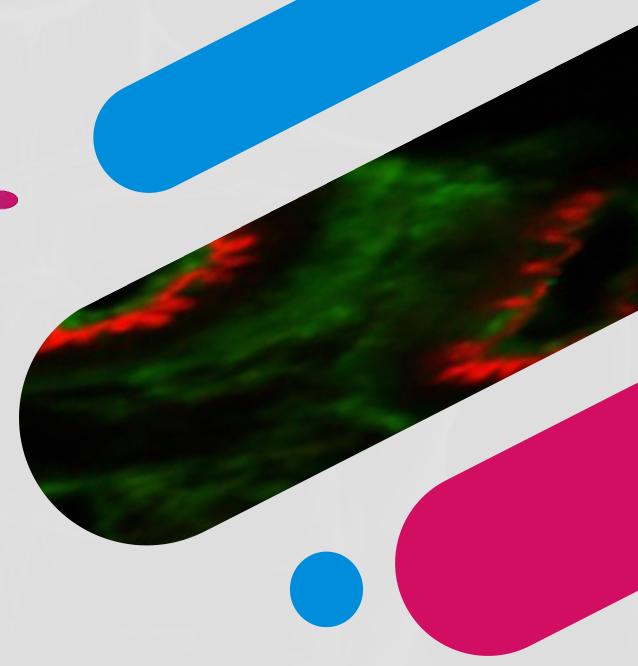


Corporate Presentation March 2024



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PHARMAZZ AT A GLANCE



Two first-in-class drug candidates with positive Phase 3 data in acute cerebral ischemic stroke and hypovolemic shock

SOVATELTIDE



- A neuroprotective, neuroregenerative, endothelin-B agonist for acute cerebral ischemic stroke
- Phase 3 data showed statistically significant clinically meaningful improvement in key neurological outcomes
- Approved for marketing in India; partnership with Sun Pharmaceuticals, >15,000 patients treated since launch on September 14, 2023.
- US IND for Phase 3 trial in acute cerebral ischemic stroke approved by the FDA.
- A Special Protocol Assessment agreement was reached with the FDA for a Phase 3 trial of sovateltide to treat stroke
- Enrolling patients for phase II Hypoxic-Ischemic Encephalopathy

CENTHAQUINE



- A resuscitative agent without arterial constriction for hypovolemic shock
- Promising results, improved stroke volume, cardiac output, and survival
- Approved for marketing in India; partnership with Dr. Reddy's Laboratory for sales and distribution in India
- US IND for Phase 3 approved for hypovolemic shock

SALES & DISTRIBUTION



• Sun Pharmaceuticals markets Sovateltide under its brand Tyvalzi[™] in India





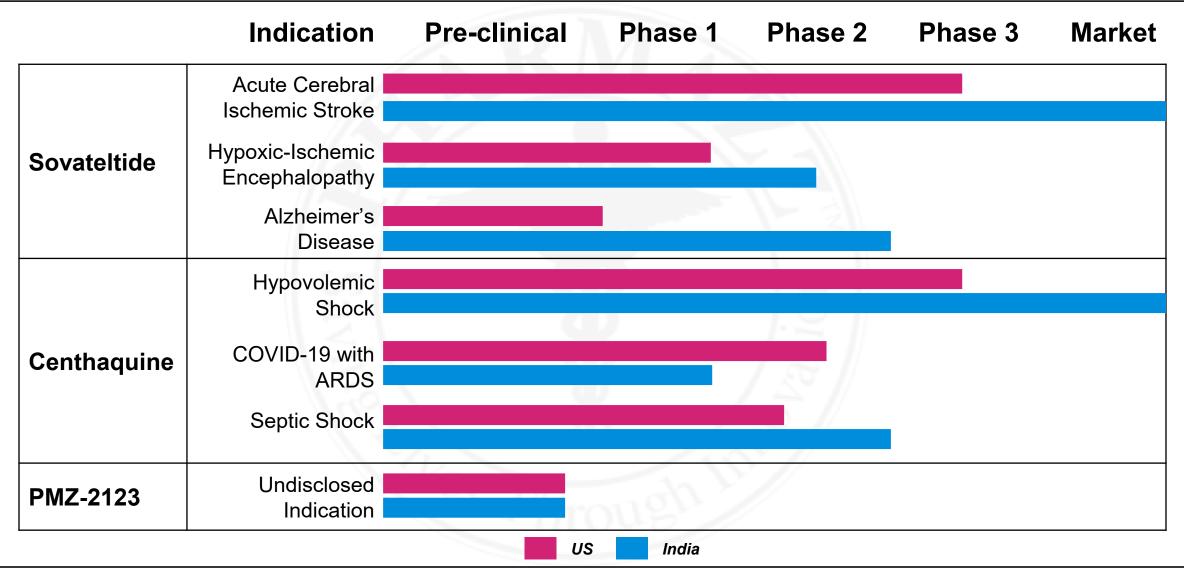
Centhaquine, branded as Lyfaquin® in India, marketed by Dr. Reddy's Laboratory





