be trained to identify and prevent errors. Another participant raised a question about the use of artificial intelligence in pharmacy. They explained that AI has the potential to revolutionize the pharmacy industry by improving drug discovery and development, medication management, and patient care. Overall, the panellists provided insightful answers to the participants' questions and created a lively and informative discussion. The panel discussion went up to 5.30 pm. Certificate were distributed to the participants. Finally the Vote of thanks was given by the convener, Dr. Padmaa M Paarakh. First she thanked the PCI President **Dr Montu M Patel** for this opportunity to our institution. Madam, thanked the Chairman, **Dr. S.N.V.L Narasimha Raju** sir, for his continuous support and motivation for organising such programs at our institution. She is also thanked organising committee, staff, industry peers, all the students from our college and other Institutions for actively participating in this successful and knowledge shared conference. She told all the students, the best tribute to Prof. M L Shroff is the students and teachers support and actively involved in academia, research, social service through pharmacy and gratitude towards the PCI and education institutions.

After National Anthem, all the participants dispersed and the session were concluded successfully.



Some of the photos from the Pharma Anveshan program





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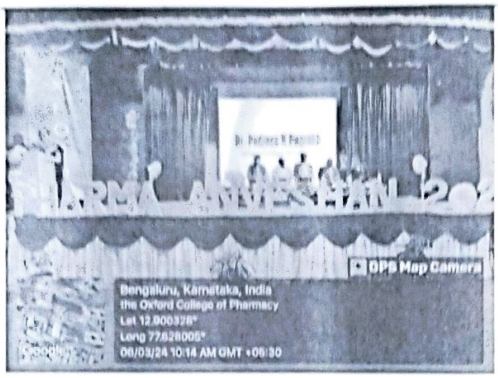
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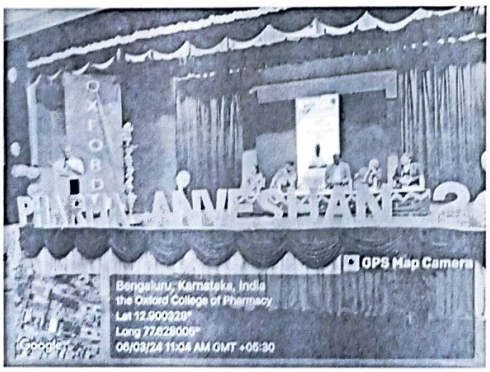
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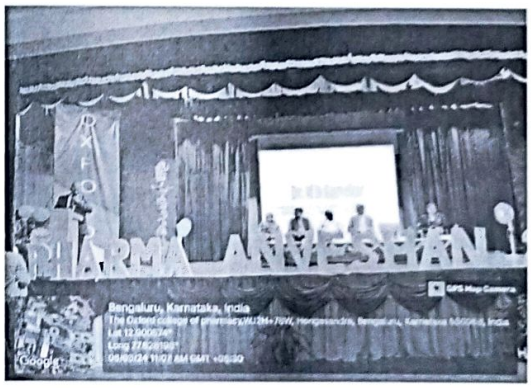

Some of the photos from the Pharma Anveshan program

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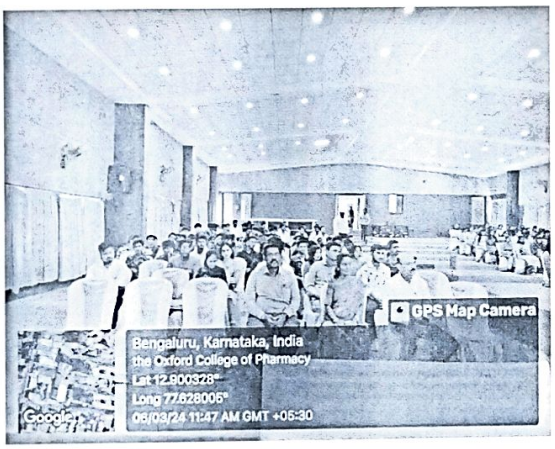

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DATE: 01/02/2024

CIRCULAR

All faculty, staff, and students of The Oxford College of Pharmacy are hereby informed that an awareness session on **"Life Skills Program: Health and Fitness"** for the academic year 2023-24 will be held on 05/02/2024. We encourage active participation from everyone. Interested students are requested to submit their names to the event coordinator.

P. Padma

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CHILDREN'S EDUCATION SOCIETY (REGD.)

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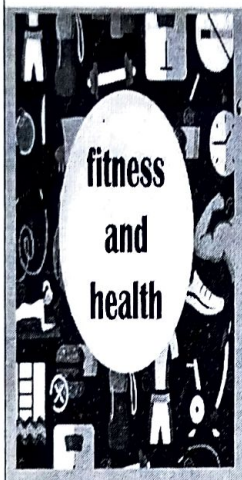


CORDIALLY INVITES YOU FOR

"LIFE SKILL PROGRAM ON HEALTH AND FITNESS"

Organized by

Department of Pharmaceutics

on

05/02/2024

SPEAKER: Mr. Sivaraj Kumar B

Research Assistant

St. Johns Research Institute

Time :12.00-1.00PM

CHIEF PATRON	CONVENER	CO-ORDINATOR
Dr. S.N.V.L NARASIMHA RAJU Chairman The Oxford Educational Institutions	Dr. PADMAA M PAARAKH Principal, The Oxford College of Pharmacy	Mrs.Adithi P Assistant Professor Department of Pharmaceutics The Oxford College of Pharmacy

Brochure

PREAMBLE

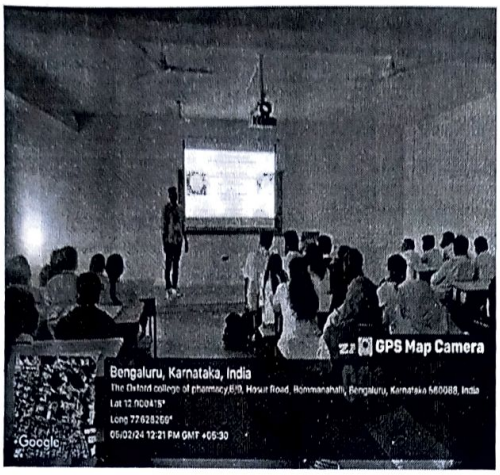
In today's fast-paced world, prioritizing health and fitness is essential for leading a fulfilling and productive life. This program empowers individuals to take control of their well-being by providing the knowledge and tools necessary to make informed health decisions. By cultivating healthy habits and adopting a proactive approach to self-care, participants will improve their physical health while enhancing their mental and emotional well-being. As we gather to expand our knowledge and skills, let us acknowledge our responsibility to prioritize our overall health and commit to fostering a culture of fitness and self-care, empowering ourselves to lead fulfilling and productive lives.

CONTENT OF THE SESSION

On 05/02/2024, The Oxford College of Pharmacy organized a "Life Skills Program on Health and Fitness," which aimed to promote the importance of maintaining both physical and mental well-being. The session included various activities, such as expert talks on fitness, interactive discussions on healthy lifestyle choices, and practical demonstrations of exercises and mindfulness techniques were conducted. The speaker provided a brief overview of different types of fitness, as well as the recommended calorie intake for various categories, emphasizing the importance of balancing physical activity and nutrition. He also highlighted how regular physical exercise, a well-balanced diet, and stress management contributed to overall health.

There was a lively interaction between the speaker and the students, with participants actively engaging in discussions on their personal health challenges. The event featured a Q&A session, where students and faculty sought expert advice on specific fitness and health issues.

A total of 50 B. Pharm students, along with faculty members, participated in the event. It concluded with a vote of thanks delivered by Mrs. Adithi, the organizer, who expressed sincere gratitude to Chairman Dr. S.N.V. L. Narasimha Raju of The Oxford Group of Institutions and Dr. Padmaa M. Paarakh, Principal, for their continuous encouragement and support. The program effectively raised awareness about health and fitness and motivated participants to adopt healthier lifestyles.



Inspiring our students with the power of knowledge.

A fruitful interaction between students and our esteemed resource person.

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LIST OF PARTICIPANTS

S.NO.	NAME OF THE CANDIDATE	SIGNATURE
1.	ABHINAV ANAND	
2.	ABHISHEK. H. PATIL	
3.	ABISHEKA. M	
4.	ADITYA '	
5.	AISHWARYA. S. P	
6.	AKASH. R	
7.	AKSHITHA. A	
8.	ALLURI YASWANTH	
9.	ANBALAGAN. R	
10.	ANUPRIYA. K	
11.	ANUSHKA SINGH	
12.	ARYAN OTTA. P. K	
13.	ASHWINI. B. S	
14.	BHAGYASHREE. B	
15.	BHARATH. B	
16.	BHOOMIKA. T	
17.	DEEPIKA. V	
18.	DEVENDRA. D	
19.	DHANUSH. R. K	
20.	DILLIPKUMAR. E	
21.	DIPANJANA NAYEK	
22.	GANESH KUMAR	
23.	GEETHA. M	
24.	GOKILAN. N	
25.	GOWTHAM. V	
26.	GUNASHREE. M	
27.	HARIHARAN. M	
28.	HARISH. G	
29.	HARSHA. T	
30.	HEMASHREE. S	
31.	JAI SURYA. S	
32.	JEEVA. B	
33.	JOE LAMBOKLANG	
34.	JOEL JOHN PHILIP	
35.	JOSHITHA. K	
36.	JOSHNI. D	
37.	KALAVATHI. K	
38.	KAVYA. K	
39.	KRITHIKA. S. K	
40.	KUSHAL GOWDA. H. C	

41.	LAVANYA. R	
42.	LIKHITH. M	
43.	MEGALA. S	
44.	MEGHANA. R	
45.	MOHITH. B. D	
46.	MONIKA. B. M	
47.	MONISH. S	
48.	MONISHA. R	
49.	MURALI. P	
50.	NANDHA KUMAR. S	

OUTCOME

The Life Skills Program on Health and Fitness was a resounding success, with enthusiastic participation from 50 B. Pharm students. The program effectively emphasized the importance of maintaining physical and mental well-being, equipping students with practical strategies for healthy living. Participants actively engaged in discussions and activities, demonstrating their keen interest in the topic. The program's positive impact is evident in the students' increased awareness of health and fitness, their ability to integrate healthy habits into their daily lives, and their overall well-being.

END OF REPORT

THE OXFORD COLLEGE OF PHARMACY
6/9, 1ST MAIN, BEGUR ROAD, HONGASANDRA,
BENGALURU-560 068

PARTICIPATION CERTIFICATE

This is to certify that Mr./Ms. Bharath. B of I Sem B. Pharm has participated in the **"Life Skills Program: Health and Fitness"** organized by the Department Pharmaceutics on 05/02/2024

Adithi

Mrs. ADITHI P
COORDINATOR

P. Padmaa

DR. PADMAA M PAARAKH
PRINCIPAL

THE OXFORD COLLEGE OF PHARMACY
6/9, 1ST MAIN, BEGUR ROAD, HONGASANDRA,
BENGALURU-560 068

PARTICIPATION CERTIFICATE

This is to certify that Mr./Ms. Abhisheka. M of I Sem B.Pharm has participated in the **"Life Skills Program: Health and Fitness"** organized by the Department Pharmaceutics on 05/02/2024

Adithi

Mrs. ADITHI P
COORDINATOR

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BENGALURU-560 068

PARTICIPATION CERTIFICATE

This is to certify that Mr./Ms. Deepika V of I Sem B. Pharm has participated in the **"Life Skills Program: Health and Fitness"** organized by the Department Pharmaceutics on 05/02/2024

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This is to certify that Mr./Ms. Harsha T of I Sem B.Pharm has participated in the **"Life Skills Program: Health and Fitness"** organized by the Department Pharmaceutics on 05/02/2024

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Estd. 1974

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PARTICIPATION CERTIFICATE

This is to certify that Mr./Ms. Kavya K of I Sem B. Pharm has participated in the **"Life Skills Program: Health and Fitness"** organized by the Department Pharmaceutics on 05/02/2024

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Children's Education Society (Regd.)
The Oxford College of Pharmacy
(Recognized by the Govt. of Karnataka, Affiliated to Rajiv Gandhi University of Health Sciences, Karnataka;
Approved by Pharmacy Council of India, New Delhi)

Date: 31/01/2024

CIRCULAR

All the teaching, non-teaching and students of The Oxford College of Pharmacy are hereby informed that a Guest Lecture on '**WORLD CANCER DAY 2024'** for the Academic Year 2023-24 will be conducted on 03/02/2023 (Saturday). As we all know that World Cancer Day is observed on 4th February every year and the February 4th falls on Sunday, we have chosen the preceding Saturday February 3rd 2024 to ensure maximum participation and convenience for all. We request for the active participation for the same.

Note: We are excited to announce a Brochure-Making competition in conjunction with the Guest Lecture on the cancer awareness. Participants are encouraged to create visually appealing and informative brochures on or before 02/02/2024 to the event organizers without fail. Class coordinators are requested to inform to the students the same.

PRINCIPAL

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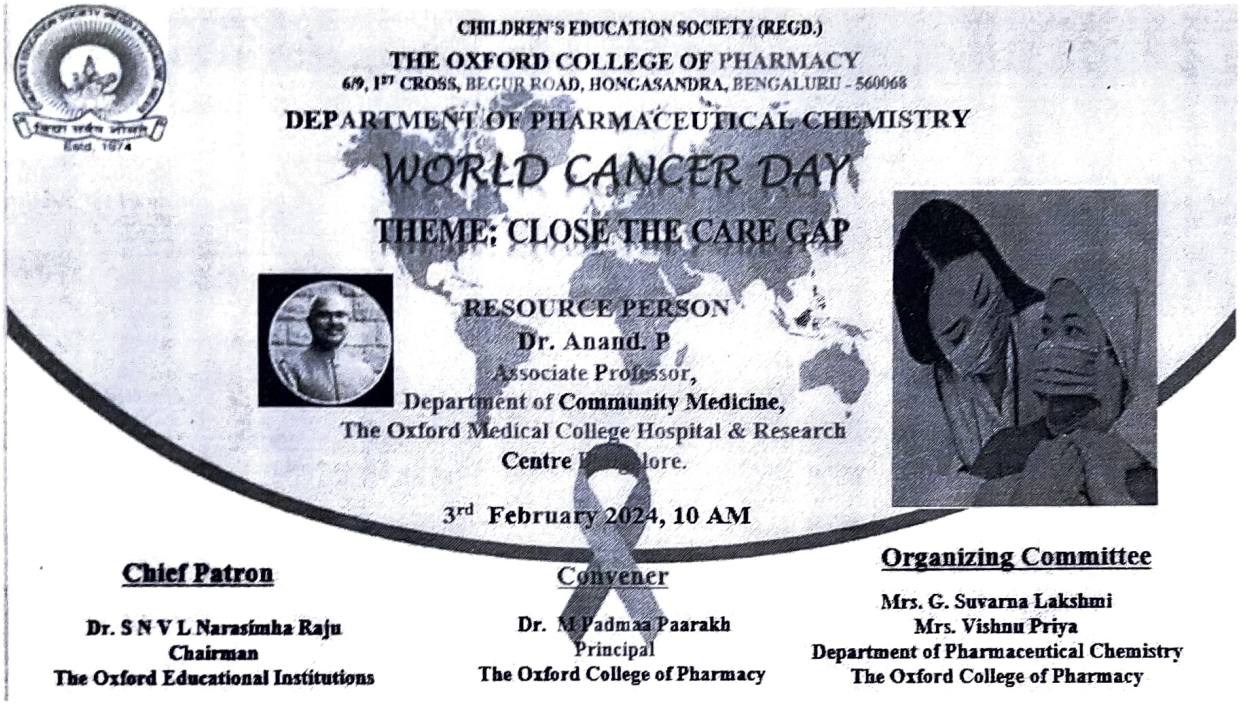

CHILDREN'S EDUCATION SOCIETY (REGD.)
THE OXFORD COLLEGE OF PHARMACY
6/9, 1ST CROSS, BEGUR ROAD, HONGASANDRA, BENGALURU - 560068
DEPARTMENT OF PHARMACEUTICAL CHEMISTRY
WORLD CANCER DAY
THEME: CLOSE THE CARE GAP
RESOURCE PERSON
Dr. Anand. P
Associate Professor,
Department of Community Medicine,
The Oxford Medical College Hospital & Research
Centre
3rd February 2024, 10 AM
Chief Patron
Dr. S N V L Narasimha Raju
Chairman
The Oxford Educational Institutions
Convener
Dr. M Padmaa Paarakh
Principal
The Oxford College of Pharmacy
Organizing Committee
Mrs. G. Suvarna Lakshmi
Mrs. Vishnu Priya
Department of Pharmaceutical Chemistry
The Oxford College of Pharmacy

BROCHURE

PREAMBLE:

The Oxford College of Pharmacy, Bengaluru, organized "**WORLD CANCER DAY 2024**". World Cancer Day is an international event observed on February 4th every year. It aims to raise awareness about cancer, encourage its prevention, detection, and treatment, as well as advocate for greater access to cancer care. The day was established by the Union for International Cancer Control (UICC) to support the goals of the World Cancer Declaration, which was adopted in 2008.

UICC (Union for International Cancer Control) declared the theme for World Cancer Day 2024 "**Close the Care Gap".**

Cancer is a second-leading cause of death across the world and 70% of cancer deaths occur in low-to-middle-income countries. Each year, millions of lives can be saved by implementing resource-appropriate strategies for prevention, early detection, and treatment. At the same time, make people aware of how to prevent, and also how to identify the symptoms of cancer, educate people, as well as to prepare government and non-governmental organizations to help in fighting this deadly disease all over the world.

THE PROGRAM AS FOLLOWS:

In honor of World Cancer Day on February 4th 2024, which fell on a Sunday, the Department of Pharmaceutical chemistry hosted a Guest Lecture on the preceding Saturday, February 3rd 2024.
The event commenced with a warm welcome and introduction of the guest speaker by Mrs. Vishnupriya. S. This was followed by the inaugural address delivered by Dr. Padmaa M Paarakh, Principal of The Oxford College of Pharmacy.

