Additional controls enable reliable laboratory diagnostics

German regulations for clinical laboratory diagnostics require a strict quality control of lab testing: Quantitative analyses have to include at least two single control measurements with a known target value. These controls should apply to at least two concentration ranges (e.g. normal and pathologically high or low). This procedure is part of the official regulations in Germany since April 2010. Even if the use of two controls may not be mandatory in other countries, it facilitates a meaningful interpretation of data and in general improves the accuracy of lab diagnostics.

Immundiagnostik supports its customers to fulfill the highest quality standards by providing as of now two controls in each test kit at no additional costs. Furthermore, we offer external controls for assay monitoring which can be used with reagents and testkits from other manufacturers. Please note that in this case, variations in test results may occur due to variations in antibody specificity, buffer composition etc.

We invite you to share your experience of using two controls for more accuracy with us so that we can further optimize our products for your needs.

Dr. Franz Paul Armbruster, CEO

PRODUCT NEWS / OPTIMIZATIONS

Neuro-Balance Profile: Portfolio for the analysis of neurotransmitters and micro-nutrients

Immundiagnostik has developed a novel laboratory diagnostics portfolio for the analysis of micro-nutrients and neurotransmitters, which have been correlated with behavioral or mood disorders. These assays provide an innovative tool box for diagnosis and therapy monitoring as well as for research of a number of diseases such as depression, anxiety, mood swings or behavior disorders.

- Glutamate (colorimetric assay) (K 7731)
  Determination in EDTA plasma and serum
- GABA (ELISA) (K 7012)
  Determination in serum, plasma and urine
- Glycine (ELISA) (K 7013)
  Determination in serum, plasma and urine
- Glutamine (colorimetric assay) (K 7732)
  Determination in EDTA plasma and serum
- Tryptophan (ELISA) (K 7730)
  Determination in EDTA plasma, serum and urine

Calprotectin ELISA with 1-point calibration allows economical testing

Calprotectin is an established gold standard marker for the differential diagnosis and therapy monitoring of inflammatory bowel disease. Immundiagnostik offers a monoclonal ELISA for the sensitive and specific analysis of calprotectin in stool. The assay is now available with 1-point calibration, thus enabling a user-friendly, quick, efficient and most of all economic handling of patient samples.

- PhiCal® Calprotectin ELISA (K 6947)
  (PhiCal®: German trade mark of Immundiagnostik AG. The assay is not sold in the U.S.A.)

Find more product infos on our website:
**Novel non-invasive marker S100A12 for screening of bacterial diarrhea**

Faecal S100A12 is a neutrophil marker. The calcium binding protein is solely produced by activated granulocytes and is released in the inflammatory tissue. S100A12 can be used for predicting microbiological diagnosis for acute bacterial diarrhea.

A current prospective multicenter study by Berger et al. (2010) demonstrates that significantly elevated S100A12 level indicate an acute bacterial diarrheaa.

In a search for reliable markers for bacterial gut infections the authors compared the eligibility of S100A12 and calprotectin in diagnosing acute diarrheaa in adults.

Stool samples of 168 patients with acute diarrhea were obtained and bacterial cultures were performed. In addition, S100A12 and calprotectin levels were determined with Immundiagnostik ELISAs. The authors then compared the obtained values of patients with confirmed bacterial infection with the ELISA-data from negatively tested patients.

The concentrations of calprotectin and S100A12 were significantly elevated in bacterial diarrhea:

- The mean value of calprotectin was 412.73 µg/ml (±105.7), the mean S100A12 concentration was 20.3 µg/ml (±7.82).
- Cut-off values were >50 µg/ml for calprotectin and > 0.8 µg/ml for S100A12.

Irrespective of the causative organism (Campylobacter, Clostridium, S. enterides, S. typhiurium and others were tested) S100A12 and calprotectin exhibited a high correlation with bacterial diarrhea. Both markers revealed the same high degree of accuracy for diagnosing (82.6%).