Product Pipeline

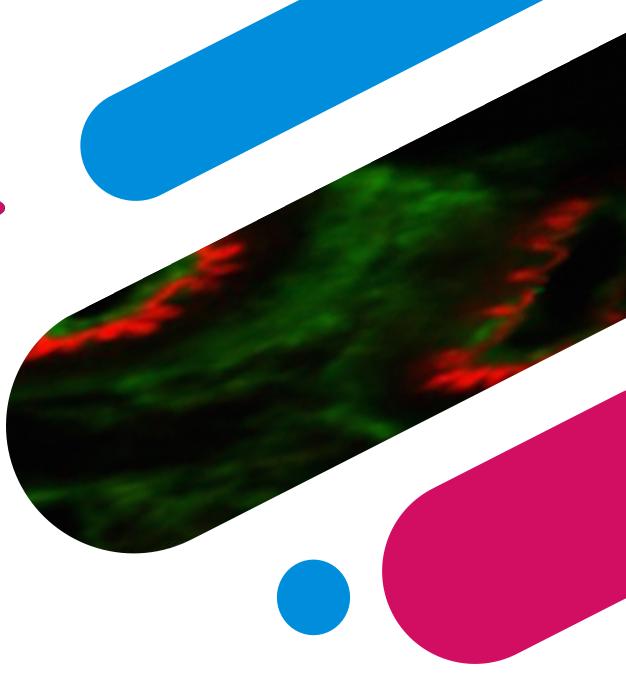




Sovateltide

The first drug candidate to demonstrate statistically significant results in acute cerebral ischemic stroke since tPA





Sovateltide: Phase 3 Trial Results



Sovateltide met Key Primary Endpoints

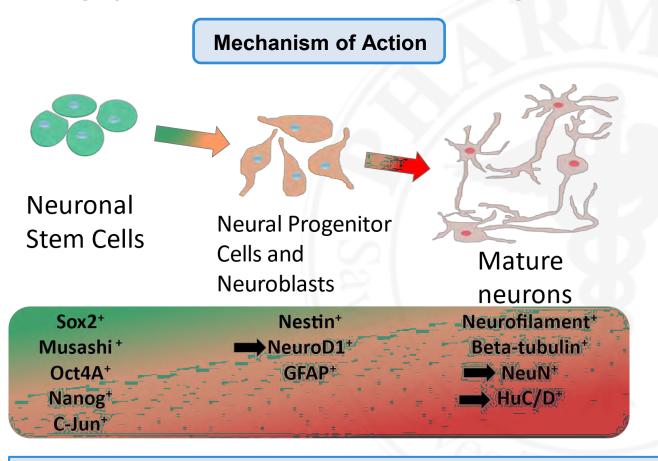
Primary Outcomes	Control (N=70)	Sovateltide (N=67)	Treatment Effect	P Value
Modified Rankin scale at 90 days (Median Score (IQR))	2.00 (1.00 to 3.00)	1.00 (0.00 to 2.00)	Mean diff. = -0.622 95% CI -1.078 to -0.167	0.0078
NIHSS scale at 90 days (Median Score (IQR))	3.00 (0.00 to 6.00)	1.00 (0.00 to 3.00)	Mean diff. = –1.586 95% CI –2.600 to –0.573	0.0024
Barthel Index at 90 days (Median Score (IQR))	85.00 (60.0 to 100.0)	95.00 (80.0 to 100.0)	Mean diff. = 10.190 95% CI 2.375 to 18.000	0.0110
Improvement of ≥2 on Modified Rankin scale score at 90 days	52.86% (N=37)	76.12% (N=51)	Odds 2.843 95% CI 1.368 to 6.015	0.0045
Improvement of ≥6 points on the NIHSS at 90 days	64.29% (N=45)	82.09% (N=55)	Odds 2.546 95% CI 1.176 to 5.798	0.0190
Improvement of ≥40 points on the Barthel Index at 90 days	61.43% (N=43)	76.12% (N=51)	Odds 2.001 95% CI 0.938 to 4.276	0.0640

Note: IQR= Interquartile Range

Sovateltide: Product Overview



A highly selective endothelin-B receptor agonist



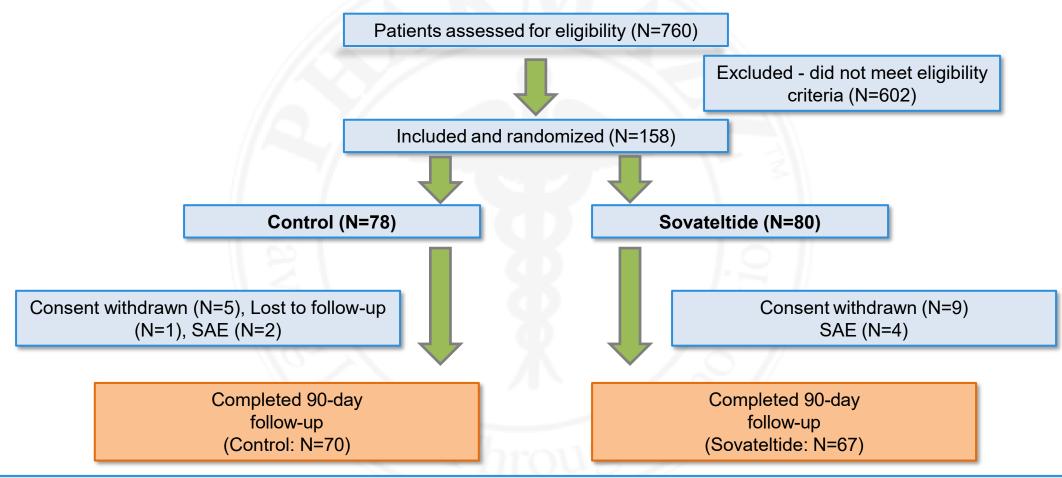
- Increases cerebral blood flow and has anti-apoptotic activity. Protects neural mitochondria and enhances their biogenesis
- Produces neurovascular remodeling through the formation of new neurons and blood vessels
- Significantly reduces infarct volume and improves neurological outcomes in an animal model of ACIS*

Sovateltide enhances the expression of markers for neural progenitor cells and neuronal cells, but not the stem cell markers

