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# CLINICAL PHARMACY

## News Letter

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VIKAS INSTITUTE OF PHARMACEUTICAL SCIENCES  
Nidigatla, Road, Near Airport  
Rajahmundry ,533102.  
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# Clinical Pharmacy News Letter

A News letter published by Department Of Pharmacy Practice,  
Vikas institute of pharmaceutical sciences,  
Rajahmundry

## EDITORIAL BOARD :-

## Interconnected Health: A Case Report of Cardio Renal Syndrome

Cardio renal syndrome is a common and significant clinical problem affecting multiple vital organs like heart and kidney which are crucial for our body's normal health. Cardio renal syndrome is particularly common in patients who are suffering from heart or kidney diseases. In general it is estimated that 1-3 people per 1000 are affected by cardio renal syndrome and affects about 30-50% of patients with heart and kidney diseases. CRS is a condition where chronic or acute damage or dysfunction of one of the part of kidney may result in the acute or chronic damage to the other organ. It is more frequently seen in older adults because both cardiac and renal diseases tend to develop and worsen with advancing age and men have slightly higher prevalence than female due to higher incidence of cardiovascular diseases. CRS is more common in this group. CRS is broadly classified into five types based on the direction and chronicity of interaction between the heart and kidney. The prevalence of CRS type 1 is highest which is 50% followed by type 2 and type 4. Risk factors for CRS include diabetes, high blood pressure, a body mass index greater than 30, kidney disease and heart failure. It also involves some processes with many different factors affecting your kidneys and heart such as reduced cardiac output or heart failure, high blood pressure in your vena cava, minimized blood flow to kidney resulting in their damage. Treatment for cardio renal syndrome ranges from medicines to devices to transplants.

**Keywords:** Cardio-Renal Syndrome, Heart Failure, Vena cava.

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## INTRODUCTION

Heart and kidney, symbiotic guardians of our well-being, harmonize their functions to sustain our body's vitality[1] Heart is an organ that helps in supply oxygenated blood to various parts of the body and removes metabolic waste such as carbon dioxide from the body through blood circulation.[2] The kidneys play a crucial role in filtering blood, eliminating waste products, and regulating the balance of water, electrolytes, and essential minerals such as sodium, calcium, and potassium in the bloodstream.[3] Cardiac and renal diseases frequently occur together, as they share similar risk factors and can exacerbate each other's symptoms, presenting complex challenges in diagnosis and treatment.[4] Primary disorders of one of these two organs frequently lead to secondary dysfunction of the other, illustrating the interconnected nature of the cardiovascular and renal systems in health and disease.[5]

Cardio-renal syndrome is typically described as a pathophysiological condition involving the heart and kidneys, wherein the acute or chronic impairment of one organ can precipitate corresponding acute or chronic dysfunction in the other, reflecting their close interdependence in physiological function[6] It includes various subtypes based on underlying pathology and chronicity. Each subtype involves unique pathophysiology and management strategy.[7]

- Type - 1: a marked decline in cardiac function that leads to an acute decrease in renal function.
- Type - 2: chronic cardiac dysfunction that leads to a sustained reduction in renal function.
- Type - 3: a marked decline in renal function that leads to an acute reduction in cardiac function.
- Type - 4: a chronic reduction in kidney function that leads to chronic cardiac dysfunction.
- Type - 5: systemic diseases that leads to both cardiac and renal dysfunction.[7]

Among the various types of cardio-renal syndrome, type 1, marked by the acute deterioration of cardiac function causing acute kidney injury, stands out as the most common and frequently diagnosed subtype.[7] Diabetes and hypertension are prevalent causes that often contribute to the development of both heart and kidney diseases, emphasizing the need for comprehensive approaches to their prevention and treatment.[8] Failure of any one organ ultimately leads to damage or failure of the other organ.[1] When the heart is not pumping proficiently it becomes congested with blood results in pressure in the main vein which supply blood to the kidneys and leading to congestion of blood in the kidneys as well and they are subjected to reduced supply of oxygenated blood and results in oorgan damage.[9]

