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PHARMA BEACON - VPCW EDITION

EXPERT DESK

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ANTIMICROBIAL RESISTANCE: A GLOBAL THREAT TO PUBLIC HEALTH

Antimicrobial resistance (AMR) poses an urgent global public health threat, with bacterial AMR directly causing 1.27 million deaths annually and contributing to nearly 5 million deaths in 2019. Physicians face escalating challenges as common infections become harder to treat due to resistance mechanisms in pathogens like Klebsiella pneumoniae, Escherichia coli, and Methicillin-Resistant Staphylococcus Aureus (MRSA), which show alarming resistance rates to first-line antibiotics. The WHO's 2024 Bacterial Priority Pathogens List highlights 24 high-priority organisms, including multidrug-resistant tuberculosis and Gram-negative bacteria resistant to last-resort antibiotics like carbapenems .

Impact of Antibiotic Resistance

The impact of antibiotic resistance in terms of mortality and of the public health cost is quite difficult to estimate. Cancer chemotherapy, organ transplantation, hip replacement surgery are few examples of modern medicine which depend on the availability of effective antibiotic drugs. And hence could not be performed without effective antibiotics. Also the economic impact of antibiotic resistance is difficult to quantify, as several types of consequences must be taken into account. Increased resistance leads to elevated costs associated with more expensive antibiotics.

Factors involved in the emergence and spread of antibiotic resistance:

1. Human medicine in community and in hospital
2. Animal production and agriculture and
3. The environmental compartment.

In conclusion, continuous efforts should be taken by the multidisciplinary core group, including physicians, pharmacists, microbiologist and epidemiologists to educate various members of society about antibiotic resistance. Without coordinated action, projections suggest AMR could cause 10 million annual deaths by 2050.

For clinicians, preserving existing antibiotics through judicious use and advocating for policy reforms are immediate priorities to avert a post-antibiotic era. This may be a very important strategy to overcome this global concern. If all members of society take on responsibility for maintaining the effectiveness of antibiotics and perform their role, minimization of antibiotic resistance can be successful.

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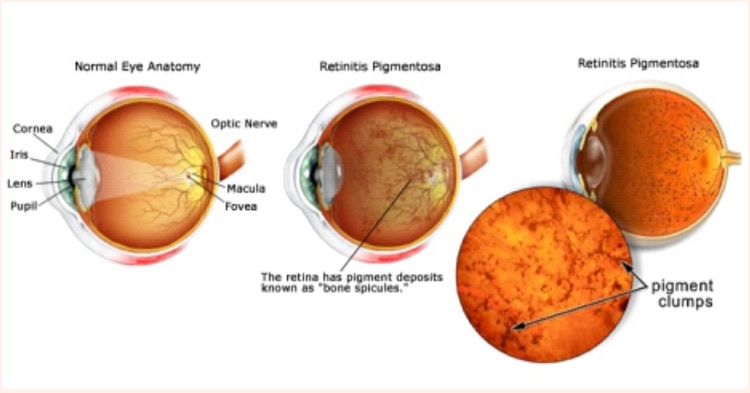
FROM BLOOD PRESSURE TO BLINDNESS: REPURPOSING RESERPINE FOR RETINAL DEGENERATION



A recent study led by researchers at the National Eye Institute (NEI), part of the U.S. National Institutes of Health (NIH), has identified Reserpine—a decades-old antihypertensive drug—as a potential neuroprotective agent for treating inherited retinal dystrophies, including Retinitis Pigmentosa (RP). Reserpine, originally approved in 1955 for managing high blood pressure, is no longer in clinical use due to adverse systemic effects. However, its pharmacological profile has gained renewed interest owing to its ability to preserve photoreceptor viability in preclinical models of retinal degeneration.