Sovateltide: Phase 3 Subject Recruitment



The Phase 3 trial was conducted in 18 centers, with 58.2% patients enrolled from 12 sites having more than 300 beds with at least 40 ICU beds



Several centers have participated in global clinical trials (results published in well recognized journals)

Sovateltide: Phase 3 Trial Patient Demographics



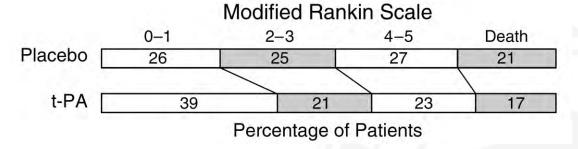
Below are the demographics of the patients enrolled in the Phase 3 trial of Sovateltide

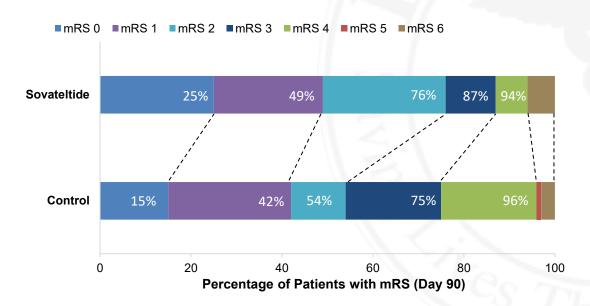
Variable	Sovateltide (N=80)	Control (N=78)
Mean Age (years)	55.78	59.27
Mean Body Weight (Kg)	65.75	65.56
Male Sex (number, %)	53, 66.2%	48, 61.5%
Median NIHSS at Baseline (IQR)	9 (7 to 12)	10 (8 to 13)
Median ASPECTS (IQR)	8 (7 to 9)	8 (7 to 9)
Thrombolytic Therapy (number, %)	9, 11.2%	20, 25.6%
Large Artery Atherosclerosis (number, %)	37, 46.25%	29, 37.17%
Median Interval (hours) between of stroke onset and treatment (IQR)	18.58 (11.8 to 23.1)	19.71 (12.4 to 23.3)

Sovateltide: Additional Trial Results



Ordinal shift in mRS across the range at day 90 compared to the rt-PA stroke study





An absolute increase in favorable outcome of <u>9%</u> was observed with t-PA in patients with mRS of 0 to 3

Sovateltide: Meets the key primary endpoint of mRS 0 to 2 at 90 days (p=0.0016)

An absolute increase in favorable outcome of <u>12%</u> was observed with Sovateltide in patients with mRS of 0 to 3

Number Needed to Treat (NNT) with Sovateltide is 5 compared to rt-PA of 10

Full recovery Sovateltide in at least 10% more patients compared to standard treatment

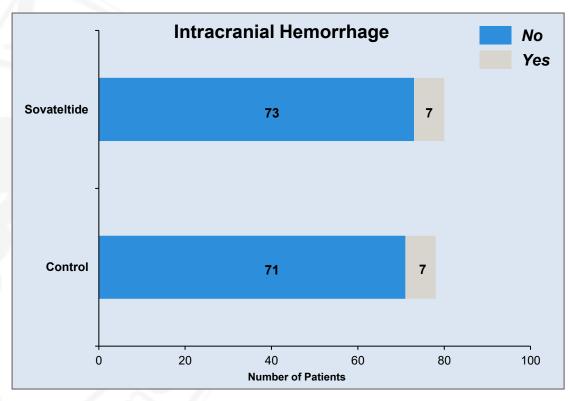
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Sovateltide: Adverse Events



Adverse events observed in the Phase 3 Study of Sovateltide are presented below

	Control (N=78) 33 adverse events in 24 patients	Sovateltide (N=80) 27 adverse events in 15 patients
Serious	2 events in 2 patients • Death (2)	5 events in 5 patients • Death (4) • Hyponatremia (1)
	22 events in 16 patients • Fever (5 events in 2 patients) • Hypertension (2 events in 2 patients) • Cold (2 events in 2 patients) • Headache (1) • Cough (1) • Pruritus (1) • Vomiting (1) • Hepatitis (1) • Hypocalcemia (1) • Hypokalemia (1) • Hypotension (1) • Lower respiratory tract infection (1) • Urinary tract infection (1) • Constipation (1) • Itching (1) • Body pain (1)	19 events in 7 patients Hypertension (3 events in 3 patients) Vomiting (2 events in 2 patients) Dizziness (2 events in 2 patients) Breathlessness (1) Cough (1) Headache (1) Hypotension (1) Tachypnoea (1) Rash (1) Urinary Incontinence (1) Sepsis (1) Septic shock (1) Fever (1) Increased Alkaline Phosphatase (1) Depression (1)
Mild	 9 events in 6 patients Abdominal pain (3 events in 3 patients) Fever (1) Headache (1) Cough (1) Sclera discoloration (1) Burning sensation in feet (1) Facial & pedal edema (1) 	3 events in 3 patients • Dyspnea (1) • Chills (1) • Back pain (1)