**CASE REPORT:**

A male patient of age 38 years admitted in the government general hospital with chief complaints of dyspnoea, back pain, abdominal pain along with ascites, and pedaloedema of both legs. Past medical history includes type 2 diabetes mellitus, hypertension. After a careful physical examination and laboratory assessment his ECG (electro cardio gram) was found to be abnormal with left ventricular failure and 2D echo revealed dilated cardiac chamber and severe left and right ventricular dysfunction along with mild mitral and tricuspid valve regurgitation. Renal function tests show that there is significant increase in creatinine and urea levels with creatinine - 2.4mg/dl and urea - 89mg/dl which indicates the kidney damage and liver function tests was abnormal with ranges of total bilirubin - 1.8mg/dl; direct bilirubin - 0.5mg/dl; SGOT - 99U/L; SGPT - 107U/L; ALP - 150U/L; albumin 3.0g/dl. Complete blood picture shows rreduced levels of haemoglobin, red blood cells and lymphocytes with increased levels of white blood cells and polymorphs. The ranges are as follows, haemoglobin - 8.5g/dl; RBCs - 2.91million/cum; WBCs - 13,570; polymorphs - 80%80 lymphocytes - 10%; eosinophil's - 3%; monocytes - 6%; platelets - 1.14lakhs. Ultrasound done to the scrotum and bilateral groin region shows skin over the scrotum appears thickened and oedematous which shows penile oedema, scrotal oedema and non-pitting type oedema of right thigh region. Serology test was done and report shows that HHBsAg was positive which indicates that the patient was hepatitis B positive.

Temperature	98.6F
PR	111 bpm
BP	110/70 mm of Hg
RR	22 bpm
SPO2	98 %

CVS	S1 S2 +
RR	Mild crepitation +
CNS	NAD
P/A	Ascites

## DISCUSSION

The functioning of heart and kidney and their synergy is very important for hemodynamic homeostasis of the body [9]. Any impairment in heart health could potentially disrupt kidney function, while any injury to the kidneys might compromise the heart's ability to function effectively [5]. Renal injury or damage can trigger kidney dysfunction manifesting as reduced urine output and causing fluid retention within the body.[10] The elevation of blood volume and increased pressure on blood vessel walls resulting from fluid retention ultimately leads to hypertension, prompting the heart to respond by thickening its muscle mass, a condition known as cardiac hypertrophy.[11] As a result of all these events heart becomes less efficient in pumping blood leading to heart failure and accumulate the greater chances of high risk of various cardiovascular events like heart attack, stroke, and etc.[12] The kidneys produce erythropoietin, a hormone essential for red blood cell production. Damage to the kidneys can result in anaemia and a decrease in the blood's oxygen-carrying capacity, placing additional strain on the heart as it works harder to compensate for the decreased oxygen supply.[13] When kidney function is compromised, the body's ability to remove toxins is reduced, resulting in the buildup of these harmful substances in the bloodstream. This accumulation can lead to endothelial dysfunction, ultimately impacting cardiovascular health negatively. [14]

In response to reduced blood flow to the kidneys due to cardiac abnormalities, the hormone renin is released, initiating the activation of the angiotensin II pathway through the renin-angiotensin-aldosterone system.[15] This stimulates the release of aldosterone from the adrenal gland and helps in the water and sodium retention in the kidneys, as a result volume is overloaded and exacerbates heart failure and further reduces the cardiac output.[9] This may result in multiple cycles of RAAS and further decreases the renal perfusion and finally reduction of glomerular filtration rate which impairs the functioning of kidneys.[16] Renal impairment is commonly present in 40-60% of patients with congestive heart failure (CHF), highlighting the frequent coexistence of these conditions.[17]

## CONCLUSION

Cardiorenal syndrome is a complex disorder that involves the interplay between the heart and kidneys, impacting both organs and often presenting challenges in diagnosis and management. Early diagnosis of renal function through tests within the first six months for patients with cardiac issues aids in the timely detection of potential renal complications, facilitating early intervention and treatment. We recommend that physicians include renal function tests and vital organ parameters in the diagnostic protocol for patients with heart and kidney diseases, as early detection and intervention can reduce disease severity and enhance patients' quality of life, ultimately decreasing disease rate.

