NATRIURETIC PEPTIDES - AREAS OF INTEREST

Clinical

- Cardiac impairment, acute myocardial infarction (left ventricular dysfunction)
- Risk stratification in acute failure patients with low heart rates
- Renal failure
- Obesity and diabetes
- Various forms of secondary hypertension
- Therapy monitoring

PreClinical

- proANP (1-98) is an excellent candidate as a biomarker of cardiac hypertrophy in preclinical toxicology investigations. Detection of drug-induced hemodynamic stress resulting in cardiac hypertrophy in rodents.

BNP Fragment Literature

Thirty years of the heart as an endocrine organ: physiological role and clinical utility of cardiac natriuretic hormones.

Comparison of Pleural Fluid N-Terminal Pro-Brain Natriuretic Peptide and Brain Natriuretic-32 Peptide Levels.
Long AC et al, Chest 2010; 137: 1369-1374

N-Terminal Pro-B-Type Natriuretic Peptide as an Indicator of Possible Cardiovascular Disease in Severely Obese Individuals: Comparison with Patients in Different Stages of Heart Failure.
Hermann-Arnhof K et al, Clinical Chemistry 2005; 51:138-143

Moro C and Smith RH, Diabetes 2009; 58: 2726-2728

Neurohormonal risk stratification for sudden death and death owing to progressive heart failure in chronic heart failure.

Natriuretic peptides/cGMP/cGMP-dependent protein kinase cascades promote muscle mitochondrial biogenesis and prevent obesity.
Myaschin K et al, Diabetes 2004; 53: 2860-2862

IMMUNOASSAYS for NATRIURETIC PEPTIDES

proANP (1-98) Literature

An Initial Characterization of N-Terminal-Pro-Atrial Natriuretic Peptide in Serum of Sprague Dawley Rats.
Colton HM et al, Toxicol Sci 2011; 120: 262-268

Transcardiomyopathic muscle cell culture-based evaluation of significance of proANP (1-98) and NT-proANP in patients with chronic heart failure: Results of the TOPCHI-CHF Registry.
Arcusa B et al, Circ Res 2007; 100: 1239-1244

Intramuscular plasma levels of NT-proANP and BNP are predictors of cardiac dysfunction in diabetic patients. Naucke U et al, Clin Lab 2005; 51(4): 373-379


Jarai R et al, Eur Heart J 2004; 25: 250-256

Prognostic value of left atrial expansion index and exercise-induced change in atrial natriuretic peptide as long-term predictors of atrial fibrillation recurrence. Govindan et al, Europace 2012; 14: 1302-1310

BNP Literature

Setting the standard for clinical research.
**Why measure prohormones?**

BNP Fragment and proANP (1-98) are stable molecules and circulate in high concentrations.

**Why measure with Biomedica Immunoassays?**

- Low sample volume – no extraction, direct measurement
- Validated in preclinical and clinical studies
- Human serum based calibrators
- Clear separation – healthy controls/ elevated levels
- Reproducible and reliable results
- Robust assays – automated protocols
- Cost efficient
- Manufactured in accordance with GMP/GLP guidelines
- Flexible solutions for your projects

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**proANP (1-98) ELISA** (BI-20892)

**Assay characteristics**

Reference data: Median = 1.45 nmol/l (n=53). Each laboratory should establish own reference values.

Standard range: 0-10 nmol/l (5 standards and 1 control in human serum matrix, lyophilized)

Sample volume: 10 μl plasma (EDTA or Heparin), urine, serum or cell culture supernatant

Detection limit: (5 nmol/l + 3 SD): 0.050 nmol/l

Incubation time: 3 h / 30 min

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**BNP Fragment EIA** (BI-20852W)

**Assay characteristics**

Reference data: Median = 392 pmol/l (n=76). Each laboratory should establish own reference values.

Standard range: 0 to 6,400 pmol/l (7 standards and 1 control in human serum matrix, lyophilized)

Sample volume: 30 µl human serum or plasma (Citrate, EDTA or Heparin)

Detection limit: 171 pmol/l at 95% B/B0

Incubation time: overnight / 20 min

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**Assay principle**

1. PRECOATED AB
2. CAL / SAMPLE / CTRL
3. CONJ
4. SUB
5. STOP
6. SUB / ENZYME CATALYZED COLOUR CHANGE

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**Precision**

Intra-assay (n=3) Sample 1 Sample 2
Mean (pmol/l) 763 3,236
SD (pmol/l) 43 251
CV% 6% 8%

Intra-assay (n=6) Sample 1 Sample 2
Mean (pmol/l) 775 3,257
SD (pmol/l) 51 196
CV% 7% 6%

Inter-assay: 2 samples of known concentrations were tested in 2 assays from 2 different operators.

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**Standards:** Synthetic human proANP (1-98) in human serum matrix: 0; 0.63; 1.25; 2.5; 5; 10 nmol/l

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**Typical standard curve of the Biomedica ELISA for proANP (1-98)**

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**Alpha ANP = proANP (1-126) (biologically active)**

**Beta ANP = proANP (99-126) (biologically active)**

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**proBNP (1-108) ELISA** (BI-20852W)

**Assay characteristics**

Reference data: Median = 1.45 nmol/l (n=53). Each laboratory should establish own reference values.

Standard range: 0-10 nmol/l (5 standards and 1 control in human serum matrix, lyophilized)

Sample volume: Sample volume 10 μl plasma (EDTA or Heparin), urine, serum or cell culture supernatant

Detection limit: (5 nmol/l + 3 SD): 0.050 nmol/l

Incubation time: 3 h / 30 min

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**BNP Fragment EIA** (BI-20852W)

**Assay characteristics**

Reference data: Median = 392 pmol/l (n=76). Each laboratory should establish own reference values.

Standard range: 0 to 6,400 pmol/l (7 standards and 1 control in human serum matrix, lyophilized)

Sample volume: 30 µl human serum or plasma (Citrate, EDTA or Heparin)

Detection limit: 171 pmol/l at 95% B/B0

Incubation time: overnight / 20 min

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**Assay principle**

1. PRECOATED AB
2A. CAL / SAMPLE / CTRL
2B. CONJ
3. SUB
4. STOP
5. SUB / ENZYME CATALYZED COLOUR CHANGE

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**Precision**

Intra-assay (n=3) Sample 1 Sample 2
Mean (pmol/l) 43 251
SD (pmol/l) 51 196
CV% 6% 8%

Inter-assay: 2 samples of known concentrations were tested in 2 assays from 2 different operators.

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**Standards:** Recombinant BNP Fragment in human serum matrix: 0; 200; 400; 1,600; 3,200; 6,400 pmol/l

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**Typical standard curve of the Biomedica competitive EIA for BNP Fragment**

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