INTENDED USE

ImmunoCAP Total IgE is an in vitro test system for the quantitative measurement of circulating total IgE in human serum or plasma samples. It is intended for in vitro diagnostic use as an aid in the clinical diagnosis of IgE-mediated allergic disorders in conjunction with other clinical findings, and is to be used in clinical laboratories. ImmunoCAP Total IgE Conjugate 100 and 400 is intended to be used with the instrument ImmunoCAP 250 and ImmunoCAP 1000.

SUMMARY AND EXPLANATION OF THE TEST

Since 1997, when the first assays for serum immunoglobulin E (IgE) were described, these measurements have become well established components of the investigation of allergic patients. The serum concentration of IgE is significantly elevated in patients suffering from extrinsic asthma, hayfever or atopic eczema. The increase during childhood is slow. Adult values are not stabilized until 50-70 years of age (6-7).

PRINCIPLE OF THE PROCEDURE

Anti-IgE, covalently coupled to ImmunoCAP, reacts with the total IgE in the patient serum sample. After washing, enzyme-labeled antibodies against IgE are added to form a complex. After incubation, unbound enzyme-anti-IgE is washed away and the bound complex is then incubated with a developing agent. After stopping the reaction, the fluorescence of the eluate is measured. The fluorescence is directly proportional to the concentration of IgE in the serum sample. To evaluate the test results, the response for the patient samples are transformed to concentrations with the use of a calibration curve.

REAGENTS FOR IMMUNOCAP 250 AND IMMUNOCAP 1000

Reagents are packaged in separate units, each purchased separately. All units are required to perform an assay, though; calibrators are not required for additional assays while the stored curve is valid. The expiration date and storage temperature for each of the units are stated on the outer label. However, each component is stable until the date stated on each individual component’s label.

Note! It is not recommended to pool any reagents.

Reagents for ImmunoCAP Total IgE Conjugate 100 (Art No 10-9519-01) (Fluoroenzymeimmunoassay for 6 x 100 det.)

- Total IgE Conjugate 100
  - 6 vials Ready for use
  - Store at 2−8 °C until expiration date
  - Do not freeze!

- Total IgE Conjugate 400
  - 6 vials Ready for use
  - Store at 2−8 °C until expiration date
  - Do not freeze!

Total IgE Calibrator Strip (Art No 10-9837-01) (Reagents for 5 calibration curves)

- Total IgE Calibration Strip
  - Good human IgE in buffer
  - Conc. 2, 10, 50, 200, 1000 and 5000 kIU
  - Kathen CQ 0.15%
  - Color coded yellow: 0.2 ml

- Total IgE Curve Control Strip (Human IgE in buffer) (Art No 10-0325-01) (Reagents for 5 x 3 sets of Curve Control)
  - 5 strips Each Strip contains a calibration curve
  - Ready for use
  - Store at 2−8 °C until expiration date

- ImmunoCAP Total IgE Anti-IgE (Art No 14-4509-01)
  - ImmunoCAP Total IgE Anti-IgE Mouse monoclonal antibodies
  - Kathen CQ 0.15%

- ImmunoCAP Total IgE Washing Solution (Art No 10-9440-01) (Reagents for 6 x 250 determinations)
  - Development Solution
  - 4-Methylumbelliferyl-ß-D-galactoside 0.01%
  - Kathen CQ 0.05%; 11 ml / 17 ml

- ImmunoCAP Stop Solution (Art No 10-9442-01) (Reagents for 6 x 194 determinations)
  - Stop Solution
  - Sodium carbonate 4%, 120 ml

- ImmunoCAP Stop Solution (Art No 34-2271-01) (Reagents for 1200 determinations)
  - Stop Solution
  - Sodium carbonate 4%; 850 ml

- ImmunoCAP Development Solution (Art No 10-9439-01) (Reagents for 6 x 2000 determinations)
  - Development Solution
  - 4-Methylumbelliferyl-ß-D-galactoside 0.01%
  - Kathen CQ 0.05%; 65 ml / 112 ml

- ImmunoCAP Stop Solution (Art No 10-9314-01) (Reagents for 6 x 250 determinations)
  - Stop Solution
  - Sodium carbonate 4%; 65 ml

