VANIN-1 ELISA

MARKER FOR
- DRUG-INDUCED & SPONTANEOUS ACUTE KIDNEY INJURY
- OBSTRUCTIVE & DIABETIC NEPHROPATHY

FULLY VALIDATED
FOR PRECLINICAL SAMPLES
FOR CLINICAL SAMPLES
ONE-STEP ELISA

Setting the standard for clinical research.
Features and Benefits

- RIGOROUSLY VALIDATED – according to FDA/ICH/EMEA guidelines
- OPTIMIZED for human URINE samples
- CONVENIENT PROTOCOL – ONE-STEP ELISA
- PROPRIETARY PRODUCT – in-house R&D and production
- HIGHLY SPECIFIC – characterized antibodies and reagents

VANIN-1 Values in Human Urine Samples

VANIN-1 is significantly elevated in urine samples of chronic kidney disease (CKD) patients.

<table>
<thead>
<tr>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Apparently Healthy Individuals (n=27)</td>
<td>116</td>
<td>3-963</td>
<td>1131</td>
<td>77-2813</td>
</tr>
<tr>
<td>CKD Patients (n=24)</td>
<td>360</td>
<td>57-2375</td>
<td>3280</td>
<td>1101-28764</td>
</tr>
</tbody>
</table>

Assay Characteristics

- Method: Sandwich ELISA, HRP/TMB, 12x8-well strips
- Sample type: human urine
- Sample volume: 10 µl / well
- Assay time: 4 h / 30 min
- Sensitivity: 9.6 pmol/l
- Standard range: 0 - 1,200 pmol/l (7 standards and 2 controls)
- Specificity: Endogenous and recombinant human Vanin-1
- Precision: Within-run ≤5; In-between-run ≤7
- Unit conversion: 1 pg/ml = 0.0192 pmol/l; MW: 52.07 kDa

Accuracy

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>+120 pmol/l Mean</th>
<th>Range</th>
<th>+600 pmol/l Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine (n=6)</td>
<td>81</td>
<td>73-92</td>
<td>93</td>
<td>86-99</td>
</tr>
</tbody>
</table>

Parallelism

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>1+1 Mean</th>
<th>Range</th>
<th>1+3 Mean</th>
<th>Range</th>
<th>1+7 Mean</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Urine (n=6)</td>
<td>94</td>
<td>85-100</td>
<td>92</td>
<td>79-98</td>
<td>86</td>
<td>69-99</td>
</tr>
</tbody>
</table>
Mouse/Rat VANIN-1 ELISA (Cat.No. BI-VAN1MR)

Features and Benefits
• LOW SAMPLE VOLUME – 5 µl / well
• OPTIMIZED for mouse/rat serum and plasma samples
• CONVENIENT PROTOCOL – ONE-STEP ELISA
• PROPRIETARY PRODUCT – in-house R&D and production
• HIGHLY SPECIFIC – characterized antibodies and reagents

VANIN-1 Values in Mouse and Rat Samples

VANIN-1 is a novel biomarker for early detection of drug-induced acute kidney injury and has superior predictive value for AKI than established markers KIM-1, NGAL, or NAG.

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>Serum (n=5)</th>
<th>Plasma (n=5)</th>
<th>Urine (n=6)</th>
<th>Serum (n=8)</th>
<th>Plasma (n=8)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Median</td>
<td>22</td>
<td>24</td>
<td>21</td>
<td>7</td>
<td>7</td>
</tr>
<tr>
<td>Range</td>
<td>9-39</td>
<td>19-34</td>
<td>3-62</td>
<td>6-11</td>
<td>5-16</td>
</tr>
</tbody>
</table>

Assay Characteristics
• Method: Sandwich ELISA, HRP/TMB, 12x8-well strips
• Sample type: mouse/rat serum, plasma, urine
• Sample volume: 5 µl / well
• Assay time: 4 h / 30 min
• Sensitivity: 2.31 pmol/l
• Standard range: 0 - 200 pmol/l
• Specificity: Endogenous and recombinant mouse/rat Vanin-1
• Precision: Within-run ≤8; In-between-run ≤8
• Unit conversion: 1 ng/ml = 19.2 pmol/l (MW: 52.07 kDa)

Accuracy

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>+25 pmol/l</th>
<th>+100 pmol/l</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Range</td>
</tr>
<tr>
<td>Mouse (n=7)</td>
<td>93</td>
<td>87-124</td>
</tr>
<tr>
<td>Rat (n=4)</td>
<td>94</td>
<td>68-103</td>
</tr>
</tbody>
</table>

Parallelism

<table>
<thead>
<tr>
<th>Sample Matrix</th>
<th>Recovery [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1+1</td>
</tr>
<tr>
<td></td>
<td>Mean</td>
</tr>
<tr>
<td>Mouse (n=4)</td>
<td>97</td>
</tr>
<tr>
<td>Rat (n=3)</td>
<td>92</td>
</tr>
</tbody>
</table>
**Areas of Interest**

- Acute kidney injury
- Diabetic nephropathy
- Drug-induced acute kidney injury
- Obstructive nephropathy

**Background**

**VANIN-1 is a glycoprotein that is selectively expressed in renal tubular cells.**

VANIN-1 is an epithelial ectoenzyme activating the conversion of pantetheine into pantothenic acid (vitamin B5) and cysteamine (1). The highest levels of VANIN-1 expression are assigned to renal tubular epithelial cells while no expression is detectable in the glomeruli (1, 2). Hence, VANIN-1 released from renal cells can be detected in the urine.

**Urinary VANIN-1 is a novel biomarker for early detection of drug-induced acute kidney injury. VANIN-1 has as superior predictive value for acute kidney injury than established markers KIM-1, NGAL, or NAG.**

In a rat model of nephrotoxicant-induced injury, VANIN-1 is upregulated in renal tubules earlier than other markers and shed into urine (1). Studies demonstrate that VANIN-1 is an early biomarker of renal tubular damage in drug-induced acute kidney injury (3,4), obstructive nephropathy and hydronephrosis (5,6), diabetic nephropathy (7), and renal injury in experimental colitis (8).

**Literature**


**Related Biomedica Products**

- Human FGF23 intact ELISA (Cat.no.BI-20700)
- FGF23 (C-terminal) ELISA (Cat.no. BI-20702)
- Endostatin ELISA (Cat.no. BI-20742)
- Mouse/Rat Endostatin ELISA (Cat.no. BI-20742MR)
- Big Endothelin ELISA (Cat.no. BI-20082H)
- NT-proBNP ELISA (Cat.no. SK1204)
- NT-proANP ELISA (Cat.no. BI-20892)
- Sclerostin ELISA (Cat.no. BI-20492)