The Guest Lecture delivered by Dr. Anand P, was a profound exploration into cancer prevention interventions and the importance of adopting a cancer-preventive lifestyle. Dr. Anand shared valuable insights, drawing from his extensive expertise in the field, and emphasized the critical role of proactive measures in reducing the burden of cancer.

During the lecture, Dr. Anand underscored the significance of raising awareness about cancer prevention strategies among communities. He emphasized that prevention is key and highlighted various lifestyle modifications that can significantly reduce the risk of developing cancer. From maintaining a healthy diet and regular exercise routine to avoiding tobacco and limiting alcohol consumption, Dr. Anand stressed the importance of making informed choices to safeguard one's health.

Moreover, Guest Speaker advocated for a collective effort in promoting cancer prevention. He emphasized the need for individuals to encourage others to prioritize their health and adopt cancer-preventive habits. By fostering a supportive environment and promoting healthy behaviours within communities, we can work towards reducing the incidence of cancer and improving overall well-being.

In alignment with the theme "Close the Care Gap," Dr. Anand addressed the need for better access to clinical evaluation and care for all individuals, regardless of their background or socioeconomic status. He emphasized the importance of bridging the gap in healthcare services to ensure that everyone has access to timely diagnosis, treatment, and support.

In conclusion, Dr. Anand's insightful lecture served as a catalyst for action, inspiring attendees to take proactive steps towards cancer prevention and advocating for equitable access to quality healthcare. By working together to raise awareness, promote healthy lifestyles, and address disparities in care, we can strive towards a future where cancer incidence is minimized, and every individual receives the care and support they deserve.

The students of The Oxford College of Pharmacy demonstrated active participation in the brochure-making competition, showcasing their creativity and commitment to raising awareness about cancer prevention. They produced a diverse range of brochures; each designed to inform and educate the community about the importance of adopting a healthy lifestyle to prevent cancer.

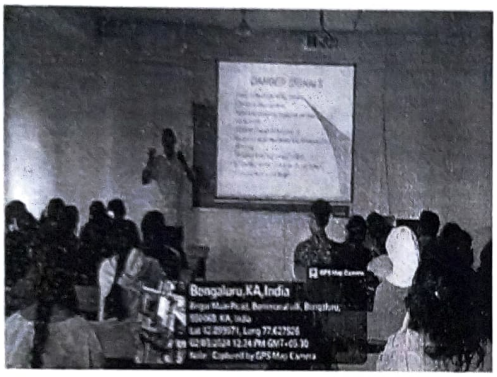
Not only did the students actively participate in creating the brochures, but they also took proactive steps to distribute them within the community. Through their efforts, valuable information regarding cancer prevention measures and support resources reached a wider audience, contributing to the overarching goal of spreading awareness and promoting health and well-being.

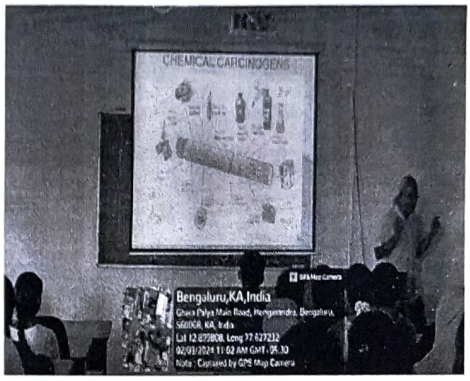
The program organizer Mrs. G. Suvarna Lakshmi concluded the program with vote of thanks. She thanked chairman Dr. S. N. V. L Narasimha Raju, The Oxford Group of Institutions, Dr. Padmaa M Paarakh, Principal, The Oxford College of Pharmacy for giving opportunity for organizing such an event. She also expressed her gratitude to Dr. Anand P, Associate Professor, Department of Community Medicine, The Oxford Medical College Hospital & Research Centre, Dr. Jyoti Srivasthava, HOD, Department of Pharmaceutical Chemistry, and to all the other faculties and students who participated in the event and helped in its successful completion of the event.

PROGRAM AGENDA & SCHEDULE:

Time	Event
10:00 am - 10:15 am	Inauguration
10:15 am – 10:30 am	Welcome Note
10:30 am – 12: 00 pm	Expert Talk
12:00 pm -12.30 pm	Vote of Thanks
12.30 pm- 1.30 pm	Community Outreach: Brochure Distribution

GLIMPSE OF THE EVENT:





Dr. Anand addressing students on Cancer Awareness

Principal honors Dr. Anand, our esteemed Resource Person

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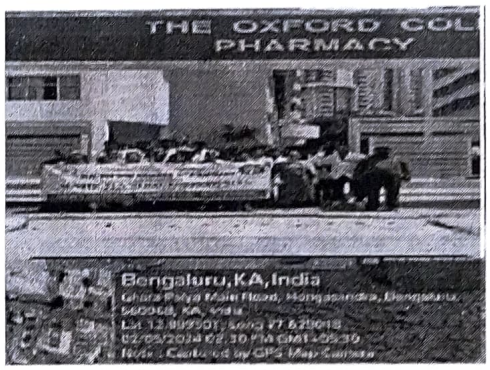
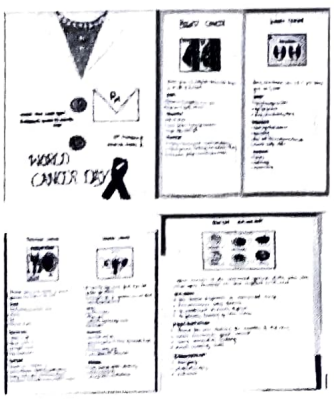
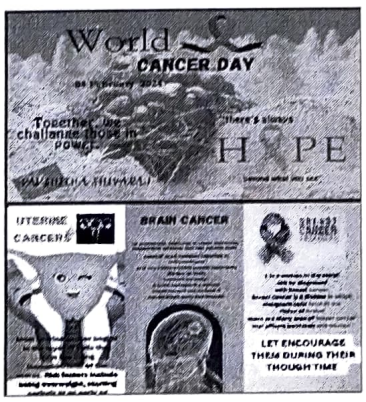
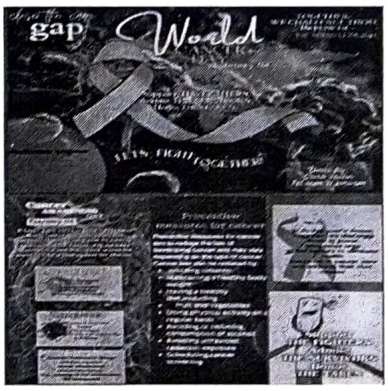
Students sharing brochures with the community to spread awareness



Students leading awareness program under NSS, spreading the word to the community







Brochures prepared by students

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OUTCOME OF THE PROGRAMME:

The program successfully reached the individuals and significantly increased the awareness about cancer related issues. 60 students of B. Pharm and Pharm. D participated in the program and attendees gained valuable knowledge about healthy lifestyles, early detection, and the importance of screenings, potentially impacting preventive behaviors. The programs brought together diverse communities, creating a supportive environment and encouraging active participation in cancer-related discussions. After the program, the participants were involved in spreading the knowledge on cancer to the local community, helping people learn more about cancer by distributing brochures to the community. To build on this success, future programs could focus on sustained educational campaigns, increased partnerships with healthcare institutions, and continued advocacy for improved policies and resources for cancer prevention and treatment.

----------END OF REPORT----------

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LIST OF PARTICIPANTS

S.NO	NAME OF THE STUDENT	SIGNATURE
1	A YESWANTHA	
2	ABHINAV ANAND	
3	ABHISHEK H PATIL	
4	ABISHEKA M	
5	ADITYA	
6	AKASH R	
7	AKSHITHA A	
8	ALLURI YASWANTH	
9	AMRIN A	
10	GEETHA M	
11	GOKILAN N	
12	GOWTHAM V	
13	GUNASHREE M	
14	HANUMANTARAYA GOUDA	
15	HARISH G	
16	HARSHA T	
17	HEMASHREE S	
18	JEEVA B	
19	JOEL JHON PHILIP	
20	JOSHITHA K	
21	JOSHNI D	
22	KALAVATHI K	
23	KAVYA K	
24	KHASHIMASAB	
25	KRITHIKA SK	
26	KULSUM	
27	KUSHAL GOWDA HC	
28	LAVANYA R	
29	LIKHITH M	
30	M HARIHARAN	
31	NITHYA M	
32	NITU KUMARI P	
33	PAVANA M	
34	PAVANI B	
35	PAVITRA HIREMATH	
36	PK ARYAN OTTA	
37	PRAJWAL L	
38	PRAKRUTHI J	
39	PRAVEEN SHANKRI	

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40	RAVI CHANDRA V	
41	RITESH KHEMKA	
42	ROHITH V	
43	S NANDITHA	
44	RAVI CHANDRA V	
45	ABIGAIL N MOZHUI	
46	ANIRBAN DEBNATH	
47	ASHISH ABHRAHAM	
48	DEBJIT BHAKAT	
49	DEEPTI CHOUDHARY	
50	DIMPLE G	
51	GANANESWAR RAO S	
52	HEMA NS	
53	JEFFY Y	
54	KEERTHANA C	
55	PADMASHREE M	
56	RANJITHA REDDY S	
57	SHASHIKALA DM	
58	SHERLIN HEPZIBAH S	
59	SUBHASHINI N	
60.	TINA LALLY	

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JOURNAL CLUB PRESENTATION

SUBMITTED TO,
Mrs. Kesarla Bhavani, M Pharm,
Assistant professor,
The Oxford College of Pharmacy,
Bangalore 560068.

SUBMITTED BY,
HAMSA C B
Reg no. : 22PP271
4th sem M.Pharm,
Dept. of Pharmacology
The Oxford College of Pharmacy,
Bangalore 560068.

K. Bhavani

TITLE:

"Effects of Cyclosporine and Azacitidine on Some Hematologic and Biochemical Parameters of Benzene-Induced Aplastic Anemia in Rats"

JOURNAL NAME: The Iraqi Journal of Veterinary Medicine

AUTHORS: Ghanem T Abdulrazzaq, Huda F Hasn

YEAR: 2023

VOLUME AND ISSUE: 47 and 2

Introduction

- Aplastic anemia is one type of acquired myeloid hematological system disease. It is characterized by immune-mediated primary bone marrow failure (BMF) leading to pancytopenia and hypocellular marrow
- In addition, acquired aplastic anemia was associated with a quantitative and qualitative hematopoietic stem progenitor cell deficiency that resulted in peripheral blood pancytopenia and hypocellular BM
- The present study aimed to evaluate the role of cyclosporine and azacitidine in treating of benzene-induced aplastic anemia in rats.

Materials and methods

Experimental Animals:

- Thirty adult female Wister rats, 3 months old, with an average body weight 220±12 g were obtained
- Animals were allowed a two-week adaptation period prior to the beginning of the experiment
- The rats were accommodated in plastic cages (20×30×50 cm3) with stainless-steel wire mesh lids in an air-conditioned room with proper climatic parameters of temperature

Experimental design

Thirty rats were divided equally into five groups

GROUPS	TREATMENT
Group 1	Normal control (vehicle 1ml *p.o*)
Group 2	Benzene treated group
Group 3	Cyclosporine group (5.86 mg/kg.)
Group 4	Azacystine group (5.75 mg/kg)
Group 5	CsA+Aza (3.68 mg/kg)

Induction of Anemia

- Benzene was administered orally for fifteen days at a dose of 40 mg/kg to induce this disease.
- After the end of the induction period, five female rats were randomly taken and euthanizing to study histopathological changes in BM and liver tissues,

Parameters:

- Differential WBCs and Reticulocytes
- Determination of serum IL-2
- Determination of Serum ALP Activity (ALP)

Results

Parameter (%)	C-	C+	CsA	Aza	CsA+Aza	LSD
Lymphocytes	59.1 ± 2.96 [a]	28.8 ± 2.69 [d]	34.8 ± 2.07 [c]	34.1 ± 1.84 [c]	42.4 ± 2.09 [b]	6.11
Monocytes	3.14 ± 0.63 [a]	0.87 ± 0.24 [c]	0.99 ± 0.08 [c]	1.10 ± 0.17 [bc]	2.00 ± 0.11 [b]	0.93
Basophil	0.75 ± 0.06 [a]	0.21 ± 0.07 [c]	0.48 ± 0.07 [b]	0.46 ± 0.08 [b]	0.63 ± 0.08 [ab]	0.22
Neutrophils	38.4 ± 1.19 [a]	19.9 ± 2.36 [d]	29.1 ± 2.63 [c]	30.9 ± 0.90 [bc]	36.9 ± 3.22 [ab]	6.53
Eosinophils	3.50 ± 0.51 [a]	0.93 ± 0.11 [c]	1.80 ± 0.22 [b]	1.76 ± 0.21 [b]	2.62 ± 0.31 [b]	0.82
Reticulocytes	3.72±0.19 [a]	0.88 ± 0.09 [d]	1.90 ± 0.21 [c]	1.82 ± 0.24 [c]	2.95 ± 0.27 [a]	0.64

Major findings

- Dosage was not given properly for both inducer and drugs
- The route of drug administration was not mentioned
- Histopathological data is not shown
- Results could have been presented in a better way

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OPEN ACCESS

Effects of Cyclosporine and Azacitidine on Some Hematologic and Biochemical Parameters of Benzene-Induced Aplastic Anemia in Rats

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A B S T R A C T

Aplastic anemia, marked by deficiencies in hematopoietic stem cells, leads to peripheral blood pancytopenia and hypocellular bone marrow. This study aimed to evaluate the therapeutic efficacy of cyclosporine and azacitidine, administered either alone or in combination, in rats with benzene-induced aplastic anemia, focusing on restoring normal blood cell levels and preventing disease complications. Thirty adult female Wistar rats (Rattus norvegicus) were randomly divided into five groups: negative control (C-, untreated), positive control (C+, induced aplastic anemia with distilled water), cyclosporine-treated (CsA, 5.86 mg/kg), azacitidine-treated (Aza, 5.75 mg/kg), and combination-treated (CsA+Aza, 3.68 mg/kg each). Benzene (1940 mg/kg) was administered orally for fifteen days to induce aplastic anemia. Post a 30-day treatment period, evaluations included differential WBC and reticulocyte counts, serum IL-2 levels, and alkaline phosphatase (ALP) activity. Results showed significant improvements in WBC% and reticulocyte% in all treated groups compared to the C+ group, with the combination-treated group showing the highest enhancement. IL-2 levels in the combination group were significantly reduced compared to other treatment groups, aligning closely with the negative control. The ALP activity was significantly higher in both the cyclosporine and azacitidine-treated groups compared to the positive control, with the combination group showing a marked increase over the azacitidine group but no significant difference from the cyclosporine group and negative control. In conclusion, the study demonstrates the potential therapeutic benefits of cyclosporine and azacitidine in treating benzene-induced aplastic anemia in rats. The combination therapy, in particular, showed improved efficacy in all tested parameters, suggesting a potential strategy for dose reduction and toxicity mitigation.

Keywords: cyclosporine, azacytidine, bone marrow, aplastic anemia, rat

INTRODUCTION

Aplastic anemia is one type of acquired myeloid hematological system disease. It is characterized by immune-mediated primary bone marrow failure (BMF) leading to pancytopenia and hypocellular marrow (1, 2). Remarkably, reticulocytopenia, monocytopenia, neutropenia and thrombocytopenia are noteworthy because they can be extremely life-threatening due to the risk of infection and bleeding, which is exacerbated by severe anemia (3). In addition, acquired aplastic anemia was associated with a quantitative and qualitative hematopoietic stem progenitor cell deficiency that resulted in peripheral blood pancytopenia and hypocellular BM (4, 5). Moreover, IL-2 stimulates the synthesis of proinflammatory cytokines like IFN- and IL-4 as an

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autocrine consequence of antigen-stimulated T cells, which are necessary for the proliferation and expansion of both antigen-specific clones of CD4+ and CD8+ T cells. (6). In this respect, previous studies have demonstrated that the peripheral blood IL-2 levels of cases with acquired aplastic anemia were significantly higher than those of healthy controls (4). Nevertheless, by preventing hematopoietic stem progenitor cells (HSPC) from proliferating and impairing the hematopoietic regulatory system, acquired aplastic anemia can be developed (6). A powerful immunosuppressive drug (calcineurin inhibitor) cyclosporine was first identified in 1971. It is an undecapeptide with a cyclic lipophilic structure of fungal origin called *Tolypocladium inflatum* (7). In numerous animal species for a variety of organs, aplastic anemia, allograft rejection, delayed hypersensitivity, and graft vs. host disease have all been found to be inhibited by cyclosporine, as well as certain humoral immunity and, to a greater extent, cell-mediated immune responses. (8).

Azacitidine (5-azacytidine), a pyrimidine nucleotide analog of cytidine, inhibits the activity of the DNA methyltransferase (DNMT) by altering the pyrimidine ring's fifth carbon. Depending on the dosing regimen, azacitidine exhibited two unique properties: cytotoxicity and DNA hypomethylation. Due to its incorporation into RNA and DNA, azacitidine enhances cytotoxicity at high doses while causing DNA hypomethylation effects at low doses (9). The medicine combination is most frequently using for treatment of the worst illnesses, such as cancer, AIDS, and aplastic anemia. The primary goals of combination medications are typically to reduce dosage and toxicity, generate synergistic therapeutic benefits, and prevent or postpone the development of drug resistance. The present study aimed to evaluate the role of cyclosporine and azacitidine in treating of benzene-induced aplastic anemia in rats.

Materials and Methods

Ethical Approval

All procedures used in this study were approved by the local Scientific Research Committee of the College of veterinary medicine, University of Baghdad in compliance with the ethical principles guidelines on the care and use of animals in research of animal welfare (Approval Number: 1254 P.G. dated 30/4/2023).