## JUST A MINUTE [JAM]

# Nafithromycin

Nafithromycin is India's first indigenously developed antibiotic, introduced to combat antimicrobial resistance (AMR). Developed with support from the Biotechnology Industry Research Assistance Council (BIRAC), a unit of the Department of Biotechnology, it is marketed under the brand name "Miqnaf" by Wockhardt Pharmaceuticals.



### KEY NOTES

**Indications:** Nafithromycin is designed to treat Community-Acquired Bacterial Pneumonia (CABP) effectively targeting typical and atypical pathogens including drug-resistant bacteria.

**Efficacy and Dosage:** Clinical studies have shown that Nafithromycin is tenfold more potent than azithromycin, and it is possible to obtain similar results with a three-day treatment course. This increased potency makes it possible to have a shorter course of treatment, which is better for patient compliance.

### STATUS

**Development and Approval Status:** Nafithromycin represents 14 years of research effort and ₹500 crores invested in its development. The clinical trials were carried out in the U.S., Europe, and India. It awaits final approval for manufacturing and public use by CDSCO.

### SIGNIFICANCE

Nafithromycin is the first new antibiotic in its class developed globally in over 30 years. It is a much-needed solution to combat multi-drug-resistant pathogens, addressing a critical global health challenge responsible for prolonged illnesses and increased healthcare costs.

**Safety Profile:** Nafithromycin has minimal gastrointestinal side effects, does not cause any significant drug interactions, and is not affected by food intake, making it an easy option for patients.

# MONTHLY DRUG SAFETY ALERT

भारतीय भेषज संहिता आयोग

स्वास्थ्य एवं परिवार कल्याण मंत्रालय, भारत सरकार  
सेक्टर - २३, राज नगर,  
गाज़ियाबाद - २०१ ००२, उत्तर प्रदेश, भारत



INDIAN PHARMACOPOEIA COMMISSION

Ministry of Health & Family Welfare, Government of India  
Sector - 23, Raj Nagar  
Ghaziabad-201 002 (U.P.), INDIA

File No. P.17019/03/2024-DSA

Dated: December 26, 2024

## Monthly Drug Safety Alert

The analysis of Adverse Drug Reactions (ADRs) from the PvPI database revealed the following:

S. No.	Suspected Drugs	Indications	Adverse Drug Reaction
1	Beta-blockers (Metoprolol, Propranolol, Atenolol)	<b>Metoprolol:</b> For the treatment of essential hypertension in adults, functional heart disorders, migraine prophylaxis, cardiac arrhythmias, prevention of cardiac death and reinfarction after the acute phase of myocardial infarction, stable symptomatic CHF and angina pectoris. <b>Propranolol:</b> For the treatment of cardiac arrhythmias; tachycardia; hypertrophic obstructive cardiac myopathy; pheochromocytoma; thrombosis; management of angina; essential and renal hypertension; prophylaxis of migraine. <b>Atenolol:</b> For the treatment of hypertension, angina pectoris, cardiac arrhythmias.	Hypokalaemia

Healthcare Professionals, Patients/Consumers are advised to closely monitor the possibility of the above ADR associated with the use of above suspected drugs. If, such reaction is encountered, please report to the NCC-PvPI, IPC by filling of Suspected Adverse Drug Reactions Reporting Form/Medicines Side Effect Reporting Form for Consumer (<http://www.ipc.gov.in>), through PvPI Helpline No. 1800-180-3024.

INDIAN PHARMACOPOEIA  
(IP)  
Official Book of Drug Standards  
in India

IP REFERENCE SUBSTANCES  
(IRS) AND IMPURITIES  
Official Physical Standards for  
Assessing the Quality of Drugs

NATIONAL FORMULARY OF INDIA  
(NF)  
Reference Book to Promote Rational  
Use of Generic Medicines

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Tel No: +91-120-2783392, 2783400, 2783401;

E-mail: [lab.ipc@gov.in](mailto:lab.ipc@gov.in);

Website: [www.ipc.gov.in](http://www.ipc.gov.in)

# EVENT CORNER

## WORLD PHARMACIST DAY

Vikas Institute of Pharmaceutical Sciences (VIPS), Rajahmundry, celebrated World Pharmacist Day September 25th 2024 with enthusiasm, focusing on the theme “Pharmacist Role in Global Healthcare Needs.” Coordinated by K. Ramya, Dr. T.Sai Swapna, and Dr. Madhuri, the event featured engaging activities such as a video making competition, a village rally, a medical camp, and an elocution contest.