- ImmunoCAP Stop Solution (Art No 10-9319-01) (Reagents for 1200 determinations)
  - Stop Solution
  - Sodium carbonate 4%; 850 ml

- ImmunoCAP Development Solution (Art No 10-9440-01) (Reagents for 6 x 310 determinations)
  - Development Solution
  - 4-Methylumbelliferyl-ß-D-galactoside 0.01%
  - Kathen CQ 0.05%; 11 ml / 17 ml

- ImmunoCAP Stop Solution (Art No 10-9442-01) (Reagents for 6 x 310 determinations)
  - Stop Solution
  - Sodium carbonate 4%, 120 ml

PRECAUTIONS

- In vitro diagnostic use. Not for internal or external use in humans or animals.
- Do not use reagents beyond their expiration dates.
- This kit contains reagents manufactured from human blood components. The source materials have been tested by immunoassay; for hepatitis B surface antigen, for antibodies to HIV1, HIV2 and hepatitis C virus and found to be negative. Nevertheless, all recommended precautions for the handling of blood derivatives should be observed. Please refer to Human Health Service (HHS) Publication No. (CDC) 93-8350 or other local/national guidelines on laboratory safety procedures.
- The reagents and their residues must not be allowed to come into contact with immunizing animals or swine.
- Reagents that contain sodium azide as a preservative must be handled with care.
- Sodium azide may react with lead and copper plumbing to form highly explosive sodium azide.
- Reagents that contain sodium azide as a preservative must be handled with care.
- Sodium azide may react with lead and copper plumbing to form highly explosive sodium azide.
- Use two Curve Controls, in single determinations to evaluate subsequent runs against the stored curve. For more information see ImmunoCAP 250 User Manual and ImmunoCAP 1000 User Manual.

QUALITY CONTROL

Record keeping for each assay: it is good laboratory practice to record the lot numbers of the components used, the dates when they were first opened and the remaining volumes.

Control Samples: Good laboratory practice requires that quality control samples should be evaluated in every run. Any material used should be assayed repeatedly to establish mean values and acceptable ranges.

Calibration: Calibrators are available from Phadia AB for day to day quality control.

Measuring Range

The measuring range for an undiluted sample is 2-2000 kIU/L.

PROFESSIONAL VALUE

The IgE calibrators are traceable (via an unbroken chain of calibrations) to the World Health Organization (WHO). ImmunoCAP Total IgE is an in vitro test system for the quantitative measurement of circulating total IgE in human serum or plasma samples. It is intended for in vitro diagnostic use as an aid in the clinical diagnosis of IgE-mediated allergic disorders in conjunction with other clinical findings, and is to be used in clinical laboratories. ImmunoCAP Total IgE Conjugate 100 and 400 is intended to be used with the instrument ImmunoCAP 250 and ImmunoCAP 1000.

Expected Ranges

Reagents for ImmunoCAP 250 and ImmunoCAP 1000 software has built-in acceptance limits for the calibration curve and the curve controls. For more information see ImmunoCAP 250 User Manual and ImmunoCAP 1000 User Manual.

LIMITATIONS OF THE PROCEDURE

A definitive clinical diagnosis should not be based on the results of any single diagnostic method and should only be made by the physician after all clinical and laboratory findings have been evaluated.

EXPECTED VALUES

Comparison studies have shown that each laboratory establishes its own expected range of values.

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Comparison studies (1) between ImmunoCAP 250 and ImmunoCAP 100 have been performed with 96 samples. Results for patient samples obtained with ImmunoCAP 250 and ImmunoCAP 100 show good agreement, see figure below.

Comparison studies (1) between Pharmacia CAP System IgE FEIA and ImmunoCAP Total IgE (run in ImmunoCAP 100) have been performed with 151 samples in two replications on three occasions. Results show good agreement between the methods, see figure below.