Retinitis pigmentosa and related inherited retinal dystrophies are characterized by progressive degeneration of photoreceptors—the retinal neurons responsible for detecting light and initiating visual signaling. These conditions are genetically heterogeneous, with over 100 genes and more than 1,000 mutations implicated. While gene therapies are under development, they are often mutation-specific, time-consuming to develop, and costly to implement.

Researcher extended their investigation to a rat model of dominant RP caused by a mutation in the rhodopsin (RHO) gene—a variant commonly observed in Irish American populations. In this study, reserpine administration preserved rod photoreceptor function, as evidenced by maintained photo transduction processes in treated animals. Notably, sex-specific effects were observed: female rats experienced more robust preservation of both rod and cone photoreceptors than their male counterparts.1,2 To mitigate the adverse effects historically associated with systemic reserpine use, the research team proposes local administration directly to the eye at ultra-low doses. As a small-molecule compound, reserpine is amenable to targeted ocular delivery, potentially minimizing systemic exposure and side effects.

This investigational compounds aimed to stall or slow vision loss in early or aggressive forms of inherited retinal disease while more definitive genetic interventions are being developed. The approach exemplifies the potential of drug repurposing—leveraging existing compounds with known safety profiles for novel therapeutic applications—and offers renewed hope for patients with currently untreatable retinal diseases.

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1. Song HB, Campello L, Mondal AK, Chen HY, English MA, Glen M, et al.,"Sex-specific attenuation of photoreceptor degeneration by reserpine in a rhodopsin P23H rat model of autosomal dominant retinitis pigmentosa". Published on 15th April 2025. eLife14:RP103888.
2. Swaroop A, Kim D, Forrest D. Transcriptional regulation of photoreceptor development and homeostasis in the mammalian retina Nat Rev Neurosci 2010. 11:563–76.

By

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BREAST FED vs BOTTLE FED
GUT MICROBIOTA MAY HOLD THE KEY TO PEDIATRIC BLOOD PRESSURE

An NIH-supported longitudinal observational study has found that greater diversity in the infant gut microbiome is associated with lower blood pressure in childhood, with the protective effect enhanced among children breastfed for at least six months. The findings were published in the Journal of the American Heart Association.

Researchers analyzed data from 526 children enrolled in a prospective birth cohort study in Denmark. Stool samples were collected at three time points—within the first week, at one month, and at one year of age—to assess the composition and diversity of the gut microbiota. Blood pressure measurements were then obtained at ages three and six.

Human milk oligosaccharides (HMOs), indigestible by the infant but fermentable by specific bacterial taxa such as Bifidobacterium infantis, are metabolized into short-chain fatty acids (SCFAs) that can influence vascular tone and systemic inflammation. SCFAs such as acetate and butyrate are known to support intestinal integrity and cardiovascular homeostasis.

In contrast, formula-fed infants may have gut microbial populations that metabolize host-derived mucins in the absence of HMOs, potentially disrupting gut barrier function and leading to increased intestinal permeability—a condition commonly referred to as “leaky gut.” This pathophysiologic state has been linked to low-grade systemic inflammation and elevated blood pressure.

Additionally, the presence of Helicobacter pylori in some infants was associated with higher blood pressure years later. H. pylori may be vertically transmitted and is known to induce chronic low-grade inflammation, further contributing to compromised gut integrity and cardiometabolic risk.

About 4% to 7% of children worldwide have high blood pressure, which can start when the fetus develops in the womb. Hence these finding carries important public health implications, as blood pressure trajectories established in childhood often persist into adulthood and contribute to long-term cardiovascular risk. So, the study underscores the critical role of promoting breastfeeding during infancy—not only to support the healthy development of the gut microbiome but also to foster improved cardiovascular outcomes throughout the life course."

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1. Liu, T.Stokholm, J.Zhang, M.Vinding, R.Sørensen, S. J.Zhao, N et al.,Infant gut Microbiota and childhood blood pressure: Prospective associations and the modifying role of breastfeeding. Journal of the American Heart Association.2025. 14(5), e037447.
2. 2.Crump C, Howell EA. Perinatal origins of cardiovascular health disparities across the life course. JAMA Pediatr. 2020;174:113.