The video making competition, led by the IPASF team, showcased students' creativity in highlighting pharmacists' contributions. A rally in local villages and a medical camp at Madhurpudi emphasised proper medication use and provided free health screenings and counselling.

The elocution contest saw passionate participation, with K.Nirmalareddy and J. Dilleswararao winning first and second prizes, respectively. Judged by Mr.Uday Bhaskar and Dr. B. Madhu Harika, the presentations reflected students' dedication to global healthcare.

The event was a resounding success, fostering community awareness, creativity, and leadership among future pharmacists



# AWARENESS PROGRAM ON OVERSEAS EDUCATION

Vikas Institute of Pharmaceutical Sciences (VIPS) organized an Awareness Program on Overseas Educational Opportunities on 22nd October 2024. The session, led by Mr. E. Rama Rao, a Psychologist, Zoologist, and Senior Counsellor from Global Degree, provided students with valuable insights into pursuing higher education abroad. He covered key topics such as university selection, application processes, scholarships, and career prospects. The interactive session allowed students to ask questions, discuss concerns, and gain confidence in their academic and career choices. Mr. Rama Rao also emphasized the importance of effective communication, cultural adaptability, and personal development when studying abroad. The program, coordinated by K. Ramya and M. Anantha Lakshmi, was highly engaging and informative, equipping students with the knowledge to explore international education opportunities.



# WORLD PNEUMONIA DAY

Vikas Institute of Pharmaceutical Sciences observed World Pneumonia Day on November 12, 2024, to raise awareness about pneumonia and its prevention.

Organised by Dr. T.Sai Swapna and Ch. Sandhya Rani, the event featured elocution competitions and mock patient counselling sessions to engage students in promoting public health.

Highlights included eloquent presentations by winners Nirmala Reddy and A. Divya (3rd Pharm.D) and outstanding counselling by Pooja, Amrutha, Lohitha, and Mounika (4th Pharm.D). Vice Principals Dr. S. Muralidhar and Mr.V. Vasu Babu distributed prizes, while judges Mr. M. Madhu Babu and Dr. V. Satish praised the students' efforts.

The event successfully enhanced awareness, communication skills, and public health contributions among students.

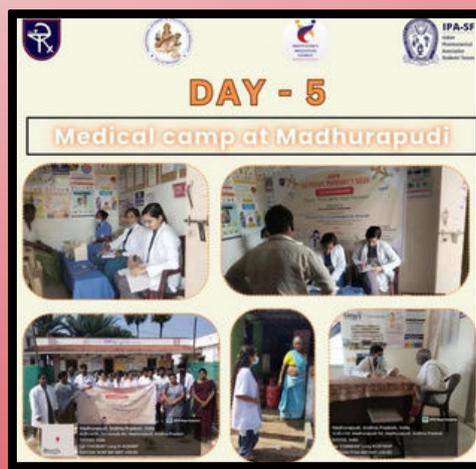
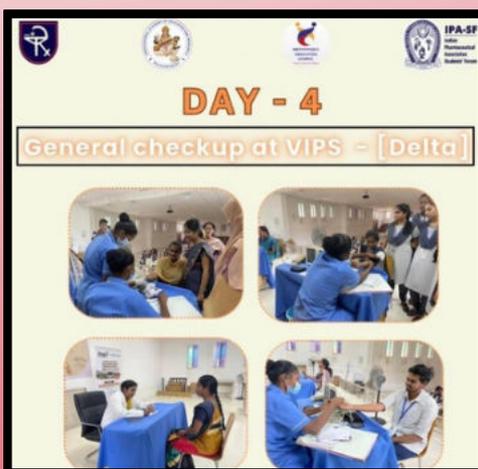
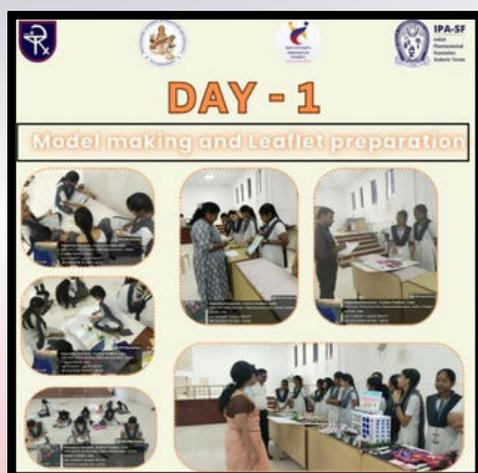