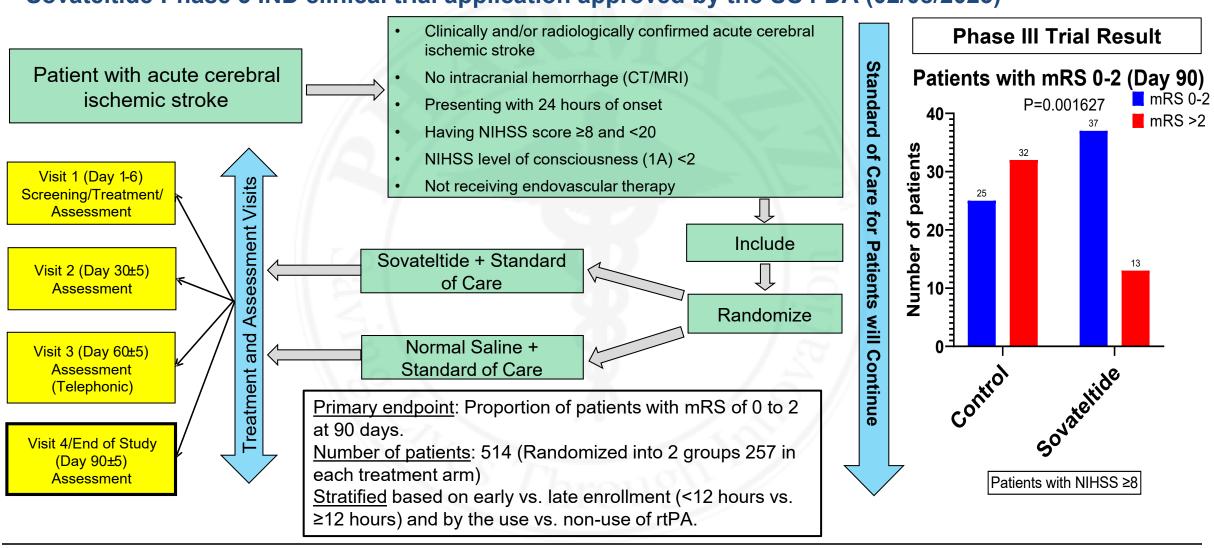


Chi-square, df		0.0025, 1
	Control	8.97%
	Sovateltide	8.75%
	P-Value	0.9604

Sovateltide: SPA agreement with US FDA for Phase 3 Trial



Sovateltide Phase 3 IND clinical trial application approved by the US FDA (02/08/2023)



Sovateltide: Key Differences In Study Protocol



Differences and similarities between India and US studies

Parameter	US Study (Special Protocol Assessment)	India Study	
Primary endpoint	The proportion of patients with mRS of 0-2 at 90 days	The proportion of patients with improved neurological outcomes (mRS, NIHSS, BI) at 90 days.	
Inclusion criteria	Age 18-80, Either sex; Ischemic stroke; Within 24 hours of stroke onset; NIHSS ≥8 to <20;	Age 18-78, Either sex; Ischemic stroke; Within 24 hours of stroke onset; NIHSS >5;	
Exclusion criterion	Endovascular therapy, surgical intervention, intracranial hemorrhage, comatose, pregnancy	Endovascular therapy, surgical intervention, intracranial hemorrhage, comatose, pregnancy	
Sample size; Randomization; Time from onset of stroke	514; 1:1 randomization; 50% within 12 hours (minimum 200 (40%) patients)	158; 1:1 randomization; within 12 hours 24% (38, 17 control and 21 sovateltide) patients	
Interim analysis	No interim analysis	Trial complete, approved for marketing	
Data analysis (Statistical Analysis Plan (SAP))	Multiple imputation for missing data, intention-to-treat (ITT) patients. SAP approved by FDA	No SAP. Table below is the data analyzed as per SAP with FDA, multiple imputation + ITT patients	
Standard of care	SOC (thrombolytics, anti-coagulants, anti- hypertensive, anti-diabetic, mannitol, and other medication as needed)	SOC (thrombolytics, anti-coagulants, anti- hypertensive, anti-diabetic, mannitol, and other medication as needed)	

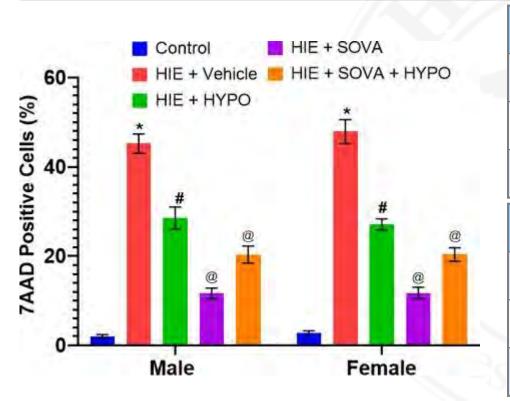
Data of 158 patients analyzed with imputation as per SAP with FDA	Control	Sovateltide	P value
Primary end point: Number of patients with mRS of 0-2 at 90 days	53.58% (N=42 out of 78)	78.75% (N=63 out of 80)	0.0009
Secondary end point: Number of patients with NIHSS of 0-5 at 90 days	67.95% (N=53 out of 78)	85.00% (N=68 out of 80)	0.0114

Sovateltide: Hypoxic-Ischemic Encephalopathy



Currently therapeutic hypothermia is the only approved treatment

The incidence of HIE ranges from 2-4/1000 live births in developed countries and as high as 26/1000 live births in developing countries. Up to 25% of neonates diagnosed with HIE result in death and around 35% have long-term neurodevelopmental sequelae



Tukey's multiple comparisons test	Mean Diff.	95.00% CI of Diff.	Summary	P-Value
Male: Control vs. HIE + Vehicle	-43.17	-51.37 to -34.96	*	<0.0001
Male: HIE + Vehicle vs. HIE + HYPO	16.63	8.425 to 24.84	#	<0.0001
Male: HIE + HYPO vs. HIE + SOVA	16.91	8.705 to 25.12	@	<0.0001

