

# Nourin® miRNAs: Novel biomarkers highly expressed in unstable angina patients with normal ECG and negative hs-troponin and dropped post percutaneous coronary intervention

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## Background

The novel Nour Heart **Nourin®-dependent miR-137 and miR-106b** can identify **reversible myocardial ischemia** in chest pain patients with a confirmed diagnosis of unstable angina (UA) and chronic stable CAD with normal resting ECG and hs-cTnI below the clinical decision (<99th URL) [1-3]. High expression levels of Nourin® miRNAs were also detected in STEMI patients. On the other hand, normal, low-grade, baseline expression levels of Nourin® miRNAs were detected in healthy subjects and in non-cardiac chest pain patients with hs-cTnI <99<sup>th</sup> URL.

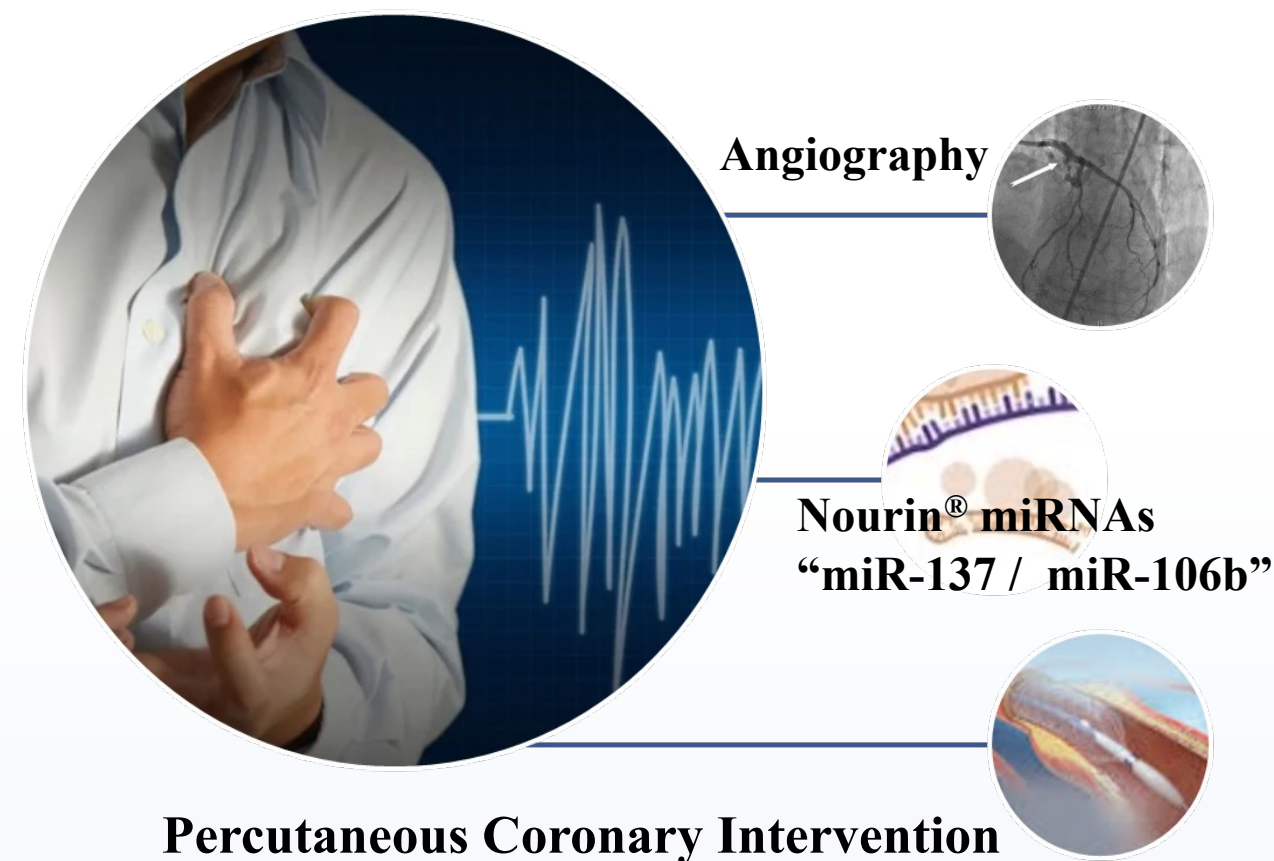
## Objectives

1. To confirm the upregulation of Nourin® miRNAs in chest pain patients with normal resting ECG and hs-cTnI < 99<sup>th</sup> URL, who are suspected of having UA.

2. To determine whether Nourin® miRNA expression levels change after relieving myocardial ischemia by PCI.

3. To determine whether there is an association between severity of chest of pain and Nourin® miRNA expression levels prior to PCI.

