Immunoassays for Natriuretic Peptides, Brochure

Interest in any of the products, request or order them at Bio-Connect Diagnostics.
IMMUNOASSAYS for NATRIURETIC PEPTIDES

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

proANP (1-98)

proANP (1-126)

Alpha ANP = proANP (99-126) (biologically active)

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

proBNP (1-108)

proBNP (1-76)

BNP 32 = proBNP (77-108) (biologically active)

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 project
**Assay Characteristics**

<table>
<thead>
<tr>
<th>Reference data</th>
<th>Plasma median = 1.45 nmol/l (n=53). Each laboratory should establish own reference values.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Standard range</td>
<td>0-10 nmol/l (6 standards and 1 control in human serum matrix, lyophilized)</td>
</tr>
<tr>
<td>Sample volume</td>
<td>Sample volume 10 μl plasma (EDTA or Heparin), urine, serum or cell culture supernatant</td>
</tr>
<tr>
<td>Detection Limit</td>
<td>(0 nmol/l + 3 SD): 0.050 nmol/l</td>
</tr>
<tr>
<td>Incubation time</td>
<td>3 h / 30 min</td>
</tr>
<tr>
<td>Cross reactivity</td>
<td>proANP (1-30) &lt;1%, proANP (31-67) &lt;1%, proANP (79-98) &lt;1%, alpha ANP (99-126) &lt;1%, proBNP (8-29) &lt;1%, proBNP (32-57) &lt;1%, proCNP (1-19) &lt;1%, proCNP (30-50) &lt;1%, proCNP (51-97) &lt;1%</td>
</tr>
<tr>
<td></td>
<td>The assay also detects mouse and rat proANP (1-98).</td>
</tr>
</tbody>
</table>

**Technical Performance**

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

**Precision**

<table>
<thead>
<tr>
<th></th>
<th>Intra-Assay (n=10)</th>
<th>Inter-Assay (n=5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (nmol/l)</td>
<td>0.66</td>
<td>0.88</td>
</tr>
<tr>
<td>SD (nmol/l)</td>
<td>0.013</td>
<td>0.035</td>
</tr>
<tr>
<td>CV%</td>
<td>2%</td>
<td>4%</td>
</tr>
</tbody>
</table>

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

| Values from apparently healthy individuals (n=76) | In a panel of blood donors the median was 392 pmol/l. Each laboratory has to establish its own reference range for the samples under investigation. |
| Standard range | 0 to 6,400 pmol/l |
| Sample volume | 30 μl human serum or plasma (Citrate, EDTA or Heparin) |
| Detection Limit | 1.71 pmol/l at 95% B/B0 |
| Incubation time | overnight / 20 min |

Assay Principle

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.

<table>
<thead>
<tr>
<th>Intra-Assay (n=3) Sample 1</th>
<th>Sample 2</th>
<th>Inter-Assay (n=6) Sample 1</th>
<th>Sample 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (pmol/l)</td>
<td>763</td>
<td>3,236</td>
<td>775</td>
</tr>
<tr>
<td>SD (pmol/l)</td>
<td>43</td>
<td>251</td>
<td>51</td>
</tr>
<tr>
<td>CV%</td>
<td>6%</td>
<td>8%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Technical Performance

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
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
- 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

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