Tukey's multiple comparisons test	Mean Diff.	95.00% CI of Diff.	Summary	P-Value
Female: Control vs. HIE + Vehicle	-45.21	-53.42 to -37.01	*	<0.0001
Female: HIE + Vehicle vs. HIE + HYPO	20.83	12.62 to 29.03	#	<0.0001
Female: HIE + HYPO vs. HIE + SOVA	15.38	7.170 to 23.58	@	<0.0001

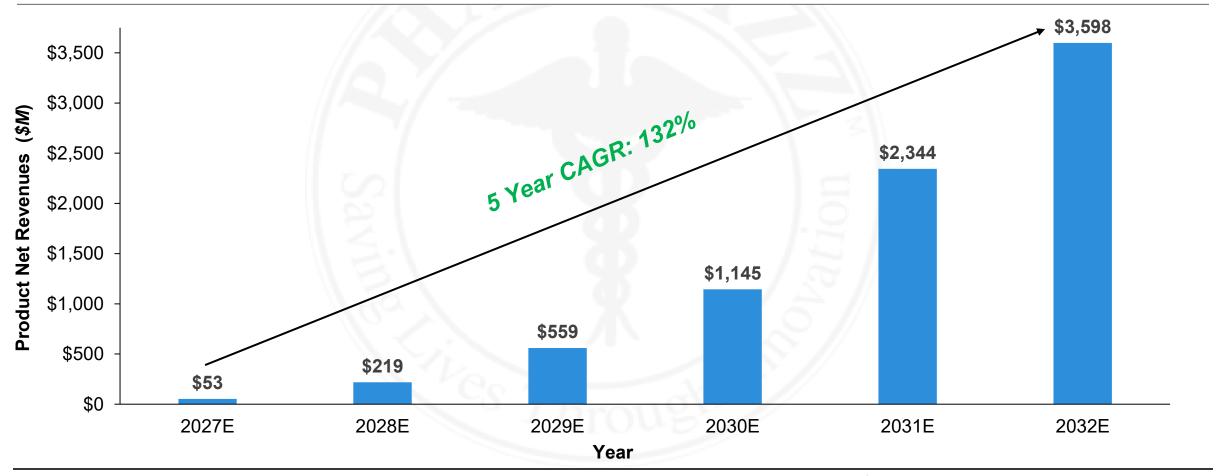
Sovateltide has neuroprotective effects and significantly reduced number of apoptotic cells

Acute Cerebral Ischemic Stroke - US Market Opportunity



The market opportunity of Sovateltide for acute cerebral ischemic stroke in the US is estimated to achieve net revenues of \$3.6B by 2032(1)

Sovateltide Revenue Forecast in the US (2027E - 2032E)

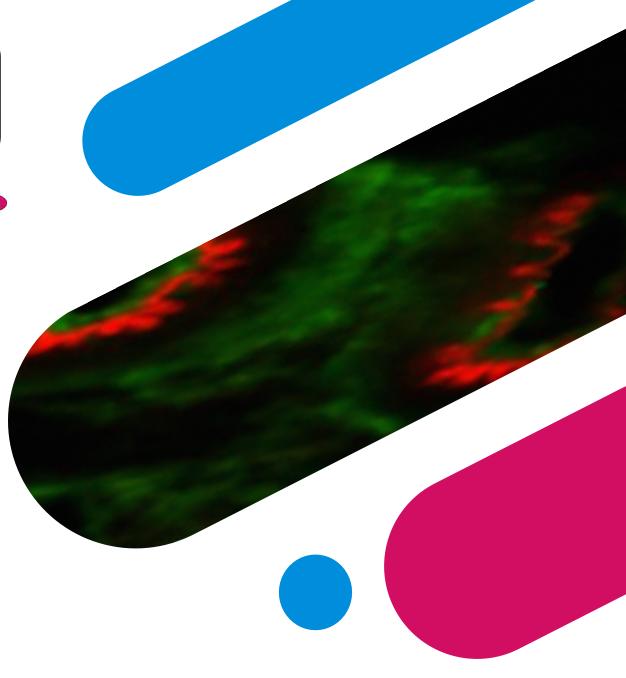


^{1.} Source: Pharmazz, Inc. Proprietary Research. Key Assumptions: Stroke patients per year = 795,000; patients eligible for Sovateltide treatment 464,000; price per patient \$22,500 with 2% annual increase; market penetration from 2.5% to 40% over 9 years. 15

Centhaquine

A resuscitative agent that is free of arterial constriction





Centhaquine: Hypovolemic / Hemorrhagic Shock



Hypovolemic / Hemorrhagic Shock is a life-threatening condition with high mortality rates. The annual incidence is 0.3 to 0.7 per 1,000 in the US with a 15% to 20% mortality rate

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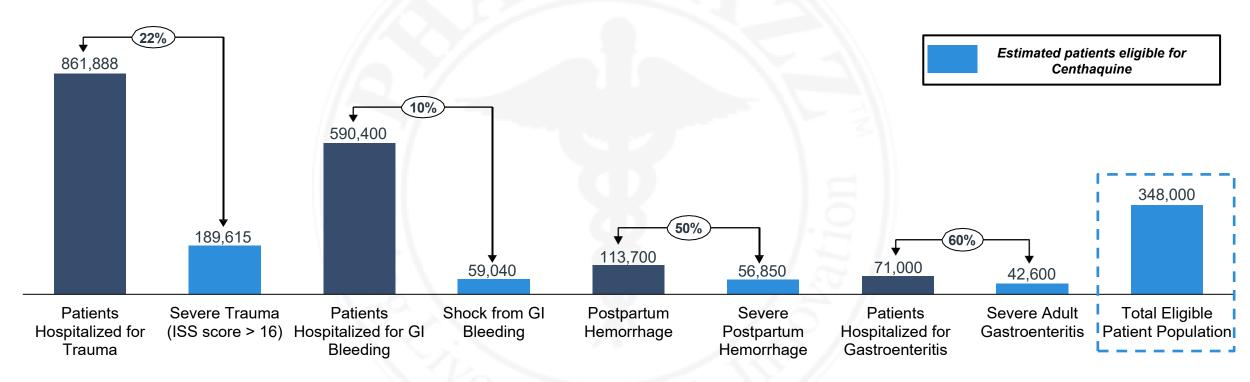
Decreased Cardiac Output	Caused by severe blood or fluid loss	Blood Pressure	
Hypoperfusion of Organs	Due to poor cardiac output and perfusion of vital organs	Oxygen Levels	
Multiple Organ Failure	This is the critical driver of mortality	Organ Failure	
DEATH			