# NATIONAL PHARMACY WEEK

63rd National Pharmacy Week at VIPs: A Celebration of Teamwork & Innovation  
Vikas Institute of Pharmaceutical Sciences (VIPs), in collaboration with IPA-SF Vikas Local Branch and Delta Hospitals, celebrated the 63rd National Pharmacy Week (NPW) from 17th to 23rd November 2024 under the theme "Think Health, Think Pharmacy." The event featured competitions like leaflet preparation, model-making, debates, and a spell bee, along with health check-ups and a medical camp at Madhurapudi to promote community welfare.

Under the guidance of Dr. G. Sumalatha and Dr. T. Sai Swapna, and with leadership from Chairperson Varun and Vice-Chairperson Sasikar, the organizing team ensured a seamless execution. Lohitha, Pooja, Tejaswi, Amrutha, and Nikitha managed event logistics, while Sharat and Ravi Teja contributed through video editing and photography. Mahesh and Abhilash provided technical and logistical support, ensuring smooth coordination.

The event successfully highlighted the pharmacy profession's impact on healthcare, inspiring students to further contribute to the field through innovation and service.



# WORLD AIDS DAY AWARENESS CAMP

The Indian Pharmaceutical Association (IPA), Rajahmundry Local Branch, in collaboration with Vikas Institute of Pharmaceutical Sciences, organized an awareness camp as part of World AIDS Day 2024. With the theme "Take the Rights Path: My Health, My Right!", the program was conducted across the adopted villages of Nidigatla, Gadala, Kolamuru, Madhurapudi, and Burugupudi.

The camp aimed to educate villagers about HIV/AIDS, emphasizing that it is not a contagious disease. Through interactive sessions and informative materials, the initiative sought to dispel myths, reduce stigma, and promote understanding among the community.

Students and faculty from Vikas Institute of Pharmaceutical Sciences played an active role in this meaningful campaign, fostering awareness and empathy. The program successfully highlighted the need for education and community support to combat the challenges associated with HIV/AIDS.



# Publications from Department of Pharmacy Practice



International Journal of All Research Education and Scientific Methods (IJARESM),  
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## Evaluation of Clinical Manifestations and Need of Antibiotics Use in Dengue Patients: A Therapeutic Challenge at a Tertiary Care Hospital

V. Sathish Kumar<sup>1</sup>, K. Hemanth Kumar<sup>3</sup>, T. Sai Swapna<sup>2</sup>, B. Devi Vaishnavi<sup>3</sup>,  
Pooja<sup>3</sup>, G. Sumalatha<sup>4</sup>

<sup>1</sup>Associate professor, Department of pharmacy practice, Vikas institute of pharmaceutical sciences, Andhra Pradesh, India  
<sup>2</sup>Assistant professor, Department of pharmacy practice, Vikas institute of pharmaceutical sciences, Andhra Pradesh, India  
<sup>3</sup>Pharm.D, Department of pharmacy practice, Vikas institute of pharmaceutical sciences, Andhra Pradesh, India  
<sup>4</sup>Principal, Department of pharmacology, Vikas institute of pharmaceutical sciences, Andhra Pradesh, India

### ABSTRACT

**Background:** Dengue fever, caused by the dengue virus transmitted through the bite of infected Aedes mosquitoes, is a significant global health concern, particularly in tropical and subtropical regions. Antibiotics may be used effectively to treat dengue fever in individuals with comorbidities such as bacterial infections or other illnesses that necessitate antibiotic treatment. It is critical to distinguish between the viral basis of dengue and any associated bacterial infections or comorbidities that necessitate antibiotic therapy.