By

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MONTHLY DRUG SAFETY ALERT

The preliminary analysis of Adverse Drug Reactions (ADRs) from the PvPI data base 2025, revealed that the following suspected drugs areas associated with the ADRs as given below.

S. No.	Suspected Drugs	Indication(s)	Adverse Drug Reactions
1.	Metronidazole	For the treatment of amoebiasis, urogenital trichomoniasis & giardiasis.	Acute Generalised Exanthematous Pustulosis (AGEP)
2.	Luliconazole	For the treatment of cutaneous mycosis viz. Tinea pedis, Tinea corporis and Tinea cruris.	Chloasma / Melasma
3.	Dalteparin	For the extended treatment of symptomatic Venous Thromboembolism (VTE), proximal Deep Vein Thrombosis (DVT) and/or Pulmonary Embolism (PE) to reduce the recurrence of VTE in patients with cancer.	Muscle spasms
4.	Gliclazide	Indicated for the treatment of all types of maturity onset diabetes, diabetes without or with obesity in adults.	Erythema multiforme
5.	Tramadol	For the treatment of severe acute and chronic pain, diagnostic measures and surgical pain.	Fixed Drug Eruption

Healthcare Professionals, Patients/Consumers are advised to closely monitor the possibility of the above ADRs associated with the use of above suspected drugs. If, such reactions are encountered, please report to the nearby ADR monitoring centre (SVMCH&RI, Tiruchengode)or send mail to our ADR Montoring Centre (svcpvmchamc@gmail.com) or NCC-PvPI, IPC by filling Suspected Adverse Drug Reactions Reporting Form / Medicines Side Effect Reporting Form for Consumer, through Android Mobile App "ADRPvPI"and PvPI Helpline No. 1800 - 180-3024.

REFERENCES

1. Home - Indian Pharmacopoeia Commission. [online] Available at: https://www.ipc.gov.in.

By

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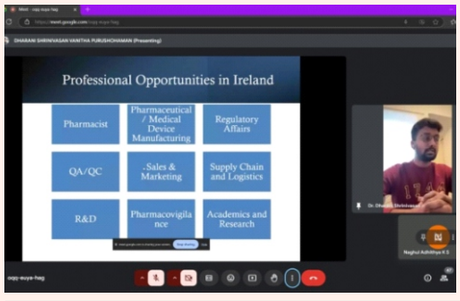
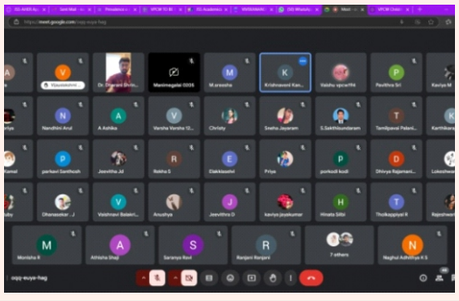
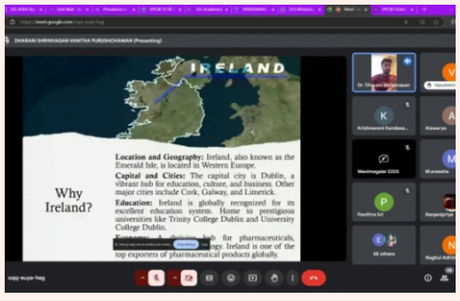
STUDENT OUTREACH ACTIVITIES







Department of Pharmacy Practice organised webinar on “Global Pharma Horizons: Your Gateway to Ireland’s Healthcare Industry” by Dr. Dharani Shrinivasan using Google meet on 07.01.2025.

Celebrated “Pongal” on 11.01.2025 at RTT ground. Performed traditional rituals, delicious sakkarai pongal and vibrant cultural events.

elebrated “Fresher’s day” on 21.01.2025 at Srinivasa mahal. Dr. I. Jegan was the chief guest for this event.