A study (1) was performed with ImmunoCAP Total IgE (run in ImmunoCAP 100) on serum collected from 63 non-atopic blood donors. The results of this study (Geometric Mean = 17.4 kU/l, and Geometric Mean + 2SD = 113 kU/l) confirm the applicability of this study (Geometric Mean = 17.4 kU/l, and Geometric Mean + 2SD = 113 kU/l) for previously published expected values studies (6) performed with patient sera from a carefully selected non-atopic patient population using Phadebas IgE PRIST in vitro assay technology. Since previous studies have shown good agreement between results obtained with Pharmacia CAP System IgE FEIA and Phadebas IgE PRIST (see figure above), between ImmunoCAP 100 vs. Pharmacia CAP System (see figure above), between ImmunoCAP 250 and ImmunoCAP 1000 vs. ImmunoCAP 1000 (see data/figure above), the expected values for Phadebas IgE PRIST can also be used for ImmunoCAP Total IgE, run in ImmunoCAP 100, ImmunoCAP 250 and ImmunoCAP 1000.

Adults: Total IgE levels have been determined using Phadebas IgE PRIST in serum of 412 adult patients with respiratory symptoms, of which 160 were classified non-atopic and 252 had atopic disease, and showed the following distribution pattern between atopic and non-atopic individuals (7): below 25 kU/l - 84% non-atopic, above 100 kU/l - 78% atopic. When determining using Phadebas IgE PRIST in another study (7), the geometric mean calculated from the total IgE levels in serum of 175 non-atopic adults was 13.2 kU/l, + 2 SD = 114 kU/l.

Children: The data from two independent studies using Phadebas IgE PRIST for the determination of total IgE in serum of 466 carefully selected healthy children (4,5), have been used for calculations leading to the following summary of development of serum total IgE levels during childhood (6).

After the peak at the age of 10 years, serum total IgE levels decline to adult values.

<table>
<thead>
<tr>
<th>Age</th>
<th>Geometric mean (kU IgE/l)</th>
<th>+ 1 SD (kU IgE/l)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 6</td>
<td>0.6</td>
<td>2.3</td>
</tr>
<tr>
<td>1</td>
<td>1.0</td>
<td>4.1</td>
</tr>
<tr>
<td>2</td>
<td>1.8</td>
<td>7.3</td>
</tr>
<tr>
<td>3</td>
<td>2.6</td>
<td>10.4</td>
</tr>
<tr>
<td>Months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 6</td>
<td>3</td>
<td>8.0</td>
</tr>
<tr>
<td>7</td>
<td>8</td>
<td>18</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
<td>63</td>
</tr>
<tr>
<td>Years</td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 6</td>
<td>5</td>
<td>23</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>12</td>
<td>16</td>
<td>63</td>
</tr>
</tbody>
</table>

PERFORMANCE CHARACTERISTICS

Precision (1)

The following mean coefficients of variation have been obtained, each sample assayed in 2 replicates on 24 different occasions, using the same list of reagents. Each level contains 3 samples. The results have been obtained with ImmunoCAP 1000. They are expected results for both ImmunoCAP 250 and ImmunoCAP 1000.

<table>
<thead>
<tr>
<th>Sample level (kU/l)</th>
<th>Coefficients of variation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 - 60</td>
<td>5</td>
</tr>
<tr>
<td>75 - 430</td>
<td>3</td>
</tr>
<tr>
<td>600 - 1840</td>
<td>5</td>
</tr>
</tbody>
</table>

Sensitivity (1)

The detection limit is < 2 kU/l.

Specificity (1)

The cross-reactivity with other human immunoglobulins is non-detectable at physiological concentrations of IgA, IgD, IgM and IgG.

Recovery (1)

Mean recovery is 98%.

WARRANTY

The performance data presented here was obtained using the procedure indicated. Any change or modification in the procedure not recommended by Phadia AB may affect the results, in which event Phadia AB disclaims all warranties expressed, implied or statutory, including the implied warranty of merchantability and fitness for use. Phadia AB and its authorized distributors, in such event, shall not be liable for damages indirect or consequential.

REFERENCES


ImmunoCAP is our brand name and replaces the old name UniCAP.

Notes

(1) Studies performed at Phadia AB, Uppsala, Sweden.

Patents

ImmunoCAP Systems may be covered by the following patents: US Patent 4,647,655; 4,708,932; 5,822,069 and 5,895,630 European Patent 134 236 and 128 885 Japanese Patent 194 288 1 and 185 589 1

In addition pending patents.

The following designations are trademarks belonging to Phadia AB: ImmunoCAP, Quality Club. Kathon is a trademark of Rohm and Haas Company.

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