Induction of Plastic Anemia

Benzene was administered orally for fifteen days at a dose of 1940 mg/kg to induce this disease. After the end of the induction period, five female rats were randomly taken and euthanizing to study histopathological changes in BM and liver tissues, as well as measuring the complete blood picture to confirm the occurrence of disease.

Experimental Animals

Thirty adult female Wister rats, 3 months old, with an average body weight 220±12 g were obtained from the animal house of the College of Veterinary Medicine, University of Baghdad. The rats were accommodated in plastic cages (20×30×50 cm^3) with stainless-steel wire mesh lids in an air-conditioned room with proper climatic parameters of temperature (22±3 °C), relative humidity (60±5%), and 12 h dark/light cycle. Animals were allowed a two-week adaptation period prior to the beginning of the experiment. The animals received free access to fresh food and water (5).

Experimental Design

Thirty rats were divided equally into five groups, as follows: C-: was not treated with benzene and left without any treatment as a negative control. C+: induced aplastic anemia by oral administration of benzene for 15 days and treated with distilled water as a positive control. The CsA group was treated with cyclosporine (Novartis, Turkey) at a dose of 5.86 mg/kg. The Aza group: was treated with azacytidine (Celgene, Turkey) at a dose of 5.75 mg/kg and the CsA+Aza group received a combination of cyclosporine and azacytidine at a dose of 3.68 mg/kg for each drug. The doses of the drug alone and in combination were chosen based on previously published depended on Abdulrazzaq and Hasan (12). After the day 30th of the experiment, the animals were sacrificed after receiving all treatments orally through a stomach tube.

Blood samples

The animals were given chloroform (SDFL, India) inhalation anesthesia at the end of the study period. Blood samples were obtained from the heart using disposable syringes, gage 22 (5 mL capacity). The blood sample was split into two tubes, the first of which was filled with EDTA-anticoagulant, the other was centrifuged at 4000 rpm for five min to separate the serum, and the samples were then kept in the freezer at -18 °C until they were used for serum IL-2 and alkaline phosphatase tests.

Differential WBCs and Reticulocytes

Differential WBC count was measured by using an automated hematology analyzer (HEMAVET, Germany). In addition, the reticulocyte percentage was measured in accordance with (14). Methylene blue solution was added to EDTA-anticoagulated blood and incubated at 37 °C for 20–25 min. Blood smears were made for reticulocyte counting, showing a proportion of reticulocytes to the full number of RBCs.

Determination of serum IL-2

Serum IL-2 concentration was measured quantitatively by using Abcam's IL-2 rat ELISA kit (ab221834) (6).

Determination of Serum ALP Activity (ALP)

The rat serum ALP activity was determined by using a rat ALP ELISA kit (Kamiya Biomedical, USA). The microtiter plate provided in this kit is pre-coated with an antibody specific to ALP. Calibrators and samples were added to the appropriate microtiter plate wells with a biotin-conjugated polyclonal antibody preparation specific for ALP. Next, Avidin conjugated to Horseradish Peroxidase (HRP) was added to each microplate well and incubated for 15 - 25 min at 37 °C. Then the TMB substrate solution was added to each well. Only those wells that contained ALP, biotin-conjugated antibody and enzyme-conjugated Avidin exhibited a change in color. The enzyme-substrate reaction was terminated by the addition of a sulfuric acid solution, and the color change was measured spectrophotometrically at a wavelength of 450 nm±2 nm. The concentration of ALP in the samples was then determined by comparing the optical density (OD) of the samples to the calibration curve.

Statistical Analysis

SAS (Statistical Analysis System, version 9.1) was utilized for analyzing the data. The ANOVA (one-way) with least significant differences (LSD) post hoc test was employed to assess significant differences among means (18). P≤0.05 was employed to determine statistical significance.

Results

WBCs and Reticulocytes

The lymphocytes %, monocytes %, basophils %, neutrophils %, eosinophils %, and reticulocytes % in the positive group of control were significantly (P<0.05) decreased in compression with all treatment groups as well as negative control group. In addition, cyclosporine and azacitidine treated groups significantly (P<0.05) increased compared with the positive control group. There is a P≤0.05 decrease compared with negative control as well as combination treated groups. Furthermore, the combination treated group showed non-significant (P>0.05) difference in compression with the negative group of control for basophils, neutrophils and reticulocytes percent. As shown in (Table 1).

Serum IL-2

The IL-2 data are shown in Table 2, in compression with all treatment groups, the IL-2 in the positive group of control had a significantly (P<0.05) higher average value. Additionally, the mean values of IL-2 in the cyclosporine and azacitidine treatment groups were considerably (P<0.05) lower than those of the positive control group. Furthermore, the mean value of IL-2 in the combination-treated group was significantly (P<0.05) decreased when compared to all other treatment groups and the positive control group, with no marked change when compared to the negative control group.

Serum ALP

The ALP activity in the positive group of control was significantly (P<0.05) declined in compression with all treatment groups. In addition, the ALP activity in the cyclosporine and azacitidine treatment groups was significantly (P<0.05) increased compared with the positive control group. Furthermore, its activity in the group of the combination was significantly (P<0.05) increased compared with the positive control and azacitidine treated groups, but with no significant (P>0.05) variation in comparison with the cyclosporine-treated and negative control groups.

Table 1. Effects of cyclosporine, azacitidine, and their combination on the percent of differential white blood cells and reticulocytes of female rats

Parameter (%)	C-	C+	CsA	Aza	CsA+Aza	LSD
Lymphocytes	59.1 ± 2.96 ^{a}	28.8 ± 2.69 ^{d}	34.8 ± 2.07 ^{c}	34.1 ± 1.84 ^{c}	42.4 ± 2.09 ^{b}	6.11
Monocytes	3.14 ± 0.63 ^{a}	0.87 ± 0.24 ^{c}	0.99 ± 0.08 ^{c}	1.10 ± 0.17 ^{bc}	2.00 ± 0.11 ^{b}	0.93
Basophil	0.75 ± 0.06 ^{a}	0.21 ± 0.07 ^{c}	0.48 ± 0.07 ^{b}	0.46 ± 0.08 ^{b}	0.63 ± 0.08 ^{ab}	0.22
Neutrophils	38.4 ± 1.19 ^{a}	19.9 ± 2.36 ^{d}	29.1 ± 2.63 ^{c}	30.9 ± 0.90 ^{bc}	36.9 ± 3.22 ^{ab}	6.53
Eosinophils	3.50 ± 0.51 ^{a}	0.93 ± 0.11 ^{c}	1.80 ± 0.22 ^{b}	1.76 ± 0.21 ^{b}	2.62 ± 0.31 ^{b}	0.82
Reticulocytes	3.72±0.19 ^{a}	0.88 ± 0.09 ^{d}	1.90 ± 0.21 ^{c}	1.82 ± 0.24 ^{c}	2.95 ± 0.27 ^{b}	0.64

Values are Means ± SEM, n= 6. $^{a-d}$Means with different superscripts in the similar row are statistically different ($P \leq 0.05$). C-: negative group of control; C+: positive group of control; CsA: cyclosporine-treated group; Aza: azacitidine-treated group; CsA+Aza: combination-treated group

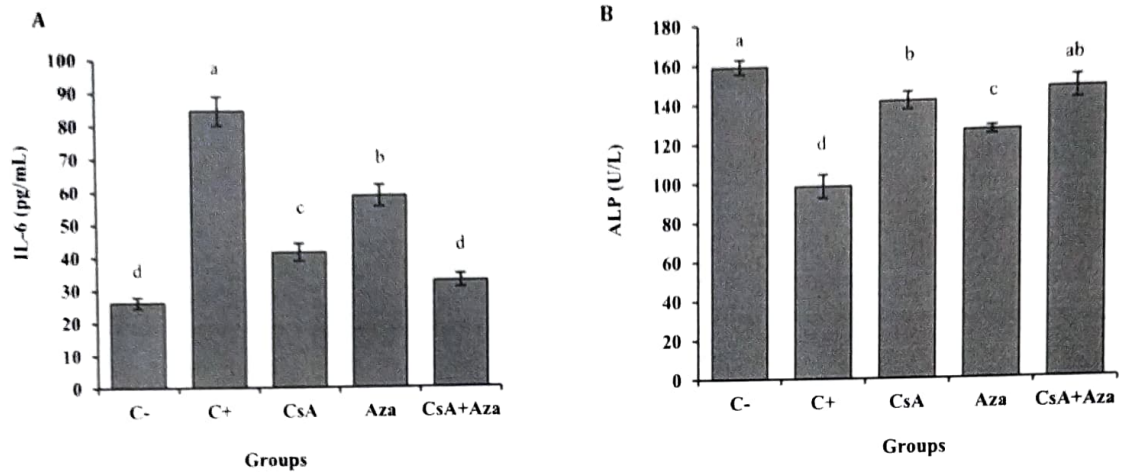

Figure 1. Effects of cyclosporine, azacitidine, and their combination on serum IL-2 level (pg/ml) **(A)** and serum alkaline phosphatase (ALP) levels (U/L) **(B)** of female rats. The bars represent the means (n=6), and the error bars indicate the standard error of the mean (SEM). [a-d] Bars without a common letter among treatment groups differ (P≤0.05). C-: negative group; C+: positive group; CsA: cyclosporine-treated group; Aza: azacitidine-treated group; CsA+Aza: combination-treated group)

Discussion

Evaluation of the differential WBC percent and reticulocyte percent is imperative in the setting of aplastic anemia and a vital investigation for this disease; thus, a low differential WBC count and reticulocyte count are suggestive of aplastic anemia (19). As such, the reduction in the differential WBC and reticulocyte counts of the group of positive control was linked to the disease status, which is linked to the damaging effects of hematopoiesis, leading to the destruction of hematopoietic stem cells (HSCs) resulting from the inability of bone marrow to create blood cells. As a result, the differential WBC and reticulocyte were reduced below normal levels, the similar results reported by (20, 21).

In addition, deregulation of the T cell response and its activation mediated suppression through increasing expression of the first apoptosis signal (Fas) receptor and secretion of hematopoietic suppressing cytokines like IFN-γTNF-α and IL-2, resulting in HSC immune-mediated destruction and induced BM inhibition, as reported by (20). Cyclosporine has a direct positive effect on HSPC signal transduction pathways via interaction with elements in this pathway, resulting in the stimulation of hematopoiesis (23, 24). Likewise, the improvement in the differential WBC and reticulocyte % count of the azacitidine-treated group was mediated via the epigenetic regulation of the HSPCs, which enhanced normal hematopoiesis, and also via their ability to modulate the bone marrow microenvironment, specifically the mesenchymal stem cell, this finding supported by (5, 22). Azacitidine has been shown to increase the percentage of reticulocytes containing hemoglobin as well as the proportion of hemoglobin in BM cells (22, 25). Importantly, the combination of cyclosporine and azacytidine could significantly improve the differential WBCs and reticulocyte % count in rats, which might be accomplished primarily through synergistic co-treatment, dose reduction, and toxicity reduction (5).

IL-2, a type of interleukin, is also a potent signaling molecule in the signaling cascade of the immune-mediated activation of T Lymphocytes, leading to the destruction of hematopoietic stem cells (HSC) which is the basis of acquired aplastic anemia (8). The elevation in IL-2 serum levels in the positive control group was due to IL-2 acting as an autocrine and paracrine molecule, which is produced mainly by activated CD4+ T-cells, naive CD8+ T-cells, and dendritic cells (26). Furthermore, as a T-cell growth factor, serum levels of IL-2 increased drastically in rats with induced aplastic anemia (4- 12). While the IL-2 levels of the cyclosporine-treated group declined. It is worth noting that cyclosporine is a powerful immunosuppressive drug that inhibits the production of IL-2 and other pro-inflammatory cytokines such as TNF-α and IFN-γ via calcineurin inhibition (23, 24). As well as altering the fundamental function of multiple proteins (e.g., NFAT, AP3, and NFLB), all are included in the regulation of the IL-2 gene transcription, this discussion is supported by (27-28). The group that received azacitidine was also found to have significantly lower levels of IL-2, it inhibited proliferation and activation of T cell, thus reducing the pro-inflammatory cytokines release, of which IL-2 (29). It was also attributed to epigenetic modifications that have been shown to tightly control FOXP3, the signature transcription factor of regulatory T cells, the same explaining reported by (30). Notably, the group that received a cyclosporine and azacitidine combination had a significantly lower decrease

in IL-2 levels than either drug alone; these findings suggested that the two drugs might have a synergistic immunosuppressive effect (12).

ALP is considered a reliable marker for bone metabolism, and changes in its level in the blood could indicate issues relating to the liver or bones (31). The reduction of serum alkaline phosphatase level in the positive control group was likely due to defective osteoplastic cells' activity, which regulated the HSCs' microenvironment in the BM (32, 33). Specifically, ALP levels and bone metabolism are linked to the development and maturation of blood corpuscles (33, 34). Additionally, under anemic conditions, the activity of BM should be increased to compensate for hemoglobin insufficiency. However, if the osteoblasts cannot be activated by anemia, a lower ALP level may result (36, 37). Moreover, ALP is correlated with the production of HSCs, and lower levels of this enzyme may therefore be associated with anemia by signifying lower production of red blood cells, suggesting a lack of hyper function of the BM to compensate for anemia (38, 39). In comparison, the increase in alkaline phosphatase levels in the cyclosporine-treated group was clearly associated with its ability to compensate for anemia and hemoglobin reduction, as well as its immunosuppressive effect; TNF-mRNA gene transcription was discovered to be inhibited by cyclosporine, which could indirectly result in ALP elevation (40, 41).

Moreover, treatment of rats with azacitidine led to a significant improvement of alkaline phosphatase activity, which may be linked to epigenetic regulation via modulating the differentiation potentials in MSCs of osteoblasts. (42). Furthermore, hypomethylation of genomic DNA was observed in association with facilitated osteogenic development, demonstrating that epigenetic control via DNA demethylation occurred during osteogenic differentiation (43).

Cyclosporine and azacitidine have a potential therapeutic effect on Aplastic anemia induced by benzene. As well, the combination of cyclosporine and azacitidine revealed an improvement in blood picture, IL-2 and ALP activity which achieved via dose and toxicity reduction.

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N/A

CONFLICT OF INTEREST

The authors declare no conflict of interest.

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تأثير السيكلوسبورين والأزاسيتيدين على بعض المعلمات الدموية والكيميائية الحيوية لفقر الدم اللاتنسجي المستحث في الجرذان

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الخلاصة

فقر الدم اللاتنسجي ، المرتبط بنقص في الخلايا الجذعية المكونة للدم على المستوى الكمي والنوعي ، يظهر في شكل قلة الكريات الشاملة في الدم المحيطي وكذلك انخفاض في خلايا النخاع العظمي. وهكذا ، كان الهدف من هذه الدراسة هو تقييم دور السيكلوسبورين والأزاسيتيدين في علاج فقر الدم اللاتنسجي المستحث في الجرذان. تم إحداث فقر الدم اللاتنسجي بواسطة البنزين بجرعة ١٩٤٠ مجم / كجم لمدة خمسة عشر يومًا. تم تقسيم الجرذان البالغة عددها ث ثلاثون أنثى إلى خمس مجموعات متساوية. المجموعة الأولى رفعت دون أي علاج كعنصر تحكم سلبي ، المجموعة الثانية تم استحداث في فقر الدم اللاتنسجي وتلقى الماء المقطر كعنصر تحكم إيجابي ؛ المجموعة الثالثة تلقت السيكلوسبورين بجرعة ٥,٨٦ مغ / كغ ؛ تلقت المجموعة الرابعة الأزاسيتيدين بجرعة ٥,٧٥ مجم / كجم ؛ والمجموعة الخامسة تلقت مزيجًا من السيكلوسبورين والأزاسيتيندي بجرعة ٣,٦٨ مجم / كجم لكل عقار. انخفض عدد خلايا الدم البيضاء التفاضلية٪ ونسبة الخلايا الشبكية في مجموعة التحكم الإيجابية بشكل معنوي $P\leq$ ٠,٠٥ عند مقارنتها مع جميع المجموعات المعالجة فضلاً عن مجموعة التحكم السلبية. وزيادةً على ذلك ، في المجموعات المعالجة بالسيكلوسبورين والأزاسيتيدين ، زادت هذه المعلمات إحصائيًا $P\leq$ ٠,٠٥ مقارنة بمجموعة التحكم الإيجابية ، مع انخفاض جوهري $P\leq$ ٠,٠٥ مقارنة بمجموعة التحكم السلبية وكذلك المجموعات المعالجة المركبة. وبعد هذا كله ، انخفض متوسط قيمة II-٢ في المجموعة المعالجة المركبة بشكل كبير عند مقارنتها بجميع مجموعات العلاج الأخرى ومجموعة التحكم الإيجابية ، مع عدم وجود تغيير ملحوظ عند مقارنتها بالمجموعة السلبية. انخفض نشاط الفوسفاتيز القلوي في مجموعة التحكم الإيجابية إلى حد كبير $P\leq$ ٠,٠٥ مقارنة مع جميع المجموعات التجريبية. في الختام ، الأدوية المستخدمة في الدراسة الحالية لها تأثير علاجي محتمل على فقر الدم اللاتنسجي المستحدث في الجرذ ، وقد أظهر المزيج بين السيكلوسبورين والأزاسيتيدين تحسنًا في جميع معاملات هذه الدراسة. تم تحقيقه بشكل عام عن طريق تقليل الجرعة والسمية.

