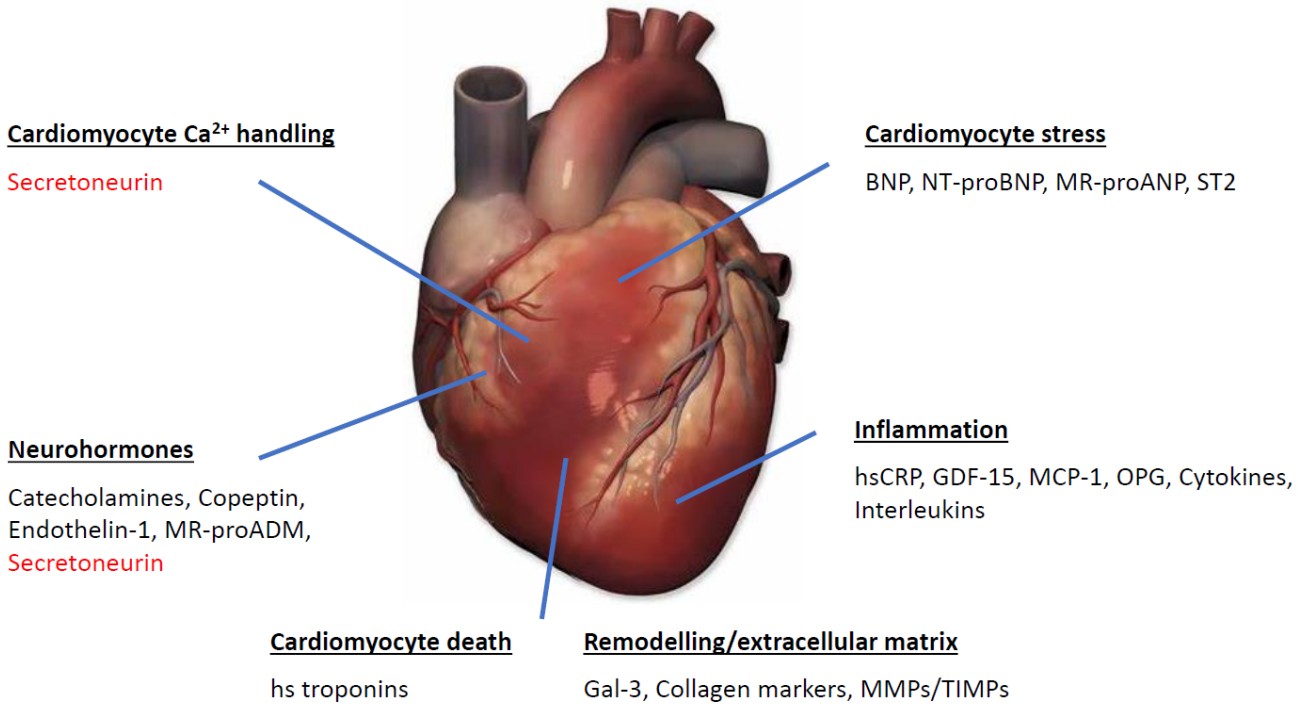
WILL SECRETONEURIN BE THE NEXT BIG THING? *

What is secretoneurin (SN)?

Secretoneurin is a 33-amino acid neuropeptide produced by the endoproteolytic cleavage of chromogranin II proteins. Secretoneurin is produced by neuroendocrine- and heart muscle cells and is detectable in the blood stream[2]. Cardiomyocyte Ca^{2+} imbalance is at the core of most triggered arrhythmias in CVD, but current biomarkers (troponins and BNP) do not reflect Ca^{2+} regulation. SN has been suggested to be associated with biological processes linked to cardiomyocyte Ca^{2+} handling[1].

*Editorial by Mark E. Anderson, Will Secretoneurin Be the Next Big Thing? J Am Coll Cardiol 2015,65

Secretoneurin (SN) - Biomarker of Cellular Calcium Imbalance



The analytical performance studies for the Research Use Only Human Secretoneurin ELISA were performed according to the appropriate CLSI guidelines

Human Secretoneurin ELISA is a standard sandwich ELISA containing 6 calibrators and high and low controls

- The LoQ for the Human Secretoneurin ELISA Assay is 7.6 pmol/L,
- The LoD for the Human Secretoneurin ELISA Assay is 5.1 pmol/L
- The Human Secretoneurin ELISA Assay is linear from 11.8 to 299.2 pmol/L
- No falsely low secretoneurin results were observed for serum samples up to 5000 pmol/L
- Repeatability precision varies from 2.7 – 4.6 % CV for 5 levels
- Within Device precision varies from 5.3 – 8.7 % CV for 5 levels

*For Research Use Only. Not for use in diagnostic procedures

The following list of publications are based on the use of an in-house RIA method except for publication 10 where the Human Secretoneurin ELISA is used.