Centhaquine: Market Sizing



Every year ~1.7 Million Americans suffer hypovolemic shock, of which 348,000 suffer severe symptoms and are therefore eligible for Centhaquine⁽¹⁾

Current Annual Incidence of Hypovolemic Shock in the US



Severe trauma, GI bleeding, postpartum hemorrhages, and gastroenteritis are the primary triggers for severe hypovolemic shock among adults in the US (excluding hypovolemia from other shock etiologies)

^{1.} Source: IQVIA Inc. Reference: Eastridge et al. 2019 Journal of AABB; Marshall et al. 2017 Am J Obstet Gynecol; Zhou et al. 2008 AHRQ; Standl et al. 2018 Dtsch Arztebl Int; National Trauma Databank 2016 Annual Report (ACS)

Centhaquine: Current Treatment Protocol



The current treatment protocol for hypovolemic shock includes a mix of fluid replacement and vasopressors

Current Treatment: Hypovolemic / Hemorrhagic Shock

Fluid Replenishment: Colloid / Crystalloid Solutions +/- Blood Products



If fluids insufficient: Vasopressors

Challenges with Current Treatment Protocol

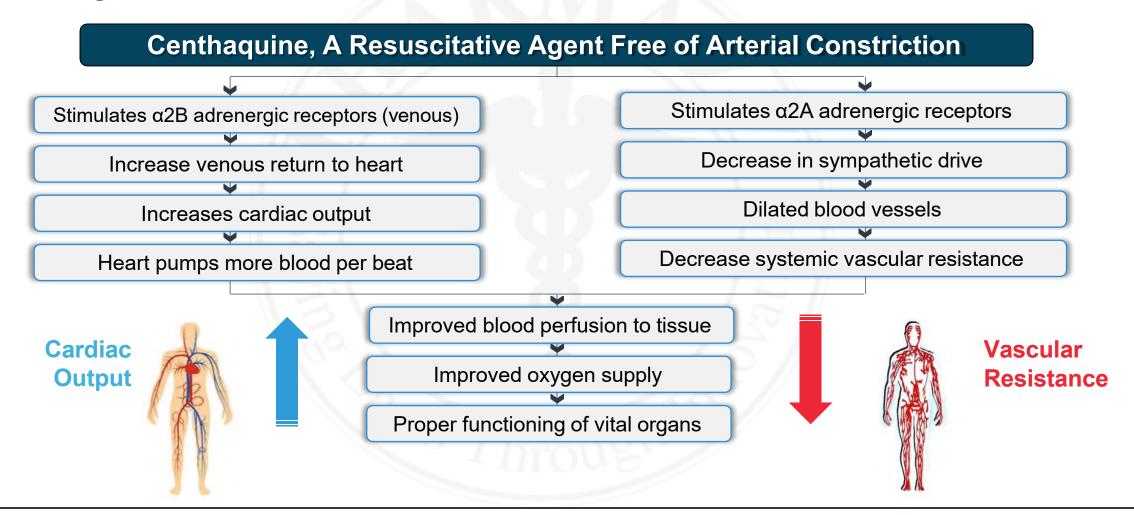
- Arterial constriction, reduced tissue blood perfusion
- Cardiac Arrhythmias
- Fluid Extravasation
- Vasopressor Infusion requires careful titration

The administration of Centhaquine does not require the insertion of a Central Venous Line (peripheral IV administration instead)

Centhaquine: Mechanism of Action



Centhaquine's MOA is distinct among resuscitative agents as it increases cardiac output while decreasing vascular resistance



Centhaquine: Phase 3 Trial Results



Centhaquine's Phase 3 trial in India met all four primary efficacy endpoints. The trial's secondary endpoint, 28-day mortality, also trended toward benefit

Study Design Summary

Key Parameters	Overview	
Treatment Arms	 71 patients: experimental arm: Centhaquine + standard of care 34 patients: comparator arm: standard of care 	
Dosage	Centhaquine administered at 0.01mg/kg, i.v. in 100 mL of normal saline	
Efficacy Assessment	SBP, DBP, Blood Lactate, base-deficit Secondary endpoint: 28-day Mortality	

Phase 3 Primary and Secondary Endpoints

Endpoints	Results (%	P Value	
	Control	Centhaquine	
SBP ≥ 110 mmHg at 24 hrs.	60.6	79.7*	P=0.0444
DBP ≥ 70 mmHg at 24 hrs.	51.5	76.6*	P=0.0122
Blood Lactate of ≤ 1.5	46.9	69.4*	P=0.0336
Base-Deficit <- 2.0 (mmol/L)	43.8	69.8*	P=0.0137
28-day Mortality	11.8	2.94	P=0.0742

