

NATRIURETIC PEPTIDES - AREAS OF INTEREST

ANP and BNP exert diuretic, natriuretic, and vasodilatory effects and thus contribute to the regulation of cardiovascular and body-fluid homeostasis and blood pressure control: These effects result from interference with the renin-angiotensin-system, endothelins, and sympathetic nervous system.

ANP appears to be a cardiovascular risk factor, particularly in the context of hypertension, stroke, obesity, and metabolic syndrome. BNP is predictive of cardiac dysfunction, in particular left ventricular dysfunction, and is a useful marker of future outcomes in patients with acute coronary syndromes and congestive heart failure.

Clinical

- Cardiac impairment, acute myocardial infarction (left ventricular dysfunction)
- Risk stratification in heart failure patients with normal NT-proBNP levels
- 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.

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*

Transcoronary Transplantation of Functionally Competent BMCs Is Associated With a Decrease in Natriuretic Peptide Serum Levels and Improved Survival of Patients With Chronic Postinfarction Heart Failure: Results of the TOPCARE-CHD Registry. *Assmus B et al, Circ Res 2007; 100: 1234-1241*

Increased plasma levels of NT-proANP and NT-proBNP as markers of cardiac dysfunction in septic patients. *Hoffmann U et al, Clin Lab 2005; 51(7-8): 373-379*

Prognostic merit of N-terminal-proBNP and N-terminal proANP in mechanically ventilated critically ill patients. *Berdal JE et al, Acta Anaesthesiol Scand 2008; 52(9): 1265-1272*

Risk assessment in patients with unstable angina/non-ST-elevation myocardial infarction and normal N-terminal pro-brain natriuretic peptide levels by N-terminal pro-atrial natriuretic peptide. *Jarai R et al, Eur Heart J 2004; 26: 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 Fragment Literature

Thirty years of the heart as an endocrine organ: physiological role and clinical utility of cardiac natriuretic hormones. *Clerico A et al, Am J Physiol Heart Circ Physiol 2011; 301: H12-H20*

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-Arnhofer K et al, Clinical Chemistry 2005; 51:138-143*

Natriuretic Peptides: New Players in Energy Homeostasis. *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. *Berger R et al, Eur J Clin Invest 2005; 35: 24-31*

Natriuretic peptides/cGMP/cGMP-dependent protein kinase cascades promote muscle mitochondrial biogenesis and prevent obesity. *Miyashita K et al, Diabetes 2009; 58: 2880-2892*

Setting the standard for clinical research.

IMMUNOASSAYS for
NATRIURETIC PEPTIDES



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Setting the standard
for clinical research.

proANP (1-98) ELISA BI-20892 • BNP Fragment EIA BI-20852W

Why measure prohormones?

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

Why measure with Biomedica Immunoassays?

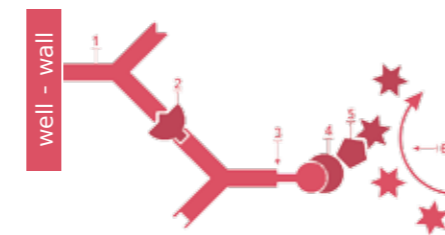
- Low sample volume – no extraction, direct measurement
- Validated in preclinical and clinical studies
- Human serum based calibrators
- Clear separation – healthy controls/elevated levels
- Reproducible and reliable results
- Robust assays – automated protocols
- Cost efficient
- Manufactured in accordance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

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 (6 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	(0 nmol/l + 3 SD): 0.050 nmol/l		
Incubation time	3 h / 30 min		

Assay principle



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

Precision

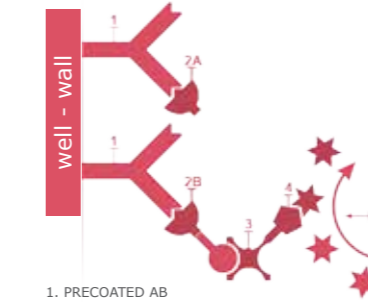
Intra-assay (n=10)	Sample 1	Inter-assay (n=5)	Sample 1
Mean (nmol/l)	0.66	Mean (nmol/l)	0.88
SD (nmol/l)	0.013	SD (nmol/l)	0.035
CV%	2%	CV%	4%

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		

Assay principle



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

Precision

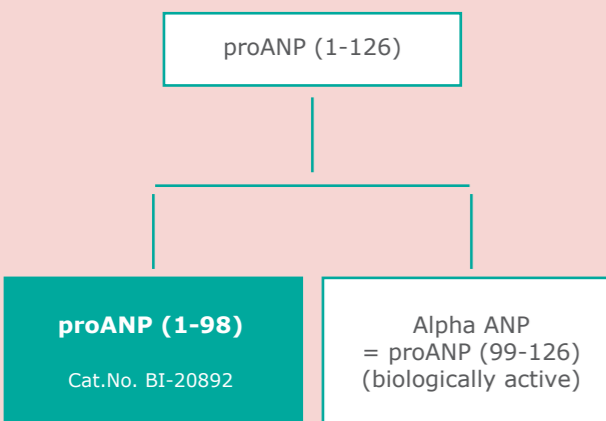
Intra-assay: 2 samples of known concentrations were tested 3 times.
Inter-assay: 2 samples of known concentrations were tested in 2 assays from 2 different operators.