**Objectives:** The six months of prospective observational study was designed to assess the need of antibiotics in dengue positive patients. To evaluate the different clinical manifestations associated along with dengue fever.

**Result and Discussion:** Out of a total of 350 individuals who tested positive for dengue, there were 228 males, representing 65.14% of the cases, and 122 females, accounting for 34.85% of the cases. The 41-60 age category, there's a higher representation of males (68.15%) compared to females (31.85%). In the Antibiotic Group, females are significantly more represented, constituting approximately 62.50%, while males account for about 37.50% of the total. The P-values associated with the initial and final WBC counts are 0.493 and 0.649, respectively.

**Conclusion:** Antibiotic use should be judicious and based on specific clinical indications, considering the broader context of patient health and treatment response. Our findings suggest that there may not be a significant advantage in using antibiotics for the treatment of dengue compared to supportive care alone.

**Keywords:** dengue, thrombocytopenia, clinical manifestations, therapeutic challenge

### INTRODUCTION

Dengue fever, caused by the dengue virus transmitted through the bite of infected Aedes mosquitoes, is a significant global health concern, particularly in tropical and subtropical regions<sup>[1,2,3,4]</sup>. The clinical spectrum of dengue ranges from mild febrile illness to severe manifestations such as dengue hemorrhagic fever (DHF) and dengue shock syndrome (DSS), characterized by plasma leakage, thrombocytopenia, and hemorrhage<sup>[5,6,7,8,9]</sup>.

Management of dengue primarily involves supportive care, fluid management, and monitoring for complications<sup>[10]</sup>. One of the most widespread myths about dengue treatment is the constant use of antibiotics<sup>[11]</sup>. Dengue is a viral infection, and medications are not effective against viruses<sup>[12]</sup>. Antibiotics are frequently recommended empirically due to overlapping symptoms with bacterial infections and concerns about subsequent bacterial infections in severe dengue patients<sup>[13]</sup>. This approach promotes antibiotic abuse, antimicrobial resistance, and excessive healthcare expenses<sup>[14,15]</sup>. Dengue management continues to rely heavily on supportive care, such as hydration, fever control, and regular monitoring of vital signs<sup>[16]</sup>. Adequate fluid replenishment is critical for preventing dehydration and ensuring hemodynamic stability<sup>[17,18]</sup>. Antipyretics are used to lower fever and relieve symptoms, improving patient comfort<sup>[19]</sup>. Thrombocytopenia, a typical characteristic of dengue, increases the risk of bleeding complications<sup>[20,21]</sup>. Platelet transfusions are often recommended in situations of severe thrombocytopenia or bleeding symptoms<sup>[22]</sup>. Platelet transfusion in dengue should be reserved for severe patients

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## The Serotonin Hypothesis: An Umbrella Review of Depression Evidence

M. V. A. N. Varun Sharma<sup>1</sup>, Dr. Ch. P. S. R. Madhuri<sup>2</sup>, Dr. G. Sumalatha<sup>3</sup>

<sup>1</sup>V Pharm D Vikas Institute of Pharmaceutical Sciences, Rajahmundry.

<sup>2</sup>Assistant Professor, Department of Pharmacy Practice, Vikas Institute of Pharmaceutical Sciences, Rajahmundry.

<sup>3</sup>Principal and Professor in Department of Pharmacology, Vikas Institute of Pharmaceutical Sciences, Rajahmundry.