1. **Ottesen et.al,** Secretoneurin is a novel prognostic cardiovascular biomarker associated with cardiomyocyte calcium handling. J Am Coll Cardiol 2015 Feb 3;65(4):339-351
   Quote from the article:
   "Conclusions: Circulating SN levels provide strong and complementary information to established risk indices in patients with acute HF and in patients with ventricular arrhythmia–induced cardiac arrest. We also demonstrated a direct effect by SN on cardiomyocyte Ca2þ handling via inhibition of aMKIId activity, a key pathophysiological mediator in CVD".

2. **Røsjø et.al,** on behalf of the FINNSEPSIS and FINNALI Study Groups. Prognostic Value of Secretoneurin in Critically Ill Patients with Infections. Crit Care Med 2016 Oct;44(10):1882-90
   Quote from the article:
   "Conclusion: Secretoneurin seems to be a biomarker that provides strong and complementary prognostic information to established risk indices in critically ill patients with infections".

3. **Myhre et.al,** Prognostic Value of Secretoneurin in Patients with Acute Respiratory Failure: Data from the FINNALI Study. Clin Chem 2016 Oct;62(10):1380-89
   Quote from the article:
   "Conclusions: SN concentrations measured on ICU admission provided incremental prognostic information to established risk indices in patients with CV-related ARF, but not in patients with non–CV-related ARF."

4. **Røsjø et.al,** for the ALBIOS Biomarkers Study Investigators. Prognostic Value of Secretoneurin in Patients with Severe Sepsis and Septic Shock: Data from the Albumin Italian Outcome Sepsis Study. Crit Care Med 2018. www.ccmjournal.org
   Quote from the article:
   "In conclusion, secretoneurin provides complementary information to established risk models and cardiac biomarkers in patients with septic shock, which suggests that secretoneurin primarily may be of use in septic patients with cardiovascular instability. In contrast, the prognostic utility of secretoneurin in septic patients without cardiovascular instability seems more limited".

5. **Ottesen et.al**, Secretoneurin Is an Endogenous Calcium-Calmodulin-Dependent Protein Kinase II Inhibitor That Attenuates Ca-Dependent Arrhythmia. Circ Arrhythm Electrophysiol 2019;12:e007045
   Quote from the article:
   "Conclusion: SN production is upregulated in conditions with cardiomyocyte Ca2+ dysregulation and offers compensatory protection against cardiomyocyte mechanisms of arrhythmia, which may underlie its putative use as a biomarker in at-risk patients".

6. **Brynildsen et.al,** Circulating Secretoneurin Concentrations After Cardiac Surgery. Data From the FINNish Acute Kidney Injury Heart Study. CritCareMed 2019. www.ccmjournal.org
   Quote from the article:
   "In conclusion, we found postoperative secretoneurin concentrations to provide additional prognostic information to EuroSCORE II and established biomarkers in cardiac surgical patients. Further studies are warranted to determine the optimal therapeutic strategy in cardiac surgical patients with high secretoneurin concentrations after cardiac surgery".

7. **Brynildsen et.al,** Circulating secretoneurin concentrations in patients with moderate to severe aortic stenosis. Clin Biochem 2019, Sep;71_17-23.
   Quote from the article:
   "In conclusion, we found preoperative concentrations of SN to provide incremental prognostic information to established risk indices in patients with moderate to severe AS. Moreover, SN was not closely correlated to established risk indices, which supports SN as a biomarker that reflects additional pathophysiology of relevance for outcome in patients with moderate to severe AS."

8. **P. Myhre et.al,** Circulating secretoneurin concentrations provide prognostic information to established risk indices in patients with chronic heart failure. ESC (European Society of Cardiology) congress, Barcelona 26-29 august 2020
   Quote from the abstract:
   "Conclusion: SN concentrations are increased in patients with ACS an provide prognostic information in patients with chest pain."

9. **P. Myhre et.al,** Performance of a Novel Research-Use-Only Secretoneurin ELISA in Patients with Suspected Acute Coronary Syndrome: Comparison with an Established Secretoneurin Radioimmunoassay. Cardiology 2021; 146:566–574
   Quote from the article:
   "Conclusion: We provide detailed data on a novel research-use-only SN ELISA with excellent performance and very good precision across a range of SN concentrations."

10. **Aakre et.al,** Biological variation of secretoneurin; a novel cardiovascular biomarker implicated in arrhythmogenesis. Clinical Biochemistry 2021; 98:74-77
    Quote from the article:
    "In summary, the current study is the first to report biological variation, RCV, II and analytical quality specifications for secretoneurin. Overall low values were found indicating that secretoneurin has characteristics suitable for a biomarker that could be useful for diagnosing and monitoring disease."

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