Conducted “Road Safety Awareness Rally” at Sankari on 22.01.2025. The event featured educational sessions, awareness campaigns, and community participation.



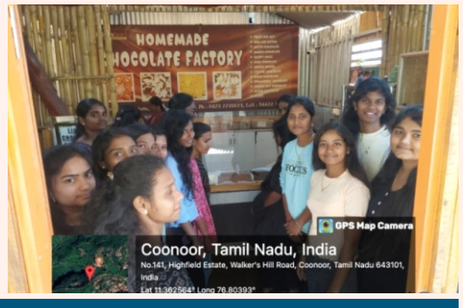
Observed “Republic day” at RTT campus on 26.01.2025. Honored India's democratic spirit with a flag hoisting ceremony, patriotic performances, and inspiring speeches.

Conducted “Siragai Viri Uyara Para” at Srinivasa mahal on 27.01.2025 to empower government school students, by guiding them toward promising career paths.


Observed World Cancer Day on 04.02.2025 by II B. Pharm at Erode Cancer Center and Holy Cross Matric Higher Secondary School, Kumarapalayam. The event likely included educational sessions, survivor stories, and community initiatives, emphasizing the theme "United by Unique"

I D. Pharm observed National Science Day on 28.02.2025 at our college.
Highlighted the importance of scientific innovation and discovery.

III B. Pharm Observed "National Pharmacy Education Day" on 06.03.2025 at our college. Emphasized the importance of pharmaceutical education, innovation, and entrepreneurship.

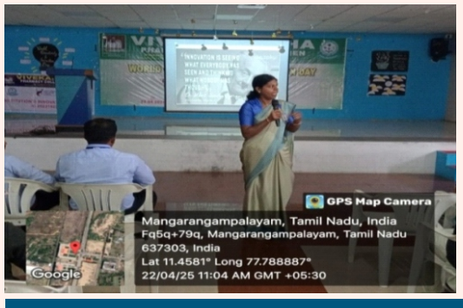


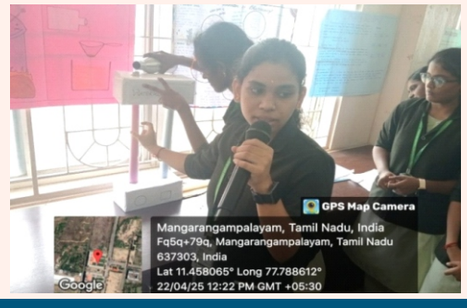
IV B. Pharm students went to an educational tour to Coonoor on 08.03.2025.

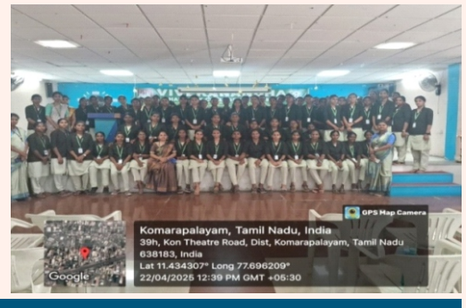
Conducted "Parents meeting" for final year B. Pharm students on 18.03.2025 at Srinivasa mahal.

Celebrated "Get Together" for final year B. Pharm students at Srinivasa mahal on 19.03.2025.

I B. Pharm observed “World Water Day” at VPCW seminar hall on 22.03.2025. The event likely featured awareness programs, expert discussions, and interactive sessions