الكلمات المفاحية: السيكلوسبورين، أزاسيتيدين، نخاع العظم، فقر الدم الاتنسجي، إناث الجرذان

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Original Article

Effects of *Atriplex hortensis* Hydroalcoholic Extract on Phenyl-hydrazine Induced Hemolytic Anemia in Rat

Running title: Anti-hemolytic Activity of *Atriplex hortensis*

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Abstract

Hemolytic anemia is a hematological disorder occurs owing to the excessive hemolysis of red blood cells. *Atriplex hortensis* L. leaves are traditionally used for prevention and treatment of anemia. The present study was performed to assess the effects of *A. hortensis* extract on phenyl-hydrazine induced hemolytic anemia in rat. Thirty-six, six months old, male Wistar rats were randomly divided into six groups of 6 rats each. One group received normal saline and other 5 groups received 40 mg/kg phenyl-hydrazine (PHZ) intraperitoneally at baseline and on day 33 for induction of hemolytic anemia. Four PHZ treated groups received daily oral doses of 50, 100, 200, and 300 mg/kg/day *A. hortensis* extract for 31 days and one PHZ treated group kept as control received saline accordingly. Blood superoxide dismutase (SOD) activity and blood hematological parameters such as hematocrit (HCT), red blood cell (RBC), reticulocyte (Ret) and hemoglobin (HGB) were determined in all groups after 34 days of the study. The blood RBC, HGB and HCT parameters were significantly lowers and Ret increased significantly in PHZ control group compared with the normal saline treated group. In *A. hortensis* extract (100, 200, and 300 mg/kg/day) treated groups the blood HCT, RBC and HGB parameters were significantly increased and Ret decrease, compared with PHZ control group, the blood SOD enzyme activity was significantly improved in all *A. hortensis* treated groups compared with PHZ control group. *A. hortensis* extract improved blood SOD activity and blood HCT, RBC, Ret and HGB parameters indicating inhibition of hemolytic anemia induced by phenyl-hydrazine in rat.

Keywords: Antioxidant, *Atriplex hortensis*, Hemolytic anemia, Traditional medicine

Introduction

Anemia is a reduction in hematocrit (HCT), red blood cell (RBC) and hemoglobin (HGB), which causes the inadequate blood supply to body organs. Severe anemia can cause tissue infarction that leads to organ dysfunction [1-3]. In 2008 global prevalence of anemia was 25 percent according to World Health Organization (WHO) report [4]. Although anemia is not a major risk factor for mortality, it imposed a high avoidable damage in people quality of life. In 2003, according to the Disability-Adjusted Life Year (DALY) index study in Iranian population, the Iron deficiency & other anemias was one of the 10 top disease and injury causes highest mortality with estimated 405 persons in 100000 [5].

Hemolytic anemia is a complex hematological disorder occurs when the hemolysis overtakes the production of RBCs. Hemolysis is a cause of anemia in 5% of cases. Hemolytic anemia is a sign of disorders for diseases such as thalassemia, sickle cell anemia and fauvism [6]. Reticulocytes are immature red blood cells and hemolysis occurs when blood levels of reticulocyte increased [7]. Although in hemolysis the number of RBC and blood supply to organs decreased, more clinically significant symptoms are overproduction of oxidant agents that destruct tissues and organs [8]. Antioxidant agents such as superoxide dismutase (SOD) reduce oxidative stress and can play an imperative role in the prevention of hemolytic anemia [9-11].

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Phenyl-hydrazine was used for its antipyretic effects in past, but its adverse hemolytic effects prohibited prescription. This drug is still useful in induction hemolytic anemia in animal models [12].

A. hortensis or red orache, belongs to the Amaranthaceae family. Its leaves decoction is a common traditional therapy for anemia in the northern region of Iran [13]. *A. hortensis* contains many antioxidant agents such as flavonoids [14, 15]. The plant is a source of vitamin C, K, A, magnesium, calcium, fiber, and two major flavonoids, including quercetin 3-O-sulphate-7-O-α-arabinopyranoside and kaempferol 3-O-sulphate-7-O-α-arabinopyranoside [14, 16-18] that may influence anemia. The present study was performed to assess the anti-hemolytic effects of *A. hortensis* in phenyl-hydrazine induced hemolytic anemia in rats.

Material and Methods

Plant Material

Atriplex hortensis L. was collected from the Institute of Medicinal Plants researched Farm (cultivated) in April. Plant's voucher specimen with code number 4582 (MPIH) was deposited in herbarium of the Institute of Medicinal Plants, ACECR, Karaj, Iran. The leaves were washed and dried in the shade at room temperature and crushed for extraction processes.

Extraction Preparation

The crushed leaves were extracted with 80% v/v hydroalcoholic solvent in a percolator for about 72 h. The extraction was repeated two times more and mixed. The rotary evaporator was used for solvent removal for production of dry extract.

DPPH Radical Scavenging Assay

Diphenyl-2-picrylhydrazyl (DPPH) radical scavenging activity of *A. hortensis* extract was assessed using the Han *et al.* method [19-21]. Methanol solution of the DPPH reagent (1.5 mL) was prepared and mixed with diferent concentrations of plant extractand kept in dark place. After 30 minutes the solution absorbance was observed at 517 nm using a spectrophotometer (Human, USA). A standard Ascorbic acid (Merck, Germany) was used as reference.

Radical scavenging activity (RSA) percent was measured as follow:

RSA (%) = (Ac-As/Ac) ×100.

Ac: absorbance of the negative control, As: absorbance of the plant sample or Ascorbic acid.

Findings were stated as IC50, which represented the concentration of antioxidant, which decreases the DPPH radicals to 50%.

Determination of Total Flavonoids

A. hortensis extract in distilled water (1 mg/mL) mixed with sodium nitrite solution (5%, 300 µL). After 5 minutes of standing, aluminum chloride solution (10%, 300 µL), a sodium hydroxide (1 M, 2 mL) and distilled water (3 mL) were added to the mixture. The absorbance was observed at 510 nm using a spectrophotometer (Human, USA). The standard curve was generated using the Rutin (100 up to 1200 µg/mL) as a standared. Findings were stated as milligrams Rutin per gram dry *A. hortensis* extract [18].

Determination of Total Phenolics

Folin-Ciocalteu colorimetric technique was applied to assess the total phenolic contents of *A. hortensis* extract. Briefly, 5 mg of *A. hortensis* extract was disolved in distilled water (5 mL) and Folin-Ciocalteu reagent (500 µL) and sodium carbonate solution (5%, 1 mL) were added to the mixture and kept in dark place for about 30 min. The absorbance was observed at 725 nm using a spectrophotometer (Human, USA). The standard curve was ploted using the Gallic acid (Merck, Germany) as a standared. The data was stated as mg of gallic acid per gram dry *A. hortensis* extract [19].

Animal Treatments and Experimental Design

Thirty six, six months old male Wistar rats were randomly divided into six groups of 6 rats each. One group received intraprotenial (IP) injuction of normal saline and kept as normal control group. Five groups received two time IP injection of phenyl-hydrazine 40 mg/kg dissolved in saline, once at baseline and seconed on day 33 for induction of hemolytic anemia [10, 22]. Four groups PHZ treated received daily oral doses of 50, 100, 200, and 300 mg/kg/day *A. hortensis* (AH) extract by gastric gavage for 31 days and one group PHZ treated kept as control received saline accordingly. The blood hematological parameters such as RBC count, HGB, HCT, Ret and SOD activity [10] was determined at baseline and after 34 days at end of the the study.

Hematological Indices and SOD Evaluation

On day 34, the blood samples were taken under anesthesia from the heart into a CBC tube that contains anticoagulant. Flowcytometry (SYSMEX XT-2000i Fluorescence Flowcytometry) was used for assessment of HGB, HCT, Ret and RBC count[10]. To perform SOD assay, a ZellBio GmbH SOD kit (Biocore Diagnostik, Ulm, Germany) was used. The SOD activity was determined by calorimetr at 420 nm [23].

The present investigation was confirmed by Alborz University of medical science's ethical committee (IR.ABZUMS.REC.1397.080) (June 13, 2018).

Statistical Evaluation

Findings were stated as the mean ± standard deviation (SD). Statistical assessment was done using SPSS ver.

22. The difference of PHZ and control group was evaluated using independent T-test. One way, ANOVA followed by a Dunnet test was used to evaluate the variance between PHZ and PHZ+AH groups. A *P*-value less than 0.01 was considered a statistically significant level.

Results

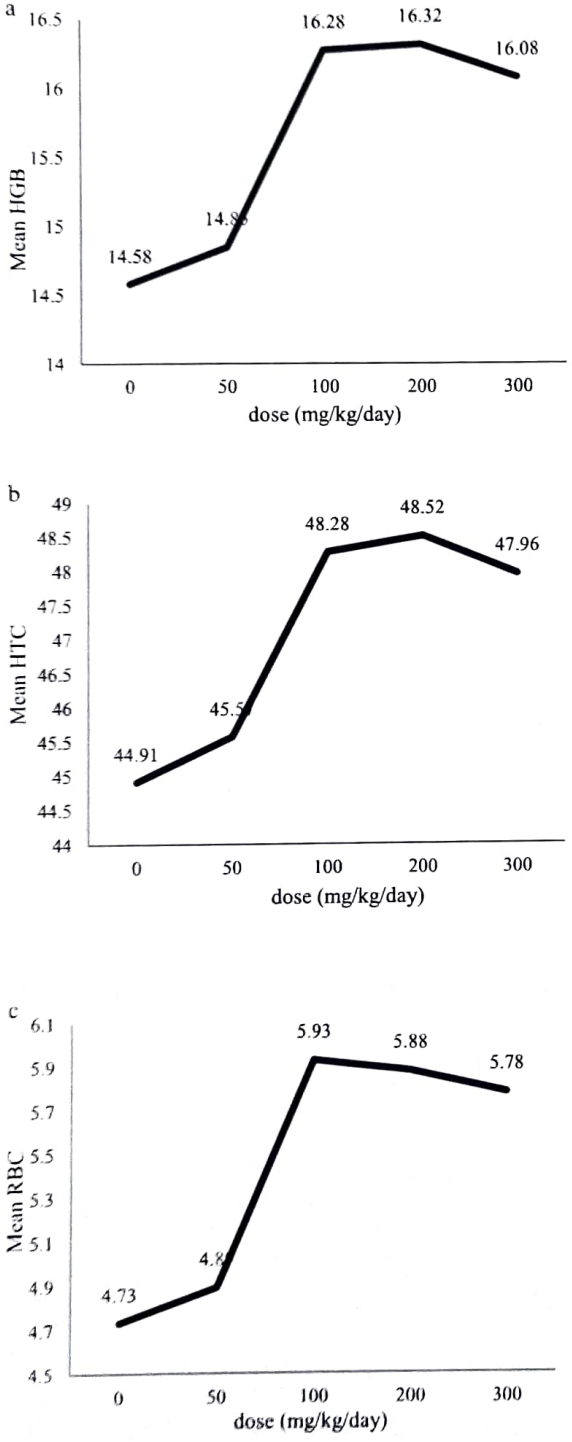

Fig. 1 Hemoglobin (A), Hematocrit (B), and Red Blood Cell (C) dose-response curve.

Phytochemical Analysis

The IC50 of the *A. hortensis* extract and Ascorbic acid were 87.26 ± 0.003 µg/mL (mean ± SD) and 5.626 ± 0.001 µg/mL (mean ± SD), respectively.

The total flavonoid content of *A. hortensis* extract was 54.75 ± 0.143 mg Rutin/g extract, and the total phenolic content of *A. hortensis* extract was 48.23 ± 1.23 mg Gallic acid/g extract.

Hematological Study

Figure 1 discloses the Hemoglobin (A), Hematocrit (B), and Red Blood Cell (C) dose-response curve.

Figure 2 discloses the hemoglobin level at day 34 in different experimental groups (N=6).

The results indicated that RBC, HGB and HTC decreased and Ret increased significantly in the PHZ group compared with the normal control group ($P < 0.01$) (Table 1).

HGB, RBC, HTC and Ret were significantly higher and Ret lower in PHZ+AH (100mg/kg, 200mg/kg, 300 mg/kg) groups, compared to the PHZ group. No significant difference was seen between the PHZ+AH (50 mg/kg) group and the PHZ group in terms of HGB, RBC and HTC. However, RET was significantly higher in PHZ+AH (50 mg/kg) in comparison to PHZ group.

Blood antioxidant study

The SOD enzyme activity was significantly decreased in PHZ treated group compared with normal control group. In all PHZ+AH groups the SOD enzyme activity was significantly higher compared with the PHZ group (Table 2).

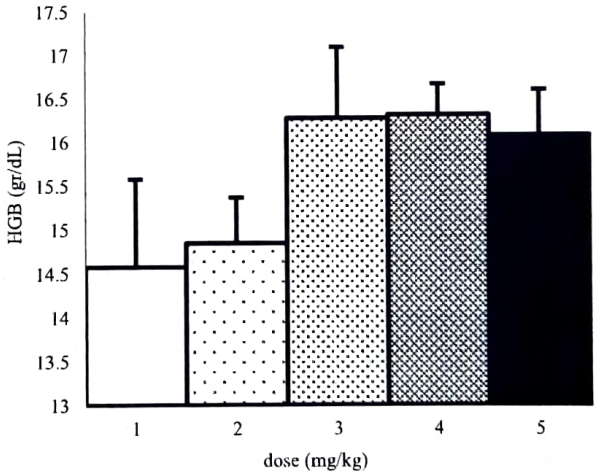

Fig. 2 Hemoglobin level at day 34 in different experimental groups (N=6). Phenyl-hydrazine (PHZ), *A. hortensis* L. extract (AH) 50, 100, 200 and 300 mg/kg/day PHZ + AH 50, 100, 200, and 300 mg/kg groups, compared with the PHZ group.

Table 1 Hematological finding in rats at day 34. PHZ group compared with control normal group.

Hematological findings	PHZ control group	Normal control group	*P* value*
RBC (cells/mL)	4.73±0.71	5.85±0.51	0.001
HGB (g/dl)	14.58±1.00	16.48±0.94	0.001
HCT (%)	44.91± 2.54	49.20±2.66	0.001
Ret (%)	0.7±1.0	3.55±0.38	0.001

HGB: Hemoglobin, RBC: Red blood cell, HCT: Hematocrit, Ret: reticulocyte, Phenyl-hydrazine (PHZ), *P values were analyzed stated according to independent T-test.

Table 2 Hematological findings in rats on day 34 in PHZ induced hymolytic anemia control and *A. hortensis* L. extract treated groups.

Hematological findings	PHZ group	PHZ+*A. hortensis* (50 mg/kg/day)	PHZ+*A. hortensis* (100 mg/kg/day)	PHZ+*A. hortensis* (200 mg/kg/day)	PHZ+*A. hortensis* (300 mg/kg/day)
HGB (g/dl)	14.58±1.00	14.85±0.52	16.28±0.81	16.32±0.35	16.08±0.52
P-value Compared to PHZ group	-	0.72	0.001	0.001	0.001
RBC (cells/mL)	4.73±0.71	4.89±0.28	5.93±0.45	5.88±0.17	5.78±0.44
P-value Compared to PHZ group	-	0.94	0.001	0.001	0.001
HCT (%)	44.91±2.54	45.57±1.40	48.28±2.09	48.52±1.44	47.96±1.45
P value Compared to PHZ group	-	0.91	0.002	0.003	0.002
SOD (U/mL)	1.73±0.34	2.58±0.68	4.27±0.28	4.26±0.42	4.55±0.23
P-value Compared to PHZ group	-	0.004	0.001	0.001	0.001
Ret (%)	2.7±1.0	2.55±0.58	3.79±0.68	3.90±0.43	3.59±0.92
P-value Compared to PHZ group	-	0.001	0.001	0.001	0.001

HGB: Hemoglobin, RBC: Red blood cell, HCT: Hematocrit, SOD: Superoxide dismutase, PHZ: Phenyl-hydrazine
*P values were analyzed stated according to one way, ANOVA test followed by Dunnett test.

Discussion

Findings of the current investigation revealed that the *A. hortensis* hydroalcoholic extract inhibits hemolytic anemia owing to phenyl-hydrazine injection in the rat model. Phenyl-hydrazine is a strong oxidant, and its metabolites include reactive oxygen species damages RBCs by oxidizing hemoglobin inside erythrocytes cause hemolytic anemia [10]. Theoretically, antioxidant compounds prevent anemia due to oxidative stress by inhibiting free oxygen radicals [24,25].

In the present study, *A. hortensis* showed a strong radical inhibitory activity and SOD activity that may be due to its flavonoids and phenolics content.

Flavonoids are an important plant's metabolite with antioxidant effects [26]. In this study, phytochemistry analysis showed that the plant contains relatively boost phenolic and flavonoid compounds. Flavonoid's antioxidant activity plays an essential role in the treatment of hemolytic anemia symptoms [14].

Two separate studies revealed the high biological effects of *Carica papaya* and *Hymenocardia acida* extract as antioxidant therapeutics which reduced the formation of dense cells, inhibition from oxidative cell injury and finally caused prolongation of RBC life [27,28]. Additionally, the mixture of *Piper nigrum*, *Piper longum,* and *Zingiber officinale* extracts can diminish oxidative stress and inhibit hemolytic anemia [29]. These studies confirmed the results of our study that anti-oxidants are useful in order to cure hemolytic anemia.

Furthermore, Niprisan, a chemical compound extracted from four diverse types of plants including *Pterocapus osun* stems, *Piper guineense* seeds, *Sorgum bicolor* leaves, and *Eugenia caryophyllum* fruit, were traditionally used in Nigeria for sickle cell anemia [30]. Although this mixture reduces sickle cell anemia signs and symptoms, unlike *A. hortensis,* there is no scientific proof that this herbal product enhances hematological indices [31, 32]. Besides, in favor of our study, the anti-hemolytic effects of *Paeonia lactiflora* and *Rehmannia glutinosa* extract were reported in animal studies [33].

The present study was limited to absent other types of *A. hortensis* extract and even its essential oil. Additionally, the lack of histopathological assessment of inner organs, particularly the liver, is another limitation of this survey. However, comparing the findings of 5 different groups and comprehensive assessment of hematological factors are strong points of the present research.