Intra-assay (n=3)	Sample 1	Sample 2	Inter-assay (n=6)	Sample 1	Sample 2
Mean (pmol/l)	763	3,236	Mean (pmol/l)	775	3,257
SD (pmol/l)	43	251	SD (pmol/l)	51	196
CV%	6%	8%	CV%	7%	6%

proANP (1-98) ELISA

Enzyme Immunoassay for the quantitative determination of human and rodent proANP (1-98)

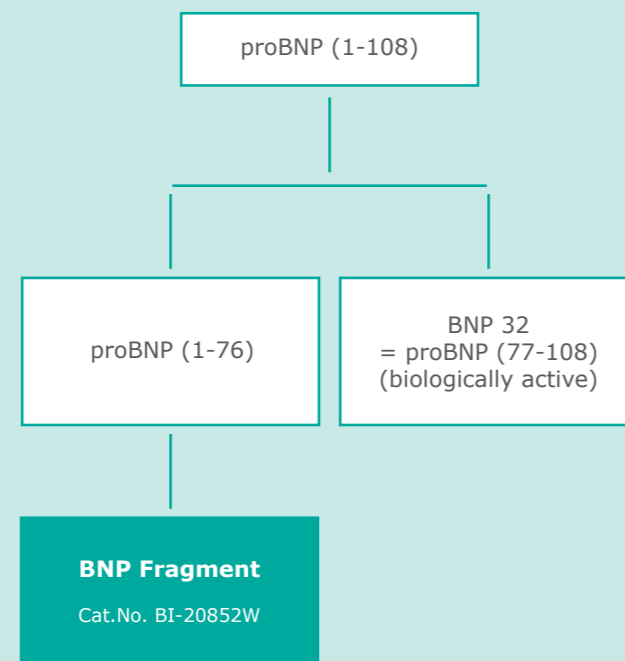
Cat.No.: BI-20892 | 12 x 8 tests
conventional 96well ELISA format