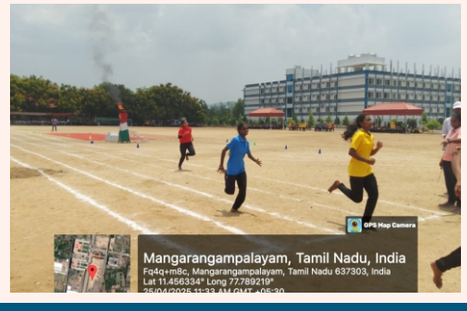






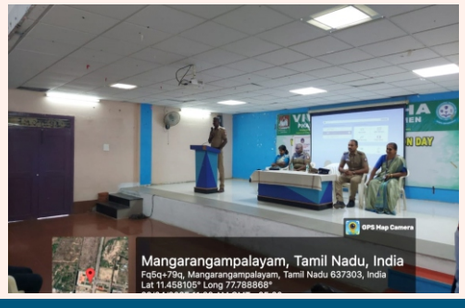
II B. Pharm observed “World Creativity and Innovation Day” at VPCW seminar hall on 22.04.2025. highlighted the importance of innovation and creative thinking in various fields.

Conducted “Cultural Day” at Srinivasa mahal on 23.04.2025 & 24.04.2025.



Conducted“Sports Day” at RTT ground on 25.04.2025.

Conducted “Annual Day” at Srinivasa mahal on 26.04.2025.



Organised Cyber-Security awareness program at VPCW seminar hall on 29.04.2025. Tamilnadu Cyber Security Police Team delivered awareness talk regarding online scams.

VIVEKANANDHA EDUCATIONAL INSTITUTIONS

"Vidhya Rathna"

Prof. Dr. M. KARUNANITHI, B.Pharm., M.S., Ph.D., D.Litt.,

Chairman & Secretary

TIRUCHENGODE CAMPUS

- ★ SWAMY VIVEKANANDHA MEDICAL COLLEGE HOSPITAL AND RESEARCH INSTITUTE
- ★ VIVEKANANDHA DENTAL COLLEGE FOR WOMEN
- ★ SWAMY VIVEKANANDHA COLLEGE OF PHARMACY
- ★ VIVEKANANDHA COLLEGE OF NURSING
- ★ VIVEKANANDHA SCHOOL OF ANM
- ★ SWAMY VIVEKANANDHA PHYSIOTHERAPY COLLEGE
- ★ VIVEKANANDHA ALLIED HEALTH SCIENCE COLLEGE (Co-Ed)
- ★ KRISHNA INSTITUTE OF OPTOMETRY AND RESEARCH
- ★ VIVEKANANDHA COLLEGE OF ENGINEERING FOR WOMEN (AUTONOMOUS)
- ★ VIVEKANANDHA COLLEGE OF TECHNOLOGY FOR WOMEN
- ★ VIVEKANANDHA INSTITUTE OF INFORMATION AND MANAGEMENT STUDIES
- ★ VIVEKANANDHA COLLEGE OF ARTS AND SCIENCES FOR WOMEN (AUTONOMOUS)
- ★ VIVEKANANDHA COLLEGE FOR WOMEN
- ★ VIVEKANANDHA COLLEGE OF EDUCATION FOR WOMEN
- ★ KRISHNA COLLEGE OF EDUCATION FOR WOMEN
- ★ KRISHNASHREE COLLEGE OF EDUCATION FOR WOMEN
- ★ VIVEKANANDHA VIDHYA BHAVAN MATRIC HIGHER SECONDARY SCHOOL
- ★ VIVEKANANDHA MEDICAL CARE HOSPITAL (VMCH)

SANKAGIRI CAMPUS

- ★ SWAMY VIVEKANANDHA NATUROPATHY AND YOGA MEDICAL COLLEGE (Co-Ed)
- ★ VIVEKANANDHA PHARMACY COLLEGE FOR WOMEN
- ★ VIVEKANANDHA NURSING COLLEGE FOR WOMEN
- ★ VIVEKANANDHA ANM SCHOOL
- ★ VIVEKANANDHA ARTS AND SCIENCE COLLEGE FOR WOMEN
- ★ RABINDHARANATH TAGORE COLLEGE OF EDUCATION FOR WOMEN
- ★ VISWABHARATHI COLLEGE OF EDUCATION FOR WOMEN

★★★

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