In conclusion, 100, 200, and 300 mg/kg concentrations of *A. hortensis* hydroalcoholic extract inhibits hemolytic anemia caused by injection of phenyl-hydrazine in rat model. Findings discovered that 50 mg/kg concentration

of *A. hortensis* hydroalcoholic extract did not show remarkable effects. However, further researches are critical to assess anti-hemolytic effects of 100, 200, and 300 mg/kg concentrations of *A. hortensis* hydroalcoholic extract on other animal models and even humans.

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JOURNAL CLUB PRESENTATION

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TITLE:

"Evaluation of Methanol Leaf Extract of *Combretum dolichopetalum* on Body Weights and Haematological Indices of Phenylhydrazine Induced-anaemic Rats"

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AUTHORS: Chinedum U. Emelike, Ugochukwu S. B. Anyaehie, Eghosa E. Iyare, Chiemeziem A. Obike, Chinyere Aloke, Darlington F. Chukwu, Chinedum O. Eleazu

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INTRODUCTION

- Anaemia has been defined as a reduction in the oxygen-carrying throughput of blood and it results from a deficiency of haemoglobin in the blood.
- This condition is appertaining to a decrease in haemoglobin level
- *Combretum dolichopetalum* is a plant that is Indigenous to Africa and which is commonly found in the Eastern part of Nigeria
- The present study investigated the effect of *C. dolichopetalum* leaves on body weights and haematological indices of phenyl hydrazineinduced anaemic rats

MATERIALS AND METHODS

Animal Experiments

- Twenty (20) mature inbred apparently healthy male albino rats of the Wistar strain (100-150 g) were procured

Plant Materials

- Fresh matured leaves of *C. dolichopetalum* were located and collected in 2017 from its natural habitat in Nsukka, Enugu. The plant samples were authenticated by Mr. C. J. Onyeukwu, a taxonomist of the Plant Science

EXPERIMENTAL DESIGN

GROUPS	TREATMENT
GROUP 1	Normal control (saline 1ml/kg *p.o*)
GROUP 2	Phenylhydrazine (80 mg/kg *i.p*)
GROUP 3	*C. dolichopetalum* extract. (200 mg/kg)
GROUP 4	*C. dolichopetalum* extract. (400 mg/kg)

Induction of anemia

- Freshly prepared phenylhydrazine hydrochloride solution was injected intraperitoneally into fifteen of the rats at a dosage of 80 mg/kg body after an overnight fast
- The phenylhydrazine-treated rats with PCV < 30% were considered to be anaemic and were used for the study

Haematological Parameters:

Red Blood Cell count (RBC), Packed Cell Volume (PCV), Haemoglobin concentration (HGB), Mean Cell Volume (MCV), Mean Cell Haemoglobin (MCH), Mean Cell Haemoglobin Concentration (MCHC), White Blood Cell count (WBC), and Platelets Count (PLT)

Results

Parameters	Group 1	Group 2	Group 3	Group 4
WBC X 10^9/L	6.20 ± 0.71	5.05 ± 0.83	5.90 ± 0.19	5.75 ± 0.90
RBC X 10^{12}/L	5.03 ± 0.26	4.83 ± 0.07^a	5.34 ± 0.20^b	6.18 ± 0.18^{ab}
PCV (L/L)	30.20 ± 1.58	26.40 ± 0.50^a	42.70 ± 0.66^{ab}	44.4 ± 1.48^{ab}
HGB (g/dL)	10.20 ± 0.47	8.60 ± 0.10^a	14.40 ± 0.37^b	14.80 ± 0.51^b
MCV (fL)	58.60 ± 1.02	66.30 ± 0.69	63.40 ± 2.83	66.60 ± 0.84
MCH (pg)	21.80 ± 0.34	23.70 ± 0.15	22.60 ± 0.80	23.60 ± 0.20
MCHC (g/dl)	36.10 ± 0.47	35.90 ± 0.48	35.60 ± 0.35	35.40 ± 0.18
PLT X 10^9/L	701.00 ± 147	893.00 ± 21.30	860.00 ± 100	870.00 ± 150

Major findings

- Histopathology data was not included
- Data on grouping was not given properly
- The route of administration of extract was not given properly

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Chemical Composition and Evaluation of Methanol Leaf Extract of Combretum dolichopetalum on Body Weights and Haematological Indices of Phenylhydrazine Induced-anaemic Rats

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Chemical Composition and Evaluation of Methanol Leaf Extract of *Combretum dolichopetalum* on Body Weights and Haematological Indices of Phenylhydrazine Induced-anaemic Rats

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Abstract

Anaemia is a serious health challenge in developing countries. This study evaluated the chemical composition of *Combretum dolichopetalum* (CD) leaves, the effect of its methanol extract on the body weights and haematological indices of phenylhydrazine induced-anaemic rats. Fresh matured leaves of CD were collected, identified and authenticated. Phytochemicals, proximate compositions, mineral elements, anti-nutritional factors and Gas Chromatography-Mass Spectrometry (GC-MS) analysis were determined. A total number of twenty (20) mature inbred apparently healthy male albino rats of the Wistar strain (100-150 g) were used for this study. Anaemia was induced by administering phenylhydrazine to rats in Groups 2, 3 and 4 comprising of five rats per group. Group 1 (non-anaemic control) (n = 5) and Group 2 (anaemic control) received distilled water respectively while Groups 3 and 4 were administered 200 and 400 mg/kg of CD leaf extract orally using oropharyngeal cannula once per day for 28 days. Blood samples were obtained for haematological analysis using standard methods. The result showed a significant increase in Red Blood Cell (RBC), Packed Cell Volume (PCV) and haemoglobin concentration in Groups 3 and 4 compared with the anaemic group. Chemical analysis showed the presence of some phytochemicals, proximate compositions, mineral elements and anti-nutritional factors. GC-MS analysis showed the presence of nine (9) compounds. This study indicates that CD is nutritionally rich and contains some important bioactive principles that support its anti-anaemic properties.

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Keywords: Anaemia, *Combretum dolichopetalum*, Haematological Parameters, Mineral Elements, Phytochemicals, Proximate Compositions

1. Introduction

Anaemia has been defined as a reduction in the oxygen-carrying throughput of blood[1] and it results from a deficiency of haemoglobin in the blood. This condition is appertaining to a decrease in haemoglobin level (<13 g/dL for males and <12 g/dL for females)[2]. The ubiquity of anaemia was superlative in South Asia, Central and West Africa[3]. Anaemia is ignored in most developing countries like Nigeria, even though it is of utmost prevalent public health conditions[4]. Studies have shown that it affects the whole being of adults, children and pose risk to pregnant women and affect neonatal growth and development[3]. Medicinal plants and their products have increasingly been found to be important as complementary/alternative medicine in most countries especially the developing ones due perhaps to the fact that they are cheap, easily available and effective[5]. Studies have shown that some medicinal plants are traditionally used to treat and manage anaemia. They include *Telfeira occidentalis, Psorospermum ferbrifugum, Jatropha curcas, Flacourtia flavenscens, Brillantasia nitens and Hibiscus sabdariffa*[6,7].

Combretum dolichopetalum is a plant that is indigenous to Africa and which is commonly found in the Eastern part of Nigeria. It is known as "achichanza" (food of the sunbird) in Igbo land and "okoso" in the Edo State of Nigeria[8]. The plant serves as food and they have different medicinal importance. As for food, the leaves are cooked and the content turns red which is prepared as soup for drinking[9]. Some folkloric uses include wound healing, antiulcer and antidiarrhea activity[10,11]. We had earlier studied the acute and sub-acute toxicity studies on *Combretum dolichopetalum* leaves in experimental animals[12]. Also, there are claims that this plant is used traditionally to manage and treat anaemia although its scientific basis has not been documented. Phytochemicals are plant-derived chemicals that confer different biological properties to plants[13]. In addition to their biological properties, these bioactive ingredients have been seen to be relevant in the pharmaceutical companies for the production of drugs[13]. Gas Chromatography-Mass Spectrometry (GC-MS) analysis provides a reliable and reproducible analytical protocol for authentication, quantitation and characterization of bioactive principles from herbal extracts[14].

In the traditional usage of *C. dolichopetalum* leaves in Nigerian and African ethnomedicine for the treatment of different ailments, practitioners often use different polar solvent extracts of the plant to prepare their traditional medicines. However, information on the bioactive constituents that confer this plant with its pharmacological potentials is scarce in literature and holistic study on the nutritional composition of this plant is also limiting in literature. As a step to validate the claim on the usage of this plant in the treatment of anaemia, the present study investigated the effect of *C. dolichopetalum* leaves on body weights and haematological indices of phenyl hydrazine-induced anaemic rats and also determined the chemical composition of the plant.

2. Material and Methods

2.1 Plant Materials

Fresh matured leaves of *C. dolichopetalum* were located and collected in 2017 from its natural habitat in Nsukka, Enugu. The plant samples were authenticated by Mr. C. J. Onyeukwu, a taxonomist of the Plant Science and Biotechnology Department of the University and the voucher specimen (UNH No.49a) of the plant was deposited at the herbarium.

2.2 Preparation of Extract

The leaves were washed and air-dried at room temperature for 7 days, thereafter ground to a coarse powder using an electric blender (model ms-233, China). About one gram (1 g) of the powder was used to determine the phytochemicals, proximate and mineral components, the remaining quantities of the powder (2 kg) were extracted for 48 h with methanol in a Soxhlet extraction following the method of Jensen[15]. Following the extraction, the extract was collected and dried at low temperature (40oC) to obtain a pasty dark-green extract which was used for animal experiments and GC-MS analysis.

2.3 Phytochemical Analysis

The alkaloid was determined using the method of Harbone[16]. Tannins and saponins were measured using the method of Association of Official Analytical Chemists (AOAC)[17]. Flavonoids were analyzed using the method of Bohamand Kocipai[18]. The method of Sofowora[19] was used for the determination of cardiac glycosides. Terpenoids were assayed following the method of Ferguson[20]. Phytates was analyzed using the method of Thompson and Erdman[21]. The determination of total oxalate was performed using

the method of Nile and Park[22]. The hydrogen cyanide was measured using the method of Onwuka[23].

2.4 Proximate Analysis

Moisture, ash, protein, lipid, and crude fibre were measured using the method of AOAC[17] while total carbohydrate content was calculated.

2.5 Mineral Analysis

An Atomic Absorption Spectrophotometer (Analyst 200, Perkin Elmer, Waltham, MA, USA) was used to analyze the Calcium (Ca), Magnesium (Mg), Zinc (Zn), Copper (Cu), Lead (Pb) and Iron (Fe) contents of the flours; the flame photometric method was employed for the analysis of sodium and potassium[20]; the molybdate method[23] was adopted to analyze phosphorous while the method of AOAC[17] was employed to measure Manganese.

2.6 Gas Chromatography-Mass Spectrometry (GC-MS) Analysis

Characterization of the bioactive constituents of the *C. dolichopetalum* extract was done using GC-MS QP2010 Plus (Shimadzu, Japan). The methods of Kalu *et al.*[24] and Otuokere *et al.*[25] were adopted.

2.7 Animal Experiments

Twenty (20) mature inbred apparently healthy male albino rats of the Wistar strain (100-150 g) were procured from the Animal House, Department of Physiology, University of Nigeria Enugu Campus. The rats were acclimatized to their feed (Vital feed, Nigeria) and water (which they had access to *ad libitum*) for two weeks before the commencement of the experiment. The study protocol was approved by the College of Medicine Research Ethics Committee of the University with protocol number 026/02/2017. The study was carried out under the established institutional guidelines and the NIH guidelines on the use of experimental animals.

2.8 Induction of Anaemia

Freshly prepared phenylhydrazine hydrochloride solution (prepared in 0.1 M potassium phosphate buffer, pH 7.4) was injected intraperitoneally to fifteen of the rats at a dosage of 80 mg/kg body after an overnight fast while the remaining five rats were taken as the non-anaemic group. After 48 h, blood was collected from the tail vein and Packed Cell Volume (PCV) was analyzed using the procedure described by Ochei and Kolhatkar[26] before the commencement of the extract administration. The phenylhydrazine-treated rats with PCV < 30% was considered to be anaemic and was used for the study.

2.9 Experimental Procedure

Phenylhydrazine-treated rats with the stable anaemic condition were randomly divided into three subgroups (Groups 2, 3 and 4) comprising of five rats per group while the non-anaemic group formed the first group as follows:

Group 1: Non-anaemic control received normal rat chow and distilled water,
Group 2: Rats which also received distilled water,
Group 3: Anaemic rats received 200 mg/kg body weight of *C. dolichopetalum* extract.
Group 4: Anaemic rats received 400 mg/kg body weight of *C. dolichopetalum* extract.

The body weights of the rats were recorded. All administration was done orally using an oropharyngeal cannula once per day for 28 d, after which the rats were anaesthetized with 2% sodium pentobarbital (75 mg/kg) intraperitoneally. Venous blood was obtained via the orbital and poured into EDTA tubes for haematological studies. The doses of the extracts that were administered were chosen following acute toxicity testing[12] that showed the extract not to be toxic even at 5000 mg/kg body weight.

2.10 Haematological Parameters

Red Blood Cell count (RBC), Packed Cell Volume (PCV), Haemoglobin concentration (HGB), Mean Cell Volume (MCV), Mean Cell Haemoglobin (MCH), Mean Cell Haemoglobin Concentration (MCHC), White Blood Cell count (WBC), and Platelets Count (PLT) were assayed for using Coulter Ac-T 5Diff AL, (Beckman Coulter, Inc. Port Matilda, Pennsylvania, USA).

2.11 Statistical Analysis

Results were analyzed using GraphPad Prism (GraphPad Software, San Diego, CA, USA). One-way ANOVA following Turkey post hoc test was used for data comparison and values were regarded as significant at $p<0.05$. Results were expressed as mean ± Standard Error of the Mean (SEM).

3. Results

The result revealed the presence of phytochemical contents of the extract. They include; 1.72% alkaloid, 0.14% tannin, 2.67% saponin, 2.03% flavonoid, 0.66% glycosides, 0.46% terpenoids, 3.17% phytate, 0.66% hydrogen cyanide and 8.22% oxalate respectively. The proximate composition of *C. dolichopetalum* showed that the plant contained: 92.68% dry matter, 13.51% protein, 8.81% lipid, 7.32% moisture, 7.13% crude fibre, 3.05% ash and 60.41% carbohydrate.

Table 1 showed the mineral composition of *C. dolichopetalum* reported in mg/100 g. Result showed it contained 12.81

mg/100 g phosphorous, 752.55 mg/100 g calcium, 109.65 mg/100 g magnesium, 152.34 mg/100 g potassium, 56.74 mg/100 g sodium, 6.61 mg/100 g zinc, 18.47 mg/100 g iron, 5.9 mg/100 g manganese, 0.11 mg/100 g lead and 0.37 mg/100 g Cu.

Table 1. Mineral contents of *C. dolichopetalum*

Mineral	Composition (mg/100g)
Phosphorus	12.81 ± 0.012
Calcium	752.55 ± 0.012
Magnesium	109.65 ± 0.012
Potassium	152.34 ± 0.012
Sodium	56.74 ± 0.012
Zinc	6.61 ± 0.012
Iron	18.47 ± 0.012
Manganese	5.9 ± 0.012
Lead	0.11 ± 0.012
Copper	0.37 ± 0.017

Values in the table are reported as means ± SEM of triplicate experiments

GC-MS chromatogram of *C. dolichopetalum* indicated presence of nine compounds (Table 2) and their structures (Figure 1). The identified compounds had their percentage occurrence as: 3-fluoro-5-[1-hydroxy-2-(methylamino) ethyl]phenol (3.577%), dextroamphetamine (3.607%), (R)-(-)-2-Amino-1-Propanol (4.226%), 2-(methylamino) ethanesulfonic acid (N-methyltaurine) (4.407%), 2-(aziridine-1-yl) ethanamine (4.033%) and bis(2-methylpropyl) benzene-1,2-dicarboxylate (35.062%), 1-Cyno-[2-(2-Phenyl-1,3-Dioxolan-2-yl) ethyl] pentyl ester (4.273%), 1-Guanidinosuccinimide (11.350%) and 1-(4-methylphenyl)propan-2-amine (aptrol) (3.696%).

There were no significant differences ($p>0.05$) in the initial body weights in the respective groups. In contrast, the final body weights of Group 2 rats (anaemic control) (that recorded 0.70% increase in body weight) were significantly decreased when compared with Group 1 (that recorded 15.89% increase in weight). The effect of administering *C. dolichopetalum* to rats in Groups 3 and 4 resulted in significant increases in their body weights (13.19 and 19.13% increases respectively) compared with Group 2 rats.

Table 2. Bioactive constituents of *C. dolichopetalum* identified using GC-MS

S/N	Retention time (min)	Peak area (%)	Molecular weight (g/mol)	Chemical Formulae	Chemical Compound	%Content
1	2.279	44.0	185.0	$C_9H_{12}FNO_2$	3-fluoro-5[1-hydroxy-2-(methylamino) ethyl] phenol	3.577
2.	4.569	44.0	135.0	$C_9H_{13}N$	Dextroamphetamine	3.607
3.	5.895	44.0	75.0	C_3H_9NO	(R)-(-)-2-Amino -1-Propanol	4.226
4.	7.575	44.0	139.0	$C_3H_9NO_3S$	2- (methylamino) ethanesulfonic acid(N-methyltaurine)	4.407
5.	8.623	44.0	86.0	$C_4H_{10}N_2$	2- (aziridine-1-yl) ethanamine	4.033
6.	9.168	149.0	278.0	$C_{16}H_{22}O_4$	Bis(2-methylpropyl) benzene-1,2-dicarboxylate	35.062
7.	9.265	149.0	347.0	$C_{19}H_{25}NO_5$	1-Cyno - [2-(2-Phenyl -1,3-Dioxolan-2-yl) ethyl] pentyl ester	4.273
8.	10.773	44.0	141.0	$C_2H_7N_3O_2$	1-Guanidinosuccinimide	11.350
9.	14.560	44.0	149.0	$C_{10}H_{15}N$	1-(4-methylphenyl) propan-2-amine (aptrol)	3.696

Table 3. Body weights of rats

Groups	Initial Weight (g)	Final weight (g)	% weight difference
Group 1	136.0 ± 9.64	161.7 ± 16.50	15.89
Group 2	142.0 ± 1.29	143.0 ± 3.35[a]	0.70
Group 3	158.0 ± 4.54	182.0 ± 22.20[b]	13.19
Group 4	186.0 ± 11.60	230.0 ± 8.89[b]	19.13

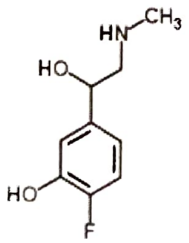
Values are mean ± standard error of the mean (SEM). [a] = $p < 0.05$ versus normal control (group 1); [b] = $p<0.05$ versus anaemic control (Group 2).