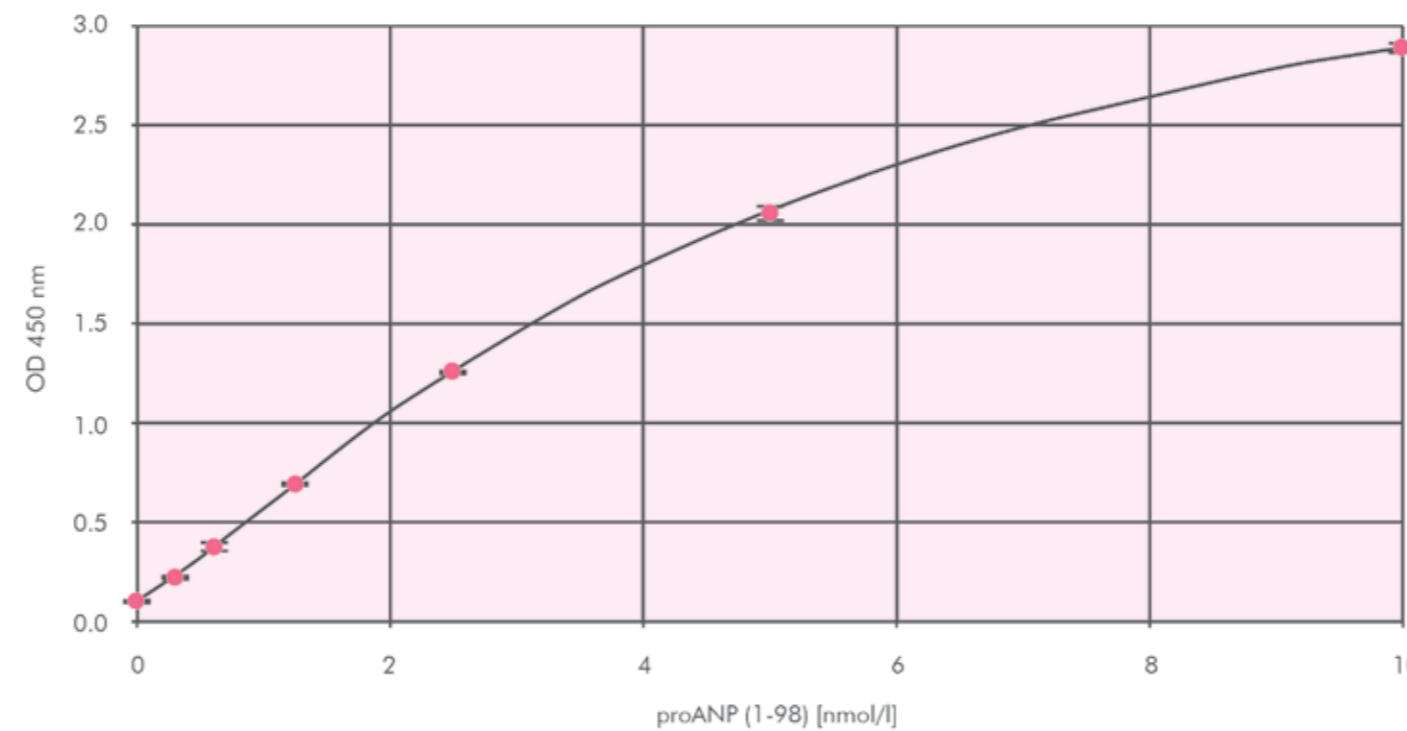
BNP Fragment EIA

Enzyme Immunoassay for the quantitative determination of human BNP Fragment (8-29)

Cat.No.: BI-20852W | 12 x 8 tests
conventional 96well ELISA format

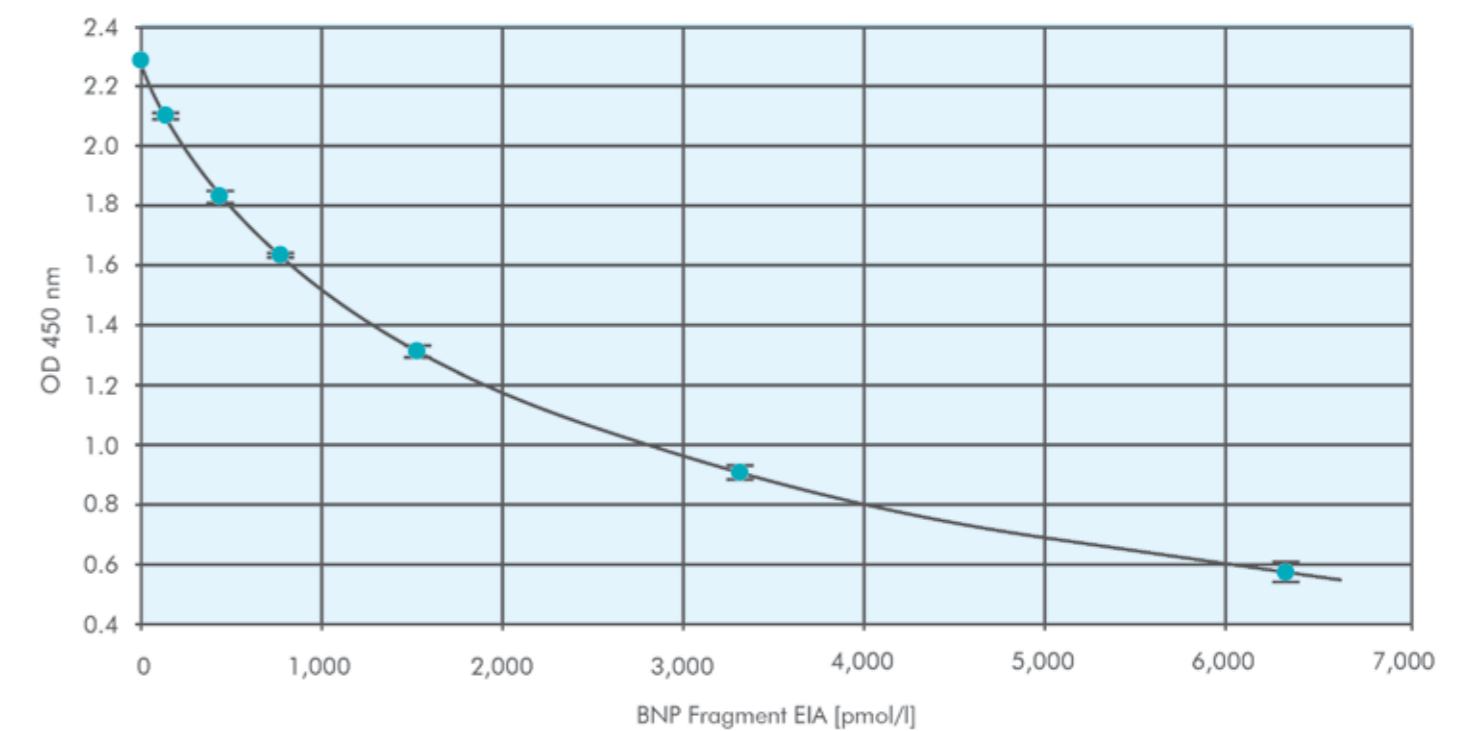


Typical standard curve of the Biomedica ELISA for proANP (1-98)



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

Typical standard curve of the Biomedica competitive EIA for BNP Fragment



Standards: Recombinant BNP Fragment in human serum matrix: 0; 200; 400; 800; 1,600; 3,200; 6,400 pmol/l