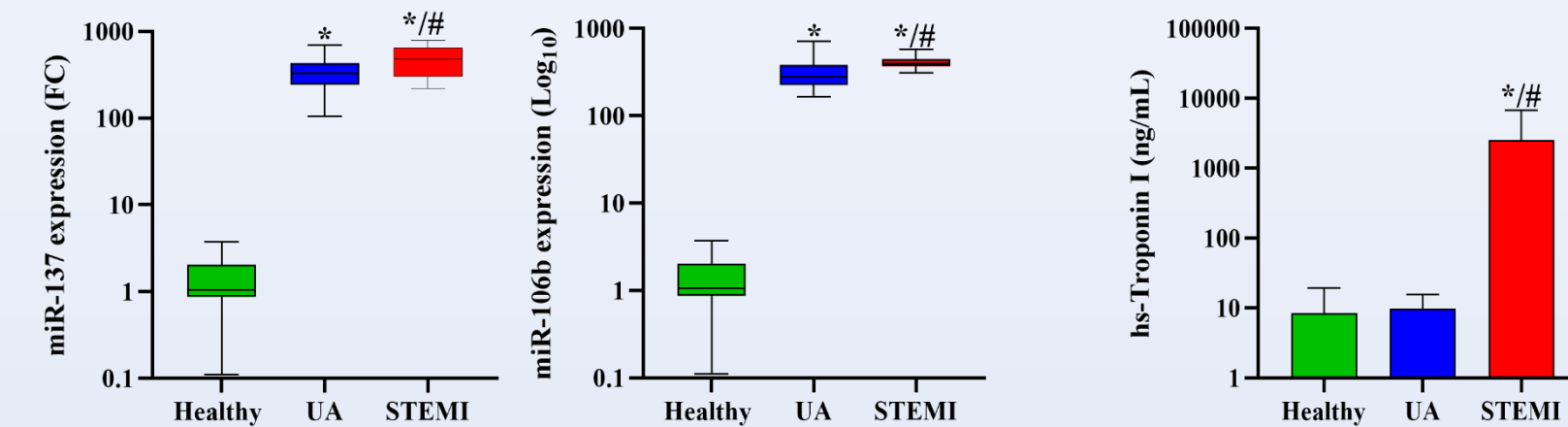
## Materials & Methods



- 36 human serum and plasma samples were collected from patients with acute chest pain, normal ECG, hs-cTnI<99<sup>th</sup> URL, whom they confirmed to have ≥ 70% stenosis (single vessel disease) by conventional angiography.
- Three samples were collected from each patient at three time-intervals: (1) at diagnosis before PCI, (2) 12 hours after successful PCI, and (3) 24 hours after PCI.

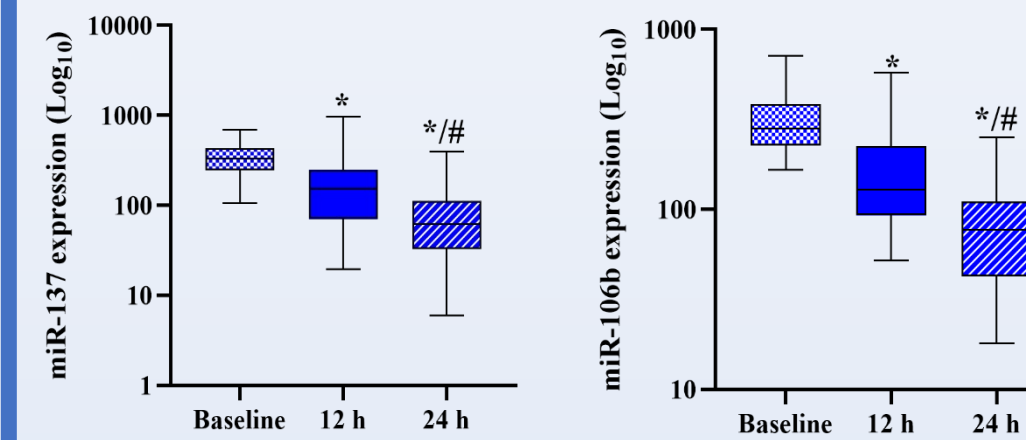
Nourin®-miRNAs “miR-137 and miR-106b” were measured by quantitative Real-time PCR

## Results



Serum gene expression levels of Nourin® miR-137 & miR-106b were significantly upregulated in UA (n=36) prior to PCI (mean ± SD: miR-137 = 355±150 and miR-106b = 317±122) compared to healthy subjects (n=16), whom they showed minimal expression levels ranged from 0.615 to 1.05 (P < 0.0001). Further, both Nourin® miRNAs were highly expressed in STEMI patients (n=15).

Plasma levels of hs-cTnI didn't show significant difference between UA (n=36) and healthy controls (n=16) (P > 0.05), while there was significant elevation in STEMI patients (n=15).



Levels of both Nourin® miRNAs in UA patients (n=36) dropped by 50% (12 hours) and 65% (24 hours) post PCI procedure (P < 0.05). Further, the expression levels of Nourin® miRNAs were not associated with the Canadian class levels of angina severity. All UA patients were asymptomatic at discharge, while 84% remained asymptomatic after 4 weeks.

## Conclusions

- This study confirms that Nourin® miR-137 and miR-106b can identify myocardial ischemia in patients presenting with unstable angina.
- Results further confirm that Nourin® miR-137 and miR-106b are two novel molecular biomarkers that are elevated during myocardial ischemia, in the absence of myocardial injury.
- There is a significant reduction of Nourin® miRNA expression levels post PCI procedure, in association with myocardial ischemia relief.

## References

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## Acknowledgments

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