There were significant decreases ($p<0.05$) in RBC, PCV and haemoglobin concentration of Group 2 rats when compared to Group 1 but no significant changes ($p>0.05$) in WBC, MCV, MCH, MCHC and platelet concentrations of Group 2 rats compared to Group 1. The effect of administering *C. dolichopetalum* extract at 200 and 400 mg/kg bwt to the anaemic rats of Groups 3 and 4 significantly increased ($p<0.05$) their RBC, PCV and haemoglobin concentrations of the rats when compared to the control groups. The effect of administering *C. dolichopetalum* extract did not significantly affect their WBC, MCV, MCH, MCHC and platelet concentrations compared to the anaemic group.

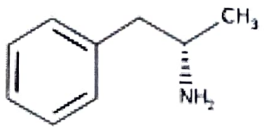
Table 4. Haematological profile of rats

Parameters	Group 1	Group 2	Group 3	Group 4
WBC X 10^9/L	6.20 ± 0.71	5.05 ± 0.83	5.90 ± 0.19	5.75 ± 0.90
RBC X 10^{12}/L	5.03 ± 0.26	4.83 ± 0.07[a]	5.34 ± 0.20[b]	6.18 ± 0.18[ab]
PCV (L/L)	30.20 ± 1.58	26.40 ± 0.50[a]	42.70 ± 0.66[ab]	44.4 ± 1.48[ab]
HGB (g/dL)	10.20 ± 0.47	8.60 ± 0.10[a]	14.40 ± 0.37[b]	14.80 ± 0.51[b]
MCV (fL)	58.60 ± 1.02	66.30 ± 0.69	63.40 ± 2.83	66.60 ± 0.84
MCH (pg)	21.80 ± 0.34	23.70 ± 0.15	22.60 ± 0.80	23.60 ± 0.20
MCHC (g/dl)	36.10 ± 0.47	35.90 ± 0.48	35.60 ± 0.35	35.40 ± 0.18
PLT X 10^9/L	701.00 ± 147	893.00 ± 21.30	860.00 ± 100	870.00 ± 150

Values are mean ± standard error of the mean (SEM). [a] = $p < 0.05$ versus normal control (group 1); [b] = $p<0.05$ versus anaemic control (Group 2).

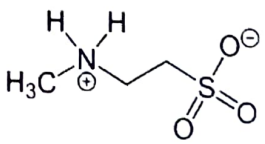


(1). 3-fluoro-5[1-hydroxy-2-(methylamino) ethyl] phenol

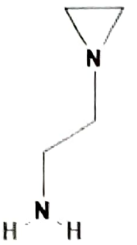


(2). Dextroamphetamine

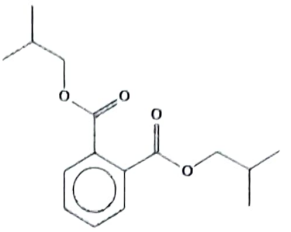
(3). Amino propanol



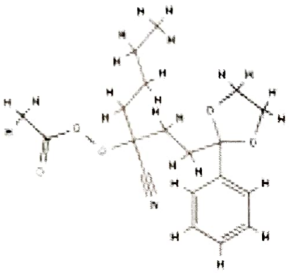
(4). N-Methyltaurine



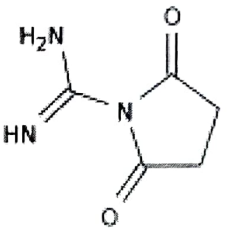
(5). N- β (aminoethyl) ethylenimine



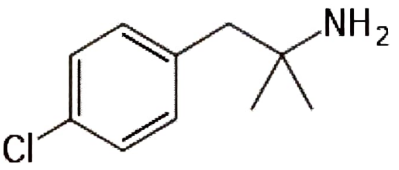
(6). 1, 2- benezenedicarboxylic acid, bis (2- methylpropyl) ester



(7). Ethaneperoxic acid, 1-Cyno-1, Chlorophenethylamine



(8). I-Guanidinosuccinimide



(9). [2-(2-phenyl-1, 3-dioxolan-2-yl) pentyl ester

Figure 1. Structures of compounds identified with GC-MS.

4. Discussion

Alkaloids serve as basic medicinal agents due to their anti-anaemic, analgesic, antispasmodic and anti-bacterial properties[13,27,28]. Tannins are water-soluble high molecular weight phenolic compounds that are found in many plants and which confer on these plants, wound healing properties[13,29]. Saponins inhibit the reabsorption of cholesterol, facilitating its excretion from the body[13]. Studies have shown that they have anti-anaemic characteristics[28]. Flavonoids are a class of polyphenolic compounds that have been reported to have antioxidant activity[30].

Cardiac glycosides are a group of inotropic agents that are reportedly being used to alleviate cardiac problems associated with hypertension[31]. Terpenoids are naturally occurring aromatic compounds, obtain from terpenes that confer many plants with their flavour, colour and antiviral properties[29]. Phytate affects the bioavailability of minerals due to the formation of stable phytate complexes, inhibiting phytase enzymatic actions and also makes proteins unavailable for digestion[32]. Despite the negative effects of dietary phytates, they also offer some advantages such as antioxidant and hypocholesterolemic activity, as well as prevention of renal stone formation[32].

Cyanogenic glucosides are compounds that yield glucose, hydrogen cyanide and aldehyde or ketone upon hydrolysis with an acid or enzyme. Dietary exposure to cyanide occurs upon consumption of foodstuffs that are rich in endogenous

cyanide in the form of cyanogenic glucosides. This cyanide could be lethal as it intercalates with cytochrome oxidase for aerobic function[33]. This present study revealed that the plant contained low amounts of tannins, cardiac glycosides, terpenoids and hydrogen cyanide.

Oxalates have been reported to bind to calcium, iron and magnesium, forming insoluble salts in the digestive tract and thereby decreasing the bioavailability of these minerals[22]. Since diet has been found to play an important role in the formation of kidney stones arising from oxalate, avoiding excessive consumption of high-oxalate containing foods and consuming calcium-containing dairy foods are reported as relevant ways of preventing the formation of these kidney stones arising from oxalate[22]. However, the values that were obtained for oxalate in this study may not give any reason for concern going by the permissible range of oxalates in foods.

The high dry matter content of the leaf is relevant as this portends increased shelf life due to low moisture content which will therefore lead to the inactivation of microorganisms. The total protein contents of this plant as quantified from its total nitrogen content reveals that this plant contains significant quantities of proteins. Although vegetables are known to contain small quantities of lipids, this plant was found to contain considerable amounts of lipids. This increased lipid content could arise from the very low amount of moisture in the plant.

Studies have shown that diets containing crude fibre are beneficial and help to delay the digestion of starch to simple sugars via inhibition of pancreatic amylase, which is crucial in the management of diabetes[33]. This present study revealed that this plant contains considerable amounts of crude fibre which could be helpful to people living with diabetes mellitus.

Ash is produced from the inorganic residue and a reliable indicator of the total amount of minerals present in food. The considerable amount of ash in this plant suggests that it could contain some considerable amounts of minerals. Besides, the considerable amount of carbohydrates in this plant suggests that it could supply some good number of calories to the consumer.

Phosphorus is one of the minerals readily available in the human body[24]. Deficiencies in phosphorus could result in rickets and osteomalacia as well as other bone deformities. The results that were obtained for phosphorous suggest that this plant contains some appreciable quantities of this mineral.

Calcium is required for the formation of bones, plays key roles in blood clotting, cell signalling, muscle and nerve functions. The results of the present study revealed that *C. dolichopetalum* extract contained higher amounts of Ca than other mineral elements that were investigated. The Recommended Daily Allowance (RDA) of Ca is 0.5 g/day for adults[35]. Going by this, the results of this present study revealed that consumption of 100 g of this vegetable will meet this requirement and this is an important finding in this present study.

Magnesium is important in muscle relaxation[13]. Results of this study revealed that the plant contained considerable amounts of Mg. Potassium is important for cardiac and skeletal contraction and gastrointestinal function[35]. Results obtained in this study also showed that the plant contained considerable amounts of potassium. Sodium is highly needed for the regulation and maintenance of blood pressure and blood volume. The findings of this study revealed that the plant contained moderate amounts of sodium. Zinc plays a key role in the regulation of insulin production by pancreatic tissues and glucose utilization by muscles and fat cells[35]. The requirement for Zn in adults and children is 10 mg/day. Going by the values that were obtained for Zn in this study, suggest that this plant is a good fount of Zn.

The World Health Organization reported iron deficiency as the 6th leading cause of illness and diseases in low-income countries[34]. Several factors could be attributed to this deficiency some of which includes: Low bioavailability of iron in foods and others. The findings of this study reveal that this plant is a good source of iron and could meet the daily requirement.

Manganese is a mineral that is required for the growth of bones, as well as in carbohydrate and lipid metabolism[34]. At the moment, there is no established recommended daily allowance for manganese, it was estimated that adult males and females require 2.3 and 1.8 mg per day respectively while an upper limit of 11 mg per day was reported for adults34. Following from above, the present study showed that Mn levels in this plant could be considered to be adequate to meet with the RDA for Mn in adult females and males.

Lead is a chemical element and heavy metal which can harm the production of blood cells, cause kidney and brain damage and lead to toxicity to the other tissues. Consumption of foods containing lead is the major source of exposure for the general population[36]. Going by the permissible range of lead in foods (0.2 mg/kg or 20 mg/100 g), the amount of Pb in this plant is too low to confer any toxic effect to the user[36].

Cu is needed for absorption of iron and incorporation of iron into haemoglobin, co factor for Vitamin C during hydroxylation reactions as well as tyrosinase activity. The daily requirement for Cu for an adult is 1.5 to 3 mg/kg[35]. Going by this, the present study showed that the level of Cu in this plant can be considered to be adequate to meet with the RDA for Cu in humans.

3-Fluoro-5-[1-hydroxy-2-(methylamino) ethyl] phenol and dextroamphetamine are reportedly used for the treatment of anaemia, management of depression, increase in satiety and as aphrodisiacs[37,38]. The existence of these compounds suggests that the plant could have potentials for the management of depression, useful as an aphrodisiac and further justifies the use of traditional use in the management and treatment of anaemia.

(R)-(-)-2-Amino-1-Propanol and 2-(methylamino) ethanesulfonic acid (N-methyltaurine) was reported to function in blood boosting, blood and liver detoxifiers respectively[39]. The presence of (R)-(-)-2-Amino-1-Propanol in *C. dolichopetalum* further justify its traditional usage in Nigerian ethnomedicine in the treatment of anaemia.

2-(aziridine-1-yl) ethanamine and bis(2-methylpropyl) benzene-1,2-dicarboxylatewere reported to possess antimicrobial, anti-inflammatory and anti-oxidative properties. Bis(2-methylpropyl) benzene-1,2-dicarboxylate also serves as a food additive. The presence of these compounds in the extract suggests that the plant could possess antimicrobial and antioxidant and anti-inflammatory properties.

1-Cyno-[2-(2-Phenyl-1,3-Dioxolan-2-yl) ethyl] pentyl esteris suggested to be a cyano compound and it may be an active antimicrobial agent and insecticide[40]. It further affirms potential antimicrobial properties and as well as insecticidal properties. The rest of the compounds (1-Guanidinosuccinimide and 1-(4-methylphenyl) propan-2-amine) that were isolated from the extract were found to have unknown biological properties.

Changes in body weights are important parameters for the evaluation of first signs of toxicity[8]. The decreased body weight of the anaemic rats concerning the control group may be due to phenylhydrazine induced toxicity. Administration of the extract possibly blunted phenylhydrazine induced toxicity on the animals, leading to their rapid weight gain.

The hematopoietic system is one of the targets of toxic compounds which make it an important marker of physiological and pathological state in both humans and animals[41]. As seen in this study, administration of phenylhydrazine decreased the RBC, PCV and Hb concentration of the rats, indicating their anaemic condition. *C. dolichopetalum* leaf at 200 and 400 mg/kg increased the RBC, PCV and Hb concentration of the rats, which suggests the ability of this plant to stimulate hematopoiesis, attributable to phytochemical and nutrient constituents including flavonoids, iron, magnesium and zinc. These constituents are known to have a haemopoietic property that affects bone marrow and the production of blood cells.

Furthermore, the non-significant differences in the WBC, MCV, MCH, MCHC and platelet concentrations of rats, suggests that phenylhydrazine or the extracts did not affect these parameters in rats.

The bioactive phytochemicals with anti-anaemic properties that were found in *C. dolichopetalum* may have contributed to its reversal of phenylhydrazine induced anaemia in rats as seen in this study. Further studies in toxicity are highly needed and amelioration of anaemia in pregnancy.

5. Conclusion

This study has shown the potentials of *C. dolichopetalum* in reversing anaemia induced by phenylhydrazine, thereby validating its traditional usage in the treatment of anaemia. This study discovers the possible reversal of phenylhydrazine induced anaemia in rats by *Combretum dolichopetalum* which validates the traditional usage of this plant in Nigerian ethnomedicine for the treatment of anaemia.

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Children's Education Society (Regd.)

The Oxford College of Pharmacy

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Approved by Pharmacy Council of India, New Delhi)

DATE: 19/04/2024

CIRCULAR

It is to inform all the teachers, students and non-teaching staff that, The Oxford College of Pharmacy, Bangalore, is going to organize a **Dance Competition** on 25th April 2024 at 11 AM onwards. All the students are requested to participate in the event with full enthusiasm.

P. Padma

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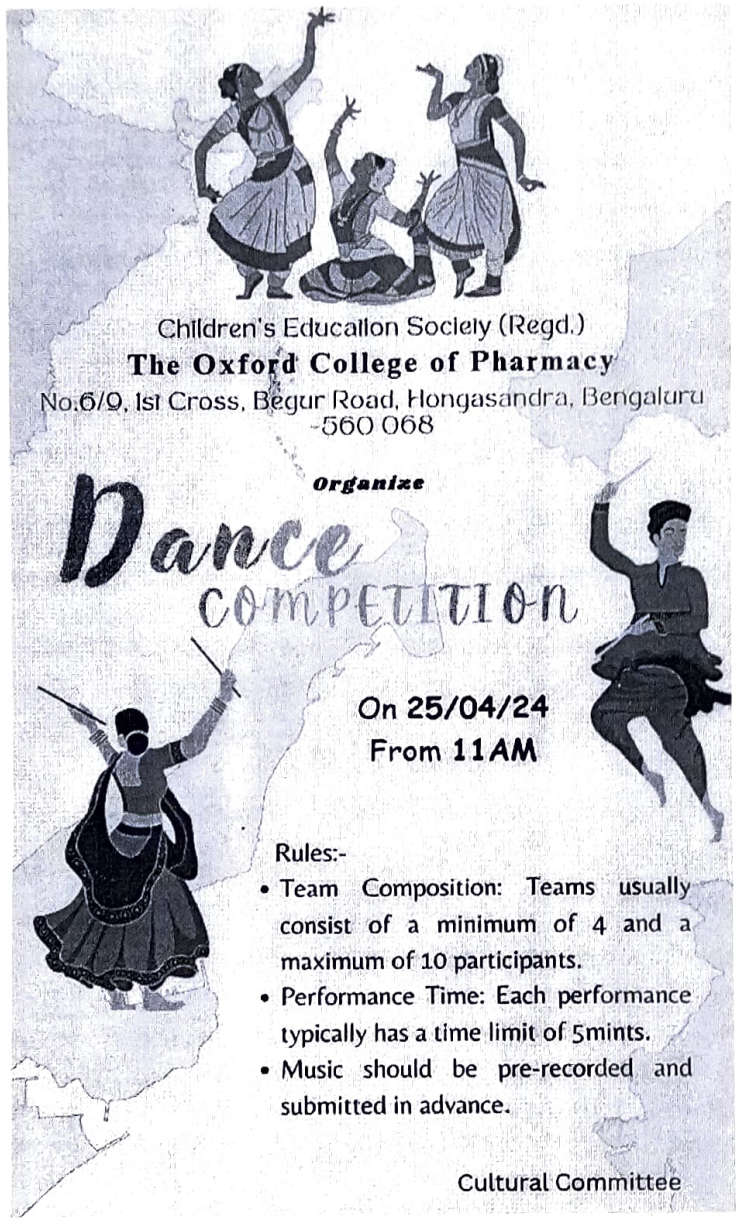

Brochure for the Dance Competition

PREAMBLE

The Oxford College of Pharmacy, Bangalore has organized Dance Competition with great enthusiasm on 25th April 2024. The dance competition was held in the college auditorium. The event was a grand success, showcasing the incredible talent and enthusiasm of our students.

The competition was divided into two categories:

1.GROUP DANCE

2.SOLO DANCE

Each category saw enthusiastic participation, with over 30 students competing in various dance forms, including classical, contemporary, hip-hop, and folk dances.

The event began with a welcome speech by the principal, Dr. Padmaa M Paarakh followed by a mesmerizing group performance by II-year M. Pharm Students. Each participant then took the stage, captivating the audience with their unique styles and energy.

Total five teams participated in the group dance and eight participated in solo performance The event was judged by Mrs Suvarnalakshmi (Assistant Professor, Department of Pharmaceutical Chemistry), Mrs Uma Prabha (Assistant Professor, Department of Pharmaceutics) Dr Parthasarthy G (HOD, Department of Pharmacy Practice) and Mrs Noopur Shrivastava (HOD, Department of Pharmacology).

