NOTE: This package insert must be read carefully prior to product use. Package insert instructions must be followed accordingly. Reliability of assay results cannot be guaranteed if there are any deviations from the instructions in this package insert.

NOTE: Changes Highlighted

INTENDED USE
The MULTIGENT Ceruloplasmin assay is intended for the quantitative immunoturbidimetric determination of ceruloplasmin in human serum or plasma on the ARCHITECT cSystem.

SUMMARY AND EXPLANATION OF TEST
Ceruloplasmin determination is useful in cases of central nervous system diseases of obscure etiology. Low levels of ceruloplasmin occur in Menke’s syndrome, nephrotic syndromes, and in some cases of advanced liver diseases. High levels of ceruloplasmin occur in a variety of neoplastic and inflammatory states.

PRINCIPLES OF PROCEDURE
The determination of ceruloplasmin is based on the specific immunoturbidimetric reaction, which occurs between the anti-ceruloplasmin polyclonal antiserum and its corresponding antigen under optimal pH conditions and in the presence of polyethylene glycol (PEG). The turbidity caused by immune complex formation is proportional to the concentration of the analyte in the sample.

Methodology: Turbidimetric/immunoturbidimetric

REAGENTS
Reagent Kit

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagent 1</td>
<td>Phosphate Buffer, pH 7.5 20 mmol/L</td>
</tr>
<tr>
<td>Reagent 2</td>
<td>Polyethylene Glycol ≥ 5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reagent 3</td>
<td>Anti-ceruloplasmin polyclonal antiserum (goat) 0.002%</td>
</tr>
</tbody>
</table>

Nonvaccine Ingredients: Reagent 1 contains sodium azide (< 0.1%) and stabilizer.

REAGENT HANDLING AND STORAGE
Reagent Handling
- Unopened and opened reagents are Ready for use.
- Opened Reagent 1