Clinical Trials Identifier: CTRI/2019/01/017196 and NCT04045327

Centhaquine: Phase 3 Trial Results (Continued)



The Indian Phase 3 study showed a ~75% reduction in mortality. Meta-analysis of Phase 2 and 3 data reach statistical significance

Additionally, a prospective, multi-centric, open-labeled study of 400 patients to assess the safety and efficacy of centhaquine is ongoing, more than 200 patients enrolled

Meta-analysis of Phase 2 and 3 data (similar inclusion criteria)		
Phase 2 + 3 Control (N=56)	10.71% (6)	
Phase 2 + 3 Centhaquine (N=91)	2.20% (2)	
Odds Ratio 5.340 (95% CI 1.27-26.50)	P=0.03	

We believe the larger trial size of 430 patients planned for the US Phase 3 trial is likely to produce statistically significant results in 28-day mortality

Centhaquine: Phase 3 Trial Protocol



Centhaquine's Phase 3 IND approved, and protocol agreed to by the FDA

Study Design			
Design Parameters	Multi-Center, Randomized, Double- Blinded, Placebo-controlled		
Dosage	0.01 mg/kg of Centhaquine + Standard of Care		
No. of Participants	430 patients, randomly assigned equally to both arms		
Time Frame	Enrollment period 12 months and total duration 24 months		

Primary Endpoint

• All cause mortality at day 28

Secondary Endpoints

- Mortality 60 days
- Ventilator free days
- Days in hospital
- Days in ICU
- Days on organ support

Exploratory Endpoints

- Systolic and diastolic blood pressure
- Blood lactate
- · Amount of fluid or blood infused
- Change in Multiple Organ Dysfunction Syndrome score

Centhaquine: Key Differences In Study Protocol



Differences between India and US studies focus patient population to those most likely to benefit

Parameter	US Study	India Study
Primary endpoint	All-cause mortality at 28 days	SBP, DBP, blood lactate & base deficit
Inclusion criteria	SBP ≤ 90 mm Hg, blood lactate > 2 mmol/L and receiving SOC	SBP ≤ 90 mm Hg, blood lactate > 2 mmol/L and receiving SOC
Exclusion criterion	Exclude if hypovolemic shock etiology is unavailable	Etiology of hypovolemic shock not specified
Sample size	430 (assuming 7% reduction in mortality and achieving statistical significance at 95% CI)	105
Randomization	1:1 Randomization	2:1 Randomization
Interim analysis	For futility (p ≤ 0.435) and efficacy (p ≤ 0.003)	Does not specify details
Standard of care	Crystalloids, Colloids, Blood Products, Vasopressors	Crystalloids, Colloids, Blood Products, Vasopressors

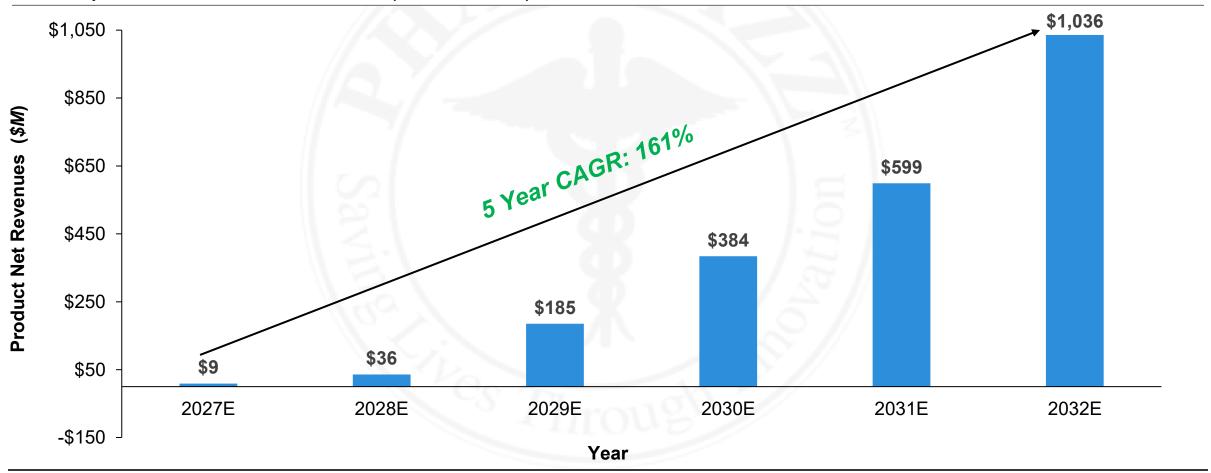
- Majority of patients enrolled were hemorrhagic shock: 65 (45 in Centhaquine, 20 in control); Number of patients with fluid loss: 37 (23 in Centhaquine, 14 in control)
- Coagulopathy, acidosis, and hypothermia make a deadly cycle of a lethal triad in patients with acute hemorrhage. Centhaquine resuscitation within the Golden Hour is likely to be more effective in attenuating the lethal triad than missing the Golden Hour.
- Literature¹ suggests higher mortality in the control group in the US vs. India due to inclusion of patients with severe hemorrhage. Expect greater reduction in mortality.