**Abstract:** Depression, or major depressive disorder (MDD), is a widespread mental health issue characterized by persistent sadness, hopelessness, and diminished interest in daily activities, affecting approximately 264 million individuals globally. It is a leading cause of disability, with regional variations influenced by cultural and socioeconomic factors. The serotonin hypothesis, proposed in the 1960s, suggests that serotonin imbalance in the brain contributes to depression, supported by the efficacy of serotonin-enhancing treatments like SSRIs. Neurobiological, pharmacological, and genetic studies have advanced understanding of serotonin's role in mood regulation. However, depression's complexity necessitates integrating serotonin-based insights with broader biological, psychological, and social frameworks. Emerging therapies and future research priorities, including genetic profiling and novel neuroimaging techniques, aim to improve diagnosis and treatment. An integrative approach offers a more nuanced understanding of depression, emphasizing the interplay between genetic, environmental, and neurochemical factors for advancing mental health care.

**Keywords:** Depression, Serotonin hypothesis, Mental health, Antidepressants, Mood regulation

### 1. Introduction

#### Overview of Depression as a Global Health Issue:

#### Definition and Symptoms of Depression:

Depression, also known as major depressive disorder (MDD), is a common and serious mental health condition characterized by persistent feelings of sadness, hopelessness, and a lack of interest or pleasure in daily activities.<sup>[1]</sup> Symptoms of depression can vary widely but often include fatigue, changes in appetite and sleep patterns, difficulty concentrating, feelings of worthlessness or excessive guilt, and recurrent thoughts of death or suicide.<sup>[2]</sup> (American Psychiatric Association, 2013). These symptoms must persist for at least two weeks to meet the diagnostic criteria for MDD.<sup>[3]</sup> (World Health Organization, 2020).

Depression affects people worldwide, with an estimated 264 million people suffering from the disorder globally.<sup>[4]</sup> (World Health Organization, 2020). It is a leading cause of disability and contributes significantly to the global burden of disease. In terms of regional prevalence, variations exist due to factors such as cultural differences, economic conditions, and availability of mental health resources.<sup>[5]</sup> For example, the prevalence of depression in high-income countries is reported to be around 5.5%, whereas in low- and middle-income countries, it ranges from 2.6% to 5.9%.<sup>[6]</sup> (Ferrari et al., 2013).

Depression significantly impacts individuals' quality of life, affecting their ability to function in various aspects of life, including work, social interactions, and self-care. It can strain family relationships, as individuals with depression may withdraw from loved ones or exhibit behaviors that are challenging to manage.<sup>[7]</sup> The societal impact is also profound, as depression can lead to increased healthcare costs, decreased productivity, and higher rates of disability

(Lépine & Briley, 2011).<sup>[8]</sup> Furthermore, depression is associated with a higher risk of chronic physical health conditions such as cardiovascular disease, diabetes, and obesity.<sup>[9]</sup> (Chapman et al., 2005).

#### Introduction to the Serotonin Hypothesis

#### Brief History and Basic Premise of the Serotonin Hypothesis

The serotonin hypothesis, first proposed in the 1960s, posits that an imbalance in serotonin levels in the brain is a primary factor in the development of depression.<sup>[10]</sup> (Coppen, 1967). Serotonin, a neurotransmitter, plays a crucial role in regulating mood, anxiety, and other functions. The hypothesis emerged from observations that drugs increasing serotonin levels, such as selective serotonin reuptake inhibitors (SSRIs), were effective in alleviating depressive symptoms.<sup>[11]</sup> (Katzman et al., 2021).

#### Importance of Serotonin in Mood Regulation

Serotonin is synthesized in the brain and intestines from the amino acid tryptophan. It is involved in numerous physiological processes, including mood regulation, sleep, appetite, and pain perception.<sup>[12]</sup> (Berger et al., 2009). Serotonin exerts its effects by binding to various receptors, which are distributed throughout the brain. Dysregulation of the serotonergic system has been implicated in the pathophysiology of depression, suggesting that maintaining optimal serotonin levels is essential for emotional stability.<sup>[13]</sup> (Coven & Browning, 2015).

#### Initial Observations That Led to the Hypothesis

The initial observations that led to the serotonin hypothesis stemmed from studies on antidepressants and their mechanisms of action. For instance, the discovery that tricyclic antidepressants and monoamine oxidase inhibitors increased serotonin levels provided early support for the hypothesis. Further research demonstrated that depletion of

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# VIPS