Time schedule	Programme
11:00-12:00 pm	Group Dance
12:00-01.30 pm	Solo Dance

The judgement for the event was as follows:-

GROUP DANCE

I position - IV B. Pharm -Povindher and team

II position - III B. Pharm- Rishika and team

III position – II Pharm D- Weizel and team

SOLO DANCE

I position - I B. Pharm -Rakshitha S

II position - II B. Pharm- Madhura R

III position – IV B. Pharm- Gokul Raj M

Students participating in the Dance Competition:- GROUP

Students participating in the Dance Competition:- SOLO

List of the participants

Group Dance

S.N.	Name of the participants	Class
1.	Rishika and team:- Druthi C, Lakshmi T, Meghana, Namitha, Nandhini R, Nisarga S T, Rajanya A, Shilpa N and Rishika Menon	III B Pharm
2.	Monika and team:- Azra Sultan, Soniya kumari S, Sunitha, Monika R, H Leelavathi and Monika	I Diploma
3.	Povindhar and team:- Saranya R, Akila C, Anusha R S, Sandra, Arya, Savitha S, Gokul, Kavya, Karthik S and C Povindhar	IV B pharm
4.	Weizal and team:- Anu R, Nayana Rai, Maivannan, Krishnajith, Savitha T V, Uddipan Roy and Weizel Pearl	II Pharm D
5.	Praveen and team:- Ravichandra, Prajwal, Abinav, Akash R and Praveen	I B Pharm

List of the participants

Group Dance

S.N.	Name of the participants	Class
1.	Madhura R	II B Pharm
2.	Dimple G	III Pharm D
3.	Rashitha Shivaraj	I B pharm
4.	Gokul Raj M	IV B Pharm
5.	Rajanya Adhikari	III B Pharm
6.	Neethu T P	V Pharm D
7.	Sujitha Shree R	I Pharm D
8.	Jeevitha V	II Pharm D

Outcome of the program:

1. The competition fostered a spirit of teamwork, dedication, and artistic expression among students. Students performed a variety of dance styles, including classical, contemporary, hip-hop, and folk dances.
2. The dance competition was a testament to the hard work and dedication of our students and teachers.
3. It provided a platform for students to express their creativity and passion for dance.

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Estd. 1974

CERTIFICATE

This is to Certify that Mr/Ms ....POVINDHER AND TEAM..... *of*

D.Pharm / B.Pharm / M.Pharm / Pharm.D / Pharm.D (Post Baccalaureate) .....IV..... *Year*

has been awarded .....I..... *prize*

for .....GROUP DANCE COMPETITION..... *during the year* ....2023 - 2024.....

CR

CULTURAL CHAIRPERSON

PRINCIPAL

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CERTIFICATE

This is to Certify that Mr/Ms SARANYA R *of*

D.Pharm / B.Pharm / M.Pharm / Pharm.D / Pharm.D (Post Baccalaureate) IV *Year*

has been awarded I *prize*

for GROUP DANCE COMPETITION *during the year* 2023-2024

P. Padma

CULTURAL CHAIRPERSON

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Children's Education Society (Regd.)

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Estd. 1974

DATE: 5/03/2024

CIRCULAR

All the teaching, non -teaching and students of The Oxford College of Pharmacy are hereby informed that a **"Selfie Stand Making Competition"** is going to be organised on **International Women's Day 2024** for the Academic Year 2023-24 on the 9th of March 2024. All are requested to assemble in the room number 501 at 11:00 PM. We look forward for the active participation for the same.

P. Padma
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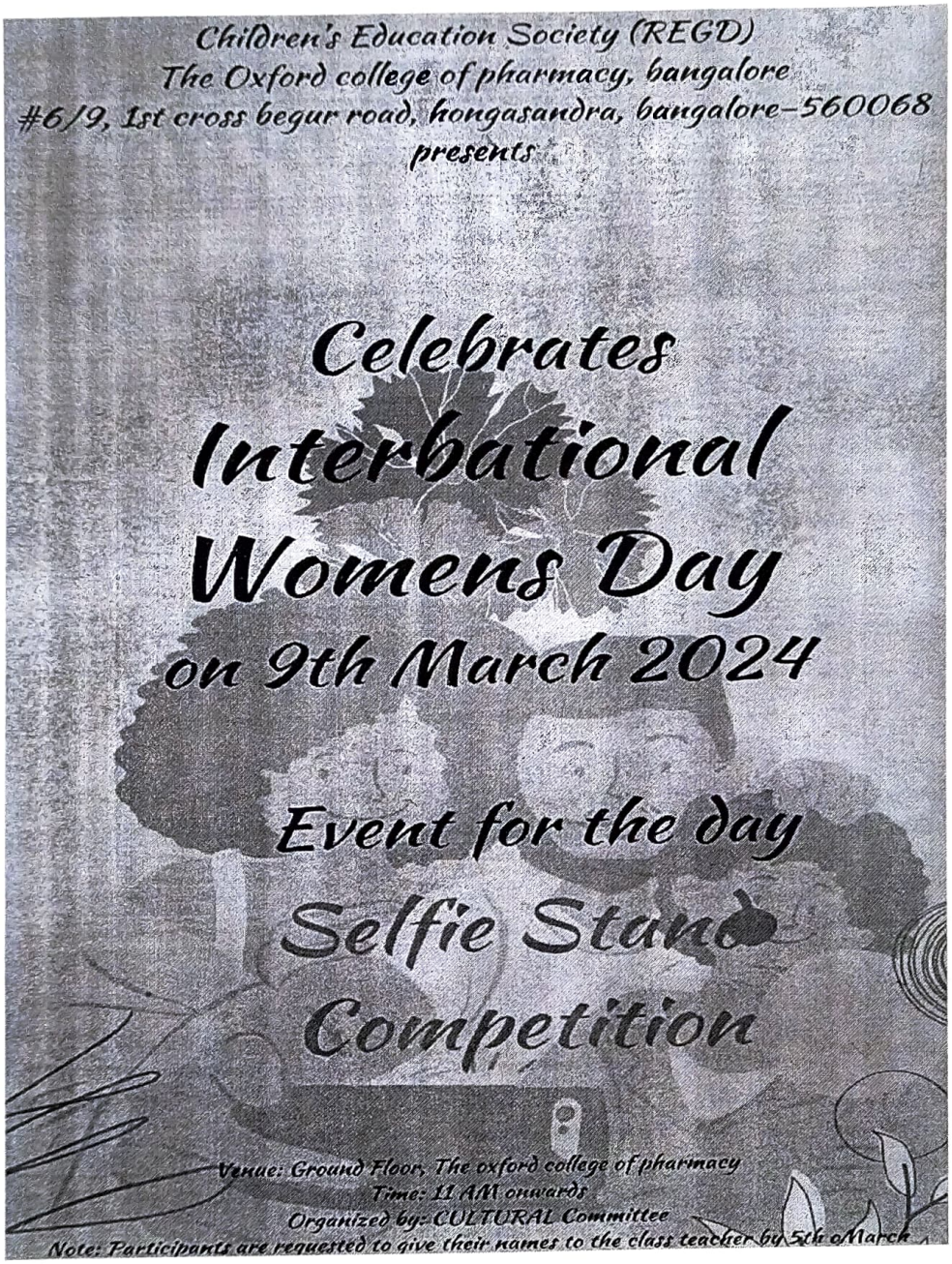

Children's Education Society (REGD)
The Oxford college of pharmacy, bangalore
#6/9, 1st cross begur road, hongasandra, bangalore-560068
presents
Celebrates
Interbational
Womens Day
on 9th March 2024
Event for the day
Selfie Stand
Competition
Venue: Ground Floor, The oxford college of pharmacy
Time: 11 AM onwards
Organized by: CULTURAL Committee
Note: Participants are requested to give their names to the class teacher by 5th of March

Brochure

PREAMBLE

International Women's Day, celebrated on March 8th, is a global day honouring the social, economic, cultural, and political achievements of women. It also marks a call to action for accelerating gender parity. The day has been celebrated for over a century, with the first official observance in 1911.

CONTENT OF THE SESSION

To commemorate International Women's Day, The Oxford College of Pharmacy, Bengaluru, organized a Selfie Stand Competition aimed at celebrating the achievements and contributions of women. The event provided a creative platform for students to express their support for gender equality and empowerment through innovative selfie stands.

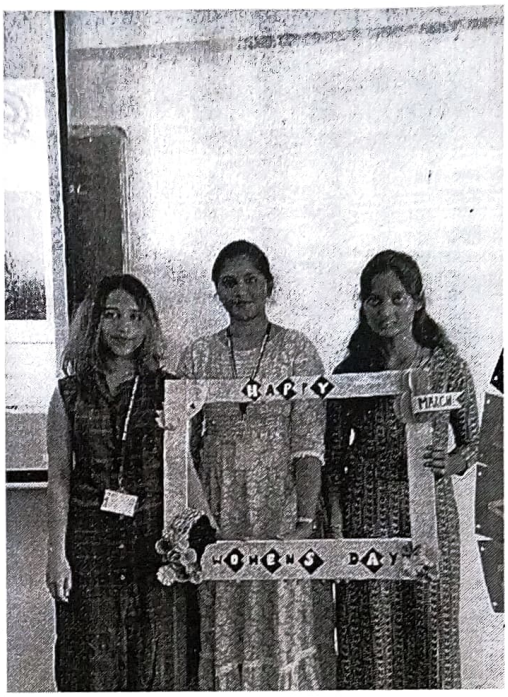
The event was inaugurated by the college principal, who spoke about the significance of International Women's Day and the importance of celebrating women's achievements.

Participants were asked to design and set up selfie stands with themes centred around women's empowerment, notable women leaders, and messages of gender equality.

The creativity on display was remarkable, with stands featuring vibrant decorations, inspirational quotes, and interactive elements that encouraged participants to engage with the themes.

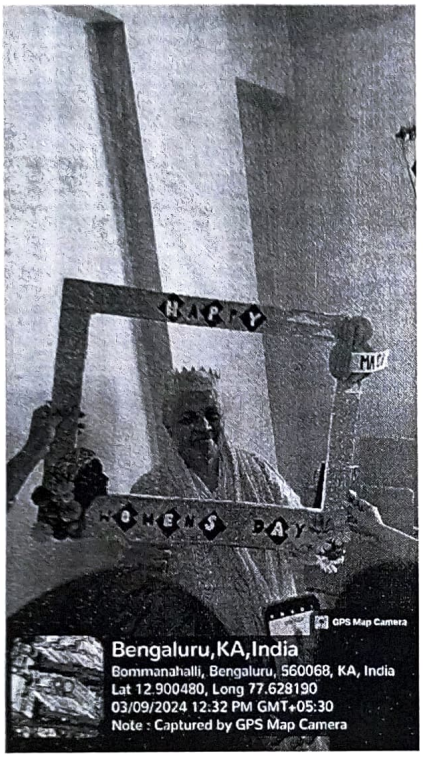
The selfie stands were judged based on creativity, originality, relevance to the theme, and overall presentation.

Time schedule	**programme**
11.00-12.30 PM	Selfie stand making Competition
12.30-01.00 PM	Judgement



Students and teachers posing with the selfie stands preparaed by the students on International womens day

Students and teachers posing with the selfie stands preparaed by the students on International womens day



Students and teachers posing with the selfie stands preparaed by the students on International womens day

Sl.no	List of Participants	Course
1	Rakshitha K C, Uttara S, Vedha Shree K S, Vency	IV Pharm D
2	Abhinaya, Lakshmi, Weizel	II Pharm D
3	Dhanshekar M K, Nisha S, Pratik Jain	IV B.Pharm
4	Shreya, Fathima, Sannidhi	II B.Pharm
5	Anitha M, Swathi S, Sasipriya P	II D Pharm

WINNERS LIST

FIRST PRIZE: Dhanshekar M K, Nisha S , Pratik Jain (7th Sem B.Pharm)

SECOND PRIZE: Abhinaya, Lakshmi, Weizel (II Pharm D)

THIRD PRIZE: Anitha M, Swathi S, Sasipriya P (II D Pharm)

Shreya, Fathima, Sannidhi (III Sem B.Pharm)

OUTCOME

The competition successfully raised awareness about the importance of gender equality and women's empowerment. Participants and attendees gained a deeper understanding of these critical issues. The event provided a platform for students to express their creativity and design skills while advocating for a meaningful cause. The diverse and innovative selfie stands highlighted the unique perspectives of each participant.

END OF REPORT

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CERTIFICATE

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D.Pharm / B.Pharm / M.Pharm / Pharm.D / Pharm.D (Post Baccalaureate) 7th SEM *Year*

has been awarded FIRST *prize*

for SELFI STAND MAKING COMPETITION *during the year* 2024 - 2024

CULTURAL CHAIRPERSON

P. Padma
PRINCIPAL

CHILDREN'S EDUCATION SOCIETY (REGD)

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CERTIFICATE

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D.Pharm / B.Pharm / M.Pharm / Pharm.D / Pharm.D (Post Baccalaureate) 7th SEM *Year*

has been awarded FIRST *prize*

for SELFI STAND MAKING COMPETITION *during the year* 2023 - 2024

CULTURAL CHAIRPERSON

P. Padma
PRINCIPAL

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CERTIFICATE

This is to Certify that Mr/Ms ..... PRATIK JAIN ..... *of*

D.Pharm / B.Pharm / M.Pharm / Pharm.D / Pharm.D (Post Baccalaureate) ..... 7th SEM ..... *Year*

has been awarded ..... FIRST ..... *prize*

for ..... SELFI STAND MAKING COMPETITION ..... *during the year* ..... 2023 - 2024 .....

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FIELDWORK REPORT 2023-2024

In-line with RGUHS university guidelines, total 13 students of B. Pharm had completed their fieldwork successfully for the academic year 2023-24. Following are the list of students undergone & completed the fieldwork.

List of Students undergone Internship.

S No	Course	Duration	Name of Student
1	B. Pharm	2023-24	Bhuvaneshwari C
2	B. Pharm	2023-24	Banu Priya D
3	B. Pharm	2023-24	Anusha R S
4	B. Pharm	2023-24	Anusha T
5	B. Pharm	2023-24	Povindhar C
6	B. Pharm	2023-24	Chaithra K
7	B. Pharm	2023-24	Arya Krishna
8	B. Pharm	2023-24	Arun Biradar
9	B. Pharm	2023-24	Arun C
10	B. Pharm	2023-24	Anwar Mulla
11	B. Pharm	2023-24	Aarthi S
12	B. Pharm	2023-24	Chandana N
13	B. Pharm	2023-24	Swetha P

P. Padmaa

Principal

Dr Padmaa M Paarakh

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FIELDWORK OUTCOME REPORT

As part of the curriculum prescribed by RGUHS, VII SEM B PHARM Syllabus of Practice School comprises of total 13 students who has opted for field work, on various topics mentioned as and completed marketed survey on different drugs. Based on the survey report students were able to differentiate and analyses the different fast-moving brands as well as API's .

Outcomes:

Students were able to understand

- The distribution and packaging of various drugs in accordance with the needs.
- The medication's effectiveness for various patient groups.
- Different brands preferred by the consumers were known
- The different categories of the medicated product such as soaps, creams etc., the students were able todifferentiate among those and were also able to identify the fastmoving product among the consumers.
- Most acceptable dosage forms.

In an effort to provide students with a field-level exposure, TOCOP launched the notion of field work to assess the legality of various drugs that are sold. As a result, each student was given a different drug, and they were required to submit a report upon completion.

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Bangalore - 560 068

List of students who carried out field work

Class: VII SEM B. PHARM, Practice School

Department: Pharmaceutics

Year: 2023-24

Sl.no	REG.NO	Name of thestudent	Title	Place where Field survey wasconducted	Duration
1	20P5621	Bhuvaneshwari C	Market survey on Aceclofenac	GSS MED CARE BENGALURU Salapuria satva, Bommanahalli, Bengaluru.	03/1/24
2	20P5620	Banu Priya.D	Market survey on Nimesulide	GOOD HEALTH PHARMACY, Hongsandra, Bangalore-68	03/1/24
3	20P5613	Anusha R S	Market survey on amlodipine	DHANU MEDICALS, GB Palya, Hongsandra, Bangalore-68	03/1/24
4	20P5615	Anusha T	Market survey on cetrizene	BALAJI MEDICALS Hongasandra, Begur Main Road, Bangalore – 560068	03/1/24
5	20P5622	Povindhar C	Market survey on Azithromycin	1. RITA CARE medicals Hongasandra, Begur Main Road, Bangalore – 560068	03/1/24
6	20P5624	Chaithra K	Market survey on Pantoprazole	Jai Ram medicals, Hongasandra, Bangalore68	03/01/24
7	20P5619	Arya Krishna	Market survey on calamine	Sri Ganesha medicals, Hongasandra, Bangalore-	03/01/24

			lotion	68	
8	20P5617	Arun Biradar	Market survey on cefixime	Sri Balaji medicals, Hosur road, near Anjaneya temple, Garebhavipalya, Bengaluru 560068	03/01/24
9	20P5618	Arun C	Market survey on ondansetron	Bhoomi Medicals, 57, Hosur road, near Ganesha temple, Bommanahalli, Bengaluru 560068.	03/01/24
10	20P5616	Anwar Mulla	Market survey on Metronidazole	Apollo pharmacy, Sri Venkateshwara building, Begur road, Bommanahalli, Bengaluru 560068.	03/01/24
11	20P5605	Aarthi S	Market survey on Amoxicillin	Shilpashri medical and general store, near gokul bakery Hongasandra, Bengaluru 560068.	03/01/24
12	20P5625	Chandana N	Market survey on Paracetamol	Dhanu medicals and clinic, near gnana Bharathi school, Bengaluru 560068	03/01/24
13	19P6036	Swetha P	Market survey on Albendazole	Srinivasa medical store, near Mathas English high school, Bangalore 560068.	03/01/24

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Student name: Bhuvaneshwari.C Class: VII SEM B. PHARM

Objective: To carry out market survey on Aceclofenac commercial brands.

