8 May 2025 Sydney, Australia

NYR-BI03 Extends Cardioprotection to Arrhythmia Control

Highlights:

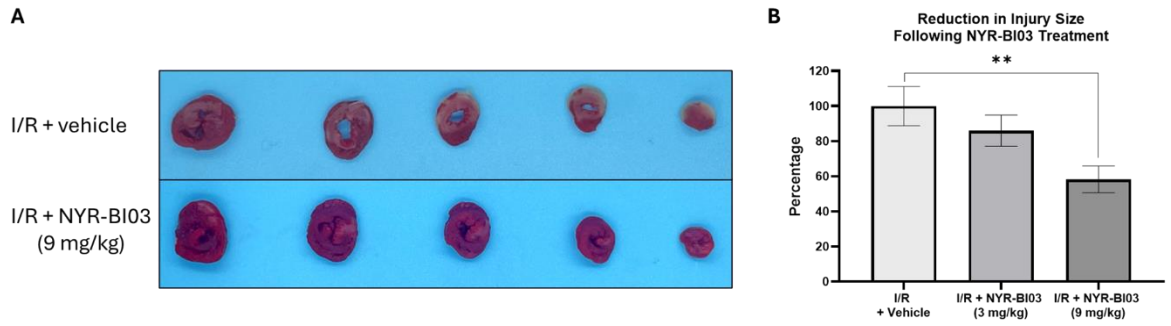
- Preclinical study demonstrates NYR-BI03 provides strong cardioprotection when administered as a short-duration intravenous infusion following myocardial infarction (heart attack).
- Study builds upon Nyrada's earlier cardioprotection study reported in October 2024[1].
- Significant reductions in both heart muscle injury size and Troponin I, a key cardiac injury biomarker.
- NYR-BI03 treated animals displayed reduced incidence of ventricular arrhythmias, the leading cause of sudden cardiac death following heart attack.

Nyrada Inc. (ASX:NYR), a drug discovery and development company focused on innovative Transient Receptor Potential Canonical (TRPC) channel inhibitors, today announces the results of a preclinical cardiac arrhythmia study.

Utilising the same rodent model from Nyrada's October 2024 study but conducted by a different contract research organisation (CRO), subject animals were administered NYR-BI03 at doses of 3.0 and 9.0 mg/kg over 3 hours following acute myocardial ischemia (AMI).

Cardioprotection Confirmed with Short Duration Treatment

The size of injury was determined via a technique called TTC staining, where viable tissue is stained 'red' and metabolically 'dead' tissue remains unstained (**A**). A dose-dependent reduction was observed following 3 hours of NYR-BI03 continuous intravenous infusion, which was statistically significant at the 9 mg/kg dose compared with vehicle (42% reduction; p = 0.008, one-way ANOVA, Bonferroni t-test post-hoc, n = 10; **B**).



[1] 1 October 2024 announcement and 23 October 2024 announcement.

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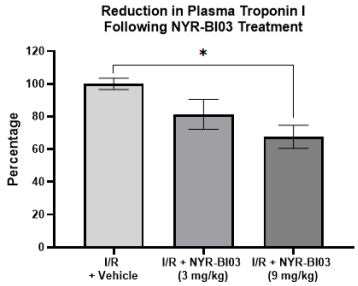
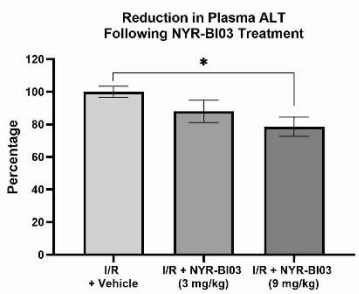
Significant Reduction in Injury Biomarkers

Troponin I (cTnI), a clinically relevant biomarker, is released into the blood following heart damage. High cTnI levels are correlated with large injury size, worse cardiac function and increased mortality risk. A dose-dependent reduction was observed in plasma cTnI levels, which were statistically significant at 9 mg/kg dose (32% reduction; p = 0.014, one-way ANOVA, Bonferroni t-test post-hoc, n = 10).



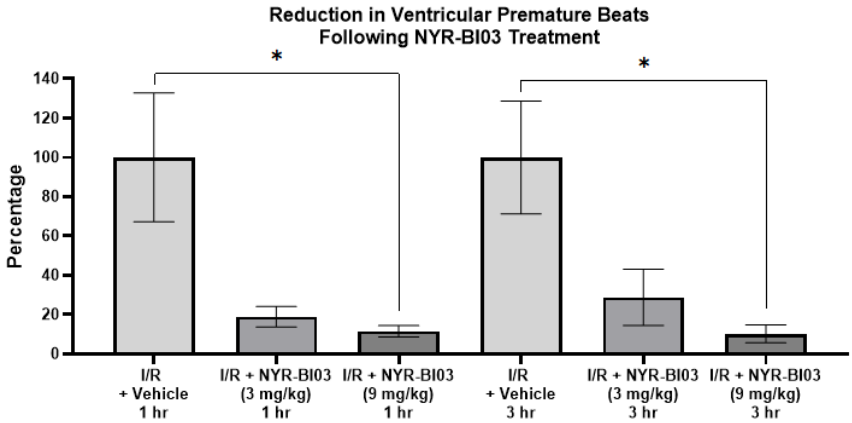
Following heart attack, there is a significant reduction in cardiac output and the ensuing blood flow to the organs. The biomarker alanine aminotransferase (ALT) elevates due to liver damage resulting from low blood supply following heart attack. NYR-BI03 reduced ALT levels in a dose-dependent manner with a significant reduction observed at the 9 mg/kg dose (21% reduction; p = 0.0202, Student's t-test, n = 10).