Hypovolemic Shock - US Market Opportunity



The market opportunity of Centhaquine for hypovolemic shock in the US is estimated to <u>achieve net</u> revenues of ~\$1.0B by 2032⁽¹⁾

Centhaquine Revenue Forecast in the US (2027E - 2032E)

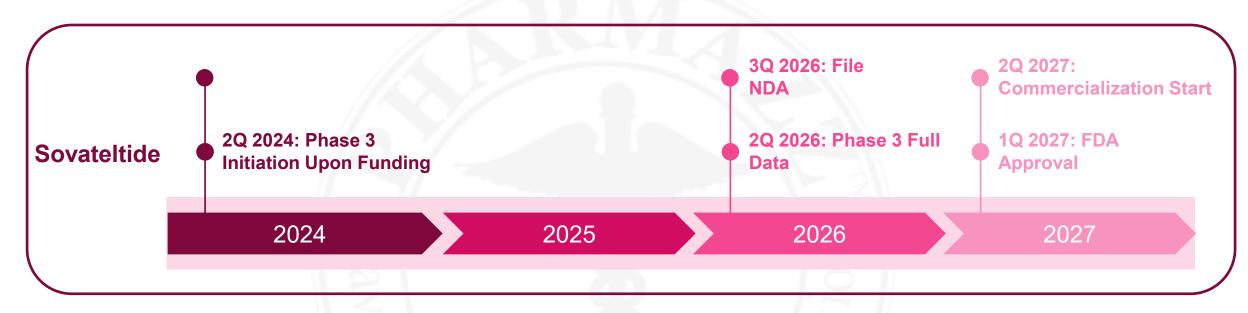


^{1.} Source: IQVIA Inc. Key Assumptions: Severe Hypovolemic Shock patients per year = 350,000; price per patient \$8,800 with 2% annual increase; market penetration from 1.0% to 40% over 9 years. Reference Company Websites, Clinicaltrials.gov.

Upcoming Milestones



\$30M projected to fund through Sovateltide commercialization

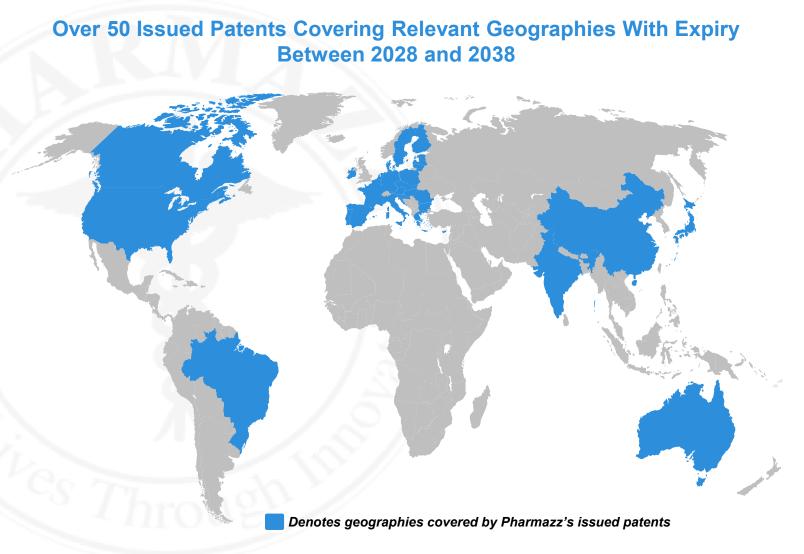




Patents and Licenses



- Exclusive worldwide rights of intellectual property from Midwestern University with, single-digit royalties due once commercialized
- Several patent applications
 related to Sovateltide and
 Centhaquine composition and
 methods Inc. under
 examination.
- New patent application in filing process currently



Ongoing Patent Applications



Patent Applications Assigned to Pharmazz with Compositions and Methods Protected Through 2043			
Title	Pharmaceutical formulation for the treatment of cerebral stroke	Lyophilized sovateltide-based injectable formulation and method for preparation thereof	
Applicant	PHARMAZZ EXCELLENCE IN CRITICAL CARE MEDICINE	PHARMAZZ EXCELLENCE IN CRITICAL CARE MEDICINE	
Application Number	18/343,087	18/478,528	
Priority Date	June 28 th 2023	June 28 th 2023	

The Team



Experienced team with extensive drug development and clinical expertise



Anil Gulati, MD, PhD
Chairman and Chief
Executive Officer

- >40 years of drug discovery, development, clinical and management experience.
- >300 peer reviewed publications, and 54 issued patents



Daniel Stauder
Chief Investment
Officer

- >35 years of experience in healthcare capital markets and investment banking
- Assisted raising >\$20 billion in over 500 transactions



Manish Lavhale, PhD

Managing Director,
India

- >20 years of pharmaceutical industry experience
- Expertise in regulatory strategy, with lead role in development of Centhaguine and Sovateltide



David Costello
Controller and Vice
President

- >25 years of financial and accounting experience
- Assisted closing of >\$500 million in structured finance and equity transactions



Sunil Gulati, PhD
Chief Operating Officer

- >35 years of running medium sized companies with governance and compliance expertise
- In house development of clinical trials team and successful completion of numerous trials



Shruthi Rammohan, MD

Manager, Medical

Affairs

- >15 years of clinical and pharmaceutical industry experience
- Expertise in medical affairs with role in development of Centhaquine and Sovateltide





Late-stage biopharmaceutical company with two US FDA approved Phase 3 INDs for clinical programs addressing the underserved critical care market



Lead asset (Sovateltide) designed to transform the treatment of acute cerebral ischemic stroke, supported by the first statistically significant clinical data in 25+ years



Secondary asset (Centhaquine)
designed to reduce mortality as a
resuscitative agent and improving
cardiac output and blood pressure
without arterial constriction in
hypovolemic shock patients



Lead pipeline programs designed to address multibillion dollar end markets and line of sight on market debut by early 2027



Worldwide rights in hand with potential to partner both Sovateltide and Centhaquine in selected geographies



Validating and functional partnerships for sales and distribution in India



Dr.Reddy'sCenthaguine

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Thank You