DESCRIPTION	INFERENCE
1.Diffrent Brand Names	Zerodol P, Fenodol plus , acelo plus
2. Rapid moving	Zerodol p is the fast moving brand
3. Active Ingredients	aceclofenac
4. Expiry duration	2 years
5. Dose strength	100mg
6. Cost per unit	Zerodol P- 12rs
7.Type of packaging	Blister packs, carton boxes
8.No of units sold per month	Approx. 20 strips
9. Age of prescription	Above 18 years

Conclusion: According to above conducted survey, A case on aceclofenac in GSS med care Bengaluru wasinvestigated, the brand available was zerodol p which are fast moving and low cost drugs.

Student name: Banu priya .D

Class: VII SEM B.PHARM

Objective: To carry out market survey on Nimesulide commercial brands.

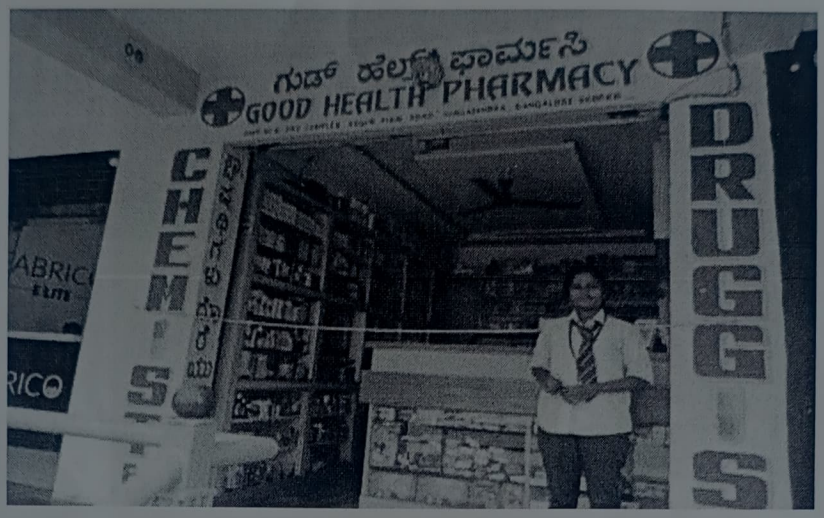
DESCRIPTION	INFERENCE
Different brand names.	Nicip plus
Which brand is rapid and fast moving	Nicip plus is fast moving drug Product
Active ingredient	Nimesulide
Expiry date	3 years from the date of manufacture
Dose of strength	100mg
Cost per unit	Rs 5 each tablet
Type of packaging	Blister and aluminum package.
No. Of units sold per month	5-6 sheets sold per month
Age of prescription	people above 15

CONCLUSION: A case of nimesulide in rite care medicals was investigated the brand available was nicip plus which is fast moving and less price. It is available in tablet form only.

Student name: ANUSHA T

Class: VII SEM B. PHARM

Objective: To carry out market survey on Cetrizene commercial brands.



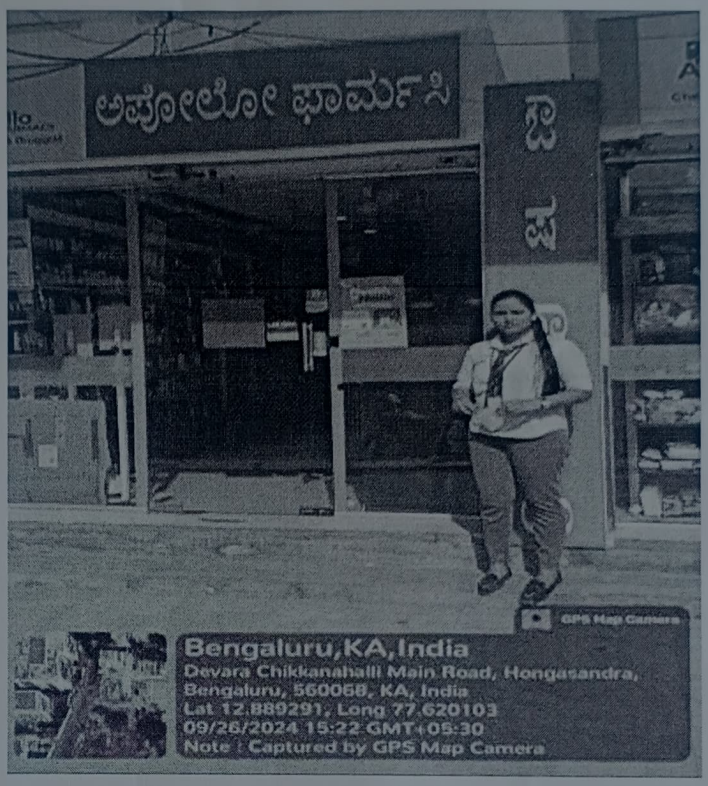
DESCRIPTION	INFERENCE
Different brand names	Cetzine , alerid
Which brand is rapid and slow moving	Alerid is the rapid moving brand
Active ingredients	Amoxicillin
Expiry date	3 years
Dose strength	10 mg to 5 mg
Cost per unit	1.9Rs Per tablet
Type of packaging	Both Blister And Aluminum Packaging
No.of units sold per month	10 units sold out per month
Age of Prescription	Adults above 15

CONCLUSION: According to the above conducted survey, a Case on cetrizene in good pharma Medicals And Clinic was investigated, the brand available was allerid which is fast moving and available at low Cost.

Student name: ANUSHA R S

Class: VII SEM B.PHARM

Objective: To carry out market survey on Amlodipine commercial brands.



DESCRIPTION	INFERENCE
Different brand names	Amlopres-5, amlong ,amlo vas-5, amlosafe
	5
Which brand is rapid and slow moving	Amlong is rapidly moving
Active Ingredients	Amlodipine
Expiry date	2-4yrs
Dose strength	5mg per day
Cost per unit	RS.18.75 for 10 tablets
Type of packaging	Blister strip packaging

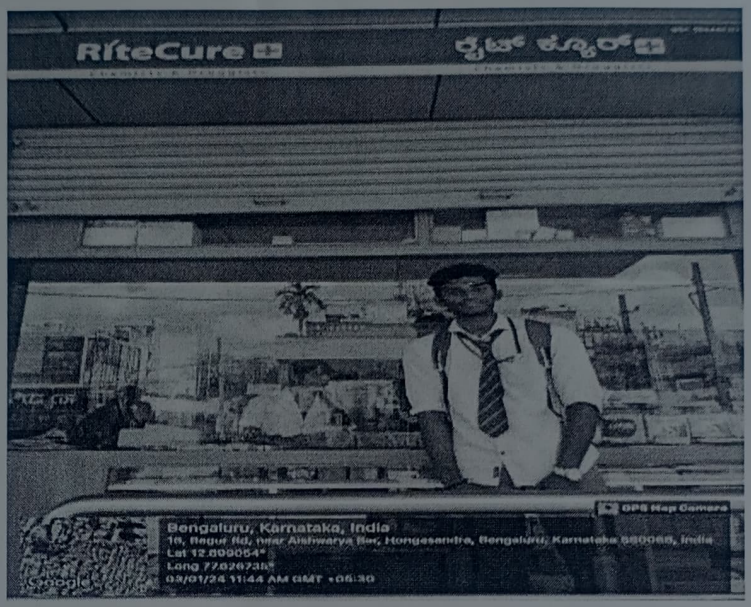
No.of units sold per month	20 strips per month on prescription
Age of prescription	Adults dose

Conclusion: According to the above conducted survey, a case of amlodipine in apollo Medicals wasinvestigated. Amlong is the brand which is the more sold amlodipine for adult dose.

Student name: C. POVINDHAR

Class: VII SEM B.PHARM

Objective: To carry out market survey on Azithromycin commercial brands.



DESCRIPTION	INFERENCE
1.Diffrent Brand Names	Azee 250,500 Azithrol 250,500 Azikem 250,500
	Azilac 250,500
2. Rapid moving/Slow moving	Azee 250
3. Active Ingredients	Azithromycin
4. Expiry duration	3 years
5. Dose strength	250mg
6. Cost per unit	13rs
7.Type of packaging	Blister strip Packaging

8.No of units sold per month	15 to 20 strips per month
9. Age of prescription	Above 15 years

CONCLUSION: According the above conducted survey, a case on Azithromycin in rita care medicals was investigated Azee, Azikem, Azithrol, Azilac are the brands which sell mostly Azithromycin drug for age 15 to 20 years-250mg and 500mg for adults as prescribed by the doctor.

Student name: CHAITHRA K

Class: VII Sem B Pharm

Objective: To carryout market survey on Pantaprazole commercial brands

DESCRIPTION	INFERENCE
1. Different Brand Names	Pazom20 (20mg), pantosec (40mg), PanD (40mg), pantop40 (40mg)
2. Rapid Moving	Pazom20
3. Active Ingredient	Pantaprazole
4. Expiry Duration	2years from manufacturing date
5. Dose Strength	20-40mg
6. Cost per unit	5rupee for each tablet
7. Type of Packing	Aluminium packaging
8. Cost per unit	5rupee for each tablet

9. Type of Packing	Aluminium packaging
10. No of units sold per month	10 sheets (100 tablet)

Conclusion: According to above conducted survey, A case on pantaprazole in Jai Sri Ram Medical wasinvestigated, Among the brands available Pazom20 was rapid moving and low cost drug.

Student name: ARYA KRISHNA

Class: VII Sem B Pharm

Objective: To carryout market survey on calamine lotion commercial brands

DESCRIPTION	INFERENCE
1. Different Brand Names	Caladryl, Calosoft-AF, Calotec, Calprick
2 Rapid Moving	Caladryl
3 Active Ingredient	Calamine
4 Expiry Duration	3years from manufacturing
5 Dose Strength	Calamine I.P 8% w/v
6 Cost per unit	97 rupees for 125ml
7 Type of Packing	Plastic container
8 No of units sold per month	3

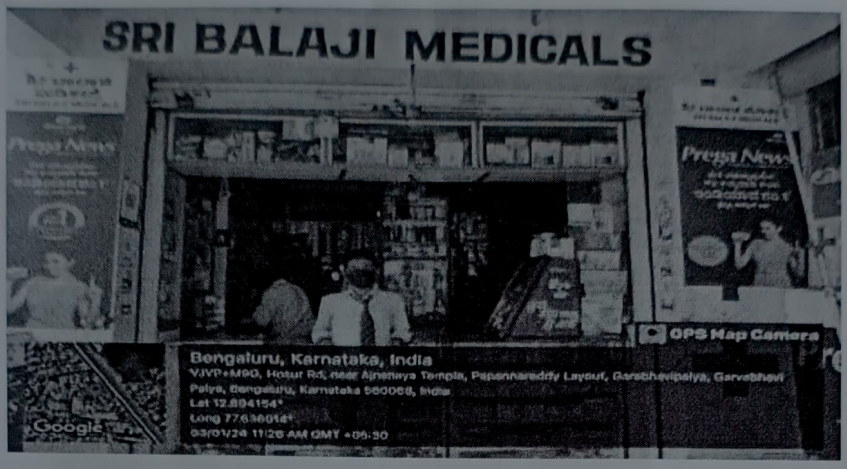
9	Age of Prescription	All age

Conclusion: According to above conducted survey, A case on calamine lotion in Sri Ganesh Medicals wasinvestigated, Among the brands available caladryl was rapid moving and low cost drug.

Student name: Arun Biradar

Class: VII SEM B. PHARM

Objective: To carry out market survey on Cefixime commercial brands.



DESCRIPTION	INFERENCE
1.Diffrent Brand Names	Cefix 200 mg, Taxim o 200 mg, Taxim o cv 200, Bactofix cv 200mg, Taxim o DT 100 mg, Texit 200 mg, Zifi 200 mg, Pancef 200 mg
2. Rapid moving	Cefix 200 mg
3. Active Ingredients	Cefixime
4. Expiry duration	2 years
5. Dose strength	Cefixime [available in 100 and 200 mg]
6. Cost per unit	11 per tablet
7.Type of packaging	Aluminium packaging
8.No of units sold per month	60 strips per month
9.Age of prescription	Above 18 yrs

Conclusion: According to above conducted survey, A case on Cefixime at Sri Balaji medicals, Bengaluru was investigated , the brand available Cefix 200 mg is fast-moving and low-cost drugs.

Student name: Arun C

Class: VIII SEM B. PHARM

Objective: To carry out market survey on Ondansetron commercial brands.

DESCRIPTION	INFERENCE
1.Diffrent Brand Names	Emeset, Emigo, Ondem, zofer, (available in 4,8, and 16 mg)
2. Rapid moving	Emeset 4 mg
3. Active Ingredients	Ondansetron
4. Expiry duration	2 years
5. Dose strength	Available in 4 mg, 8mg, and 16 mg
6. Cost per unit t	5.7 Rs per unit(57rs/strip)
7.Type of packaging	Aluminium packaging
8.No of units sold per month	50 per month
9.Age of prescription	Above 18 years

Conclusion: According to above conducted survey, A case on Ondansetron at Bhoomi medicals, Bengaluruwas investigated, the brand available Emeset 4mg is fast-moving and low-cost drugs.

Student name: Anwar Mulla Class: VII SEM B. PHARM

Objective: To carry out market survey on Metronidazole commercial brands.

DESCRIPTION	INFERENCE
1.Diffrent Brand Names	Metrogyl-400mg, Flagyl- 400mg, Aristogyl-400mg, Maxgyl400mg,
2. Rapid moving	Metrogyl-400mg
3. Active Ingredients	Metronidazole
4. Expiry duration	24 months
5. Dose strength	Metronidazole 400mg
6. Cost per unit	35 Rs for 10 Tablets
7.Type of packaging	Aluminium packaging
8.No of units sold per month	100 -150 per month

Conclusion: According to above conducted survey, A case on Metronidazole in Apollo Bengaluru was investigated , the brand available Metrogyl-400mg is fast-moving and lowcost drugs.

Student name: CHANDANA N

Class: VII Sem B Pharm

Objective: To carryout market survey on Paracetamol commercial brands

DESCRIPTION	INFERENCE
1. Different Brand Names	DOLO 650, Panadol, Calpol, Fepanil 650, P250, Crocin tablet, paracetamol tablet & syrup
2. Rapid Moving	DOLO 650, Crocin tablet, paracetamol tablet
Active Ingredient	PARACETAMOL
Expiry Duration	2-3 years from manufacturing date
Dose Strength	Paracetamol Syrup – 120-250 mg, Crocin tablet – 120-250 mg, Dolo-650mg
Cost per unit	120 mg syrup -35rs 250 mg syrup- 45rs 650 mg tablet – 2rs
Type of Packing	BLISTER PACKING
No of units sold per month	30 sheets

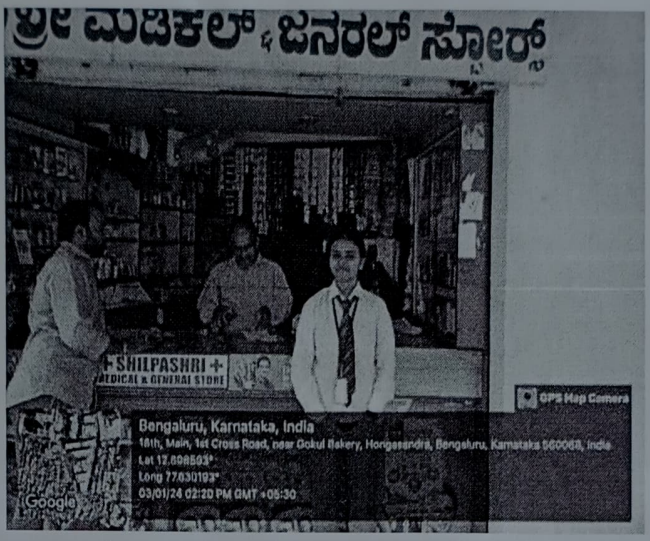
Age of Prescription	Age up to 10 yrs 500 mg tablet, above 10 yrs-650 mg, Syrup- 1 to 2 yrs 120 mg, above 2 yrs – 250 mg Oral drops up to - 1 year

Conclusion: According to above conducted survey, A case on paracetamol in Shilpa shree medical & general store was investigated, Among the brands available DOLO 650, Crocin tablet, paracetamol tablet was rapid moving and low cost drug

Student name: AARTHI S

Class: VII Sem B Pharm

Objective: To carryout market survey on Amoxicillin commercial brands



DESCRIPTION	INFERENCE
Different Brand Names	Plain 500, Potassium clavulanate, Cipmox 500, Amlox 250, novamox
Rapid Moving	Amlox, novamox
Active Ingredient	Amoxicillin
Expiry Duration	2-3 years from manufacturing
Dose Strength	Tablet 125mg, capsule 250-500mg
Cost per unit	500mg- 8rs, 250mg- 4rs
Type of Packing	blister
No of units sold per month	35 sheets
Age of Prescription	500mg- adults, 250mg-14 years

Conclusion: According to above conducted survey, A case on paracetamol in Shilpa shree medical & general store was investigated, Among the brands available Amlox, novamox was rapid moving and low cost drug.

Student name: SWETHA P

Class: VII Sem B Pharm

Objective: To carryout market survey on Albandazole commercial brands.

DESCRIPTION	INFERENCE
Different brand names.	Bandy
Which brand is moves rapidly and slow moving	Not much moving
Active ingredient	Albandazole
Expiry date	1 year
Dose strength	200mg
Cost per unit	20rs per strip
Type of packing	Packed in brown glass bottle
No. Of units sold per month	10 to 15 bottles
Age of prescription	5 and below

Conclusion: According to above conducted survey, A case on Albendazole in Srinivasa medical store wasinvestigated, Among the brands available Bandy was not much moving.

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