NYR-BI03 Provides Arrhythmia Protection

As part of this study, cardiac arrhythmias were monitored via electrocardiogram (ECG). Animals treated with NYR-BI03 showed statistically significant superior outcomes.

In this model, significant arrhythmia events were observed at 1 hour and 3 hours post-injury. A dose-dependent reduction was observed in ventricular premature beats (VPB), which, following ischemia, trigger ventricular tachycardia (VT) and ventricular fibrillation (VF), the leading causes of sudden cardiac death. A statistically significant reduction in VPB events was noted at the 9 mg/kg dose (88% reduction; p = 0.04 at 1 hour and 90% reduction; p = 0.010 at 3 hours versus control, n = 9 – 10, one-way ANOVA, Bonferroni's t-test post-hoc).



Seven incidents of VT were seen in the vehicle treated animals compared to only four observed in the NYR-BI03 treated animals at the 9 mg/kg dose. Notably, VF events were completely suppressed in the 9 mg/kg treated group compared to the vehicle group where five events were observed (p = 0.005, Chi square test, n = 10).

The demonstrated ability of NYR-BI03 to protect cardiac tissue from reperfusion injury, as shown previously and confirmed in this short duration dosing study, along with suppression of cardiac arrhythmias, highlights NYR-BI03's potential as a targeted therapy with a broad cardioprotective action. This supports a distinctive and comprehensive therapeutic profile, positioning NYR-BI03 as a promising treatment for AMI related conditions.

Nyrada CEO James Bonnar commented: "These findings are very exciting and further validate the strong cardioprotective efficacy of NYR-BI03, as demonstrated in our earlier study. It also confirms NYR-BI03's anti-arrhythmic effects, as seen in a TRPC knockout animal model, validating our approach and highlighting the drug's potential to address multiple risks following a heart attack.

"NYR-BI03 has now demonstrated preclinical efficacy in three significant indications, ischemic stroke, traumatic brain injury (TBI), and acute myocardial infarction, with our Phase I trial supporting multiple development pathways."

About NYR-BI03

NYR-BI03 is a novel small-molecule drug developed by Nyrada to inhibit TRPC3/6/7 channels. Scientific literature shows that these channels are implicated in both cardiac tissue death resulting from ischemia-reperfusion injury and in multiple forms of cardiac arrhythmia following acute myocardial ischemic injury (heart attack).

In September 2024, Nyrada filed a provisional patent application to protect its intellectual property related to TRPC channel inhibitors. The application seeks a 'Composition of Matter' patent, covering the chemical structures of relevant compounds. A preliminary international patent search has affirmed the novelty and inventiveness of Nyrada's TRPC-targeting claims.

NYR-BI03 in Cardioprotection

In October 2024, Nyrada reported results from a preclinical study[2] on coronary heart disease, demonstrating that a 24-hour intravenous infusion of NYR-BI03 provided an 86 percent cardioprotective effect against myocardial ischemia-reperfusion injury. This injury occurs when blood flow to the heart is restored following an ischemic event and is a major contributor to cardiac tissue damage.

[2] 1 October 2024 announcement and 23 October 2024 announcement.

About Cardiac Arrhythmia

Cardiac arrhythmia involves irregular and often rapid heart rhythms. Arrhythmias frequently occur following a myocardial infarction (heart attack), where ventricular premature beats (VPB) are associated with an increased risk of ventricular tachycardia (VT) and ventricular fibrillation (VF).

VT is a fast, abnormal heart rhythm originating in the ventricles that can reduce the heart's ability to pump blood effectively. VF is a chaotic, disorganised rhythm that causes the heart to stop pumping entirely.

Both conditions reflect serious myocardial electrical instability and can lead to life-threatening outcomes. These disruptions can damage the heart, brain, and other vital organs, and are linked to conditions including stroke, heart failure, and sudden cardiac death.

Phase I Clinical Trial

Nyrada is currently conducting a Phase I clinical trial to evaluate the safety, tolerability, and pharmacokinetics of NYR-BI03. This is a double-blind, randomised, placebo-controlled, dose-escalating study involving five cohorts of eight healthy participants each.

Participants receive an intravenous infusion of either NYR-BI03 or placebo over three hours, with six receiving the active drug and two receiving the placebo per cohort. The first two cohorts have completed dosing with no safety concerns.

Final readouts from the Phase I study are expected in the third quarter of calendar year 2025. Nyrada will continue to provide regular updates as the trial progresses.

-ENDS-

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About Nyrada Inc.

Nyrada Inc. is a biotechnology company focused on the discovery and development of innovative small-molecule therapies, specifically targeting Transient Receptor Potential Canonical (TRPC) ion channels. The company's lead candidate, NYR-BI03, has shown efficacy in both neuroprotection and cardioprotection, positioning it for a first-in-human Phase I clinical trial. Nyrada Inc. (ARBN 625 401 818) is incorporated in Delaware, US, with limited liability for its stockholders.

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