The authors conclude that both markers are able to support the presumptive diagnosis of infectious diarrhea and could hence justify an antibiotics therapy. With a sensitivity of 82.6% S100A12 appears to be a slightly more sensitive marker which could be of advantage in clinical routine.

Previous studies (Shastri et al. 2009; Kaiser et al. 2007) provide additional evidence that compared to other faecal parameters such as lactoferrin, PMN-elastase and calprotectin, S100A12 is the superior marker for bacterial bowel diseases.

**Literature**


**Immundiagnostik assays for routine diagnosis of acute infectious diarrhea:**

- S100A12 ELISA (K 6938)
- PhiCal® Calprotectin ELISA (K 6947)*

*(PhiCal®: German trade mark of Immundiagnostik AG. The assay is not sold in the U.S.A.)
Acetylsalicylic acid inhibits LDL-oxidation - a novel anti-atherosclerosis agent?

In their study, Kurban and Mehmetoglu (Literature reference see grey box) examine the effects of acetylsalicylic acid (ASA) on oxidative stress parameters in healthy volunteers. The authors hypothesize that apart from its platelet inhibitory function ASA exhibits yet another positive therapeutic effect on the cardiovascular system since other platelet inhibitory agents are not as effective. The authors propose that ASA influences the oxidative stress level, thereby exhibiting an additional protective effect on the cardiovascular system.

Oxidative stress, in particular oxidized low density lipoprotein (ox-LDL) is a major cause of pathogenesis and progression of atherosclerosis. Monitoring of oxidative stress markers in cardiovascular risk groups, above all oxidized cholesterol, is hence an important tool for early prevention or therapy control.

30 volunteers received a daily ASA-dosage of either 100 mg or 150 mg for 2 months. Before and after (1 or 2 months = group 1 or 2, respectively) the treatment the following oxidative stress parameters were determined: Serum paraoxonase 1 (PON1), arylesterase, total antioxidant status (TAS), total oxidant status (TOS), ox-LDL, and coenzyme Q10. The ox-LDL serum levels were measured with the Immundiagnostik ox-LDL/MDA-Adduct ELISA.

The basic principle of our ox-LDL/MDA Adduct-ELISA is the specific immunological detection of MDA-modified Apo B. This method has the advantage of measuring only oxidized lipoproteins with high sensitivity and specificity - exactly those particles, which correlate with the cardiovascular risk.

There were no significant differences between most measured parameters of the groups. The concentrations of the total oxidant status and the ox-LDL levels however were significantly reduced in the 150 mg dosage group in comparison to the other volunteers (s. table).

The authors conclude from these results that ASA treatment exhibits a time- and dosage-dependent positive effect on the total oxidant status and most of all on ox-LDL.

ASA appear to reduce lipid peroxidation thereby preventing LDL oxidization. According to Kurban und Mehmetoglu, the mode of action is still unclear. They discuss several possibilities, among them the inhibition of the prostaglandin production pathway by ASA which reduces the number of free radicals that could oxidize lipids.

The authors conclude from this study that ASA treatment may contribute to the prevention of atherosclerosis. Further studies are needed to determine the suitable dose and time of an effective treatment.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Group</th>
<th>before ASA</th>
<th>1 month after ASA</th>
<th>2 months after ASA</th>
</tr>
</thead>
<tbody>
<tr>
<td>PON1 (U/l)</td>
<td>1</td>
<td>187.20 ± 55.93</td>
<td>192.52 ± 58.55</td>
<td>213.60 ± 82.77</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>187.00 ± 90.76</td>
<td>195.43 ± 81.04</td>
<td>206.01 ± 112.93</td>
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<tr>
<td>Arylesterase (kU/l)</td>
<td>1</td>
<td>147.38 ± 3.31</td>
<td>148.12 ± 4.57</td>
<td>148.84 ± 4.28</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>151.11 ± 7.92</td>
<td>150.91 ± 7.07</td>
<td>152.44 ± 15.01</td>
</tr>
<tr>
<td>TAS (mmol Trolox equiv/l)</td>
<td>1</td>
<td>2.15 ± 0.25</td>
<td>2.15 ± 0.23</td>
<td>2.17 ± 0.23</td>
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<tr>
<td></td>
<td>2</td>
<td>2.08 ± 0.19</td>
<td>2.11 ± 0.16</td>
<td>2.14 ± 0.18</td>
</tr>
<tr>
<td>TOS (µmol H2O2 equiv/l)</td>
<td>1</td>
<td>12.59 ± 10.67</td>
<td>10.93 ± 4.44</td>
<td>10.26 ± 1.92</td>
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<tr>
<td></td>
<td>2</td>
<td>14.59 ± 8.82</td>
<td>11.61 ± 3.67</td>
<td>10.25 ± 2.62</td>
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<tr>
<td>ox-LDL (ng/ml)</td>
<td>1</td>
<td>190.61 ± 151.37</td>
<td>141.73 ± 148.82</td>
<td>116.29 ± 129.18</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>187.94 ± 176.75</td>
<td>174.99 ± 159.79</td>
<td>126.83 ± 143.24</td>
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<tr>
<td>CoQ10 (µg/ml)</td>
<td>1</td>
<td>1.80 ± 0.83</td>
<td>1.84 ± 0.60</td>
<td>1.99 ± 0.74</td>
</tr>
<tr>
<td></td>
<td>2</td>
<td>1.87 ± 0.67</td>
<td>1.90 ± 0.66</td>
<td>2.00 ± 0.66</td>
</tr>
</tbody>
</table>

Total oxidant status and ox-LDL level fall during ASA-therapy. (Table 1 from Kurban and Mehmetoglu, 2010)
EVENTS & ACTIVITIES

- XLVII ERA-EDTA Congress
  (& German Society of Nephrology Congress)
  booth Nr. A45

- XXIInd FECTS Meeting
  (held in conjunction with ISMB)
  3. – 7. July 2010, Davos, Switzerland

- AACC Annual Meeting
  25. – 29. July 2010, Anaheim / CA (USA)
  booth Nr. 1613

Immundiagnostik premiere at DDW 2010, New Orleans, USA successful

For the first time Immundiagnostik joined the exhibition at the worlds biggest conference for gastroenterology diseases. The „Digestive Disease Week“ (DDW) attracted and hosted more than 15.000 delegates. The Immundiagnostik booth received a lot of customer traffic from around the world. Our staff Natalia Kuzmina, Wolfgang Reichert, and Jörg Ruppert attended on visitors and provided information on our products while Corinna Berger visited poster exhibitions and seminars to gain insight on the latest scientific developments.

Our Calprotectin ELISA (which is sold outside the USA) raised particular interest as a reliable gut inflammation marker. Other product highlights at the meeting included our kits measuring anti TNF alpha drug levels and anti-drug autoantibodies, since individual TNF alpha therapy monitoring is gaining importance.

Also, information about our unique panel for defensins, the zonulin ELISA, and stool parameters in general was well received.

Given this positive response, Immundiagnostik will continue to be present at key events like the DDW to foster customer dialogue and to monitor the latest scientific trends and market needs.

Praxis to the point

**TIP: Stool sampling system – easy, clean, convenient:**

The stool sample tubes from Immundiagnostik enable the preparation of a defined stool sample dilution when applied correctly (s. steps 1-4):

First, unscrew only the upper yellow part of the cap, remove the attached dipstick and obtain the stool sample. Second, stick the dipstick with the attached stool back into the sample tube. Excess material will be stripped off by the cone-shaped insert thereby leaving 15 mg of sample in the tube. By shaking the tube, the stool dissolves in the buffer resulting in a defined sample dilution which is now ready for use in our ELISA test systems.

Please refer to our lab personnel for questions & feedback.

ID-Team

Dr. Inge Mühl Dorfer joined Immundiagnostik in April as Head of the scientific marketing department. From end of 2007 until March 2010 Dr. Mühl Dorfer held a staff position in the strategic management of Rentschler Biotechnology. Her previous engagement in the pharmaceutical industry includes the development of anti-infective agents and biopharmaceuticals at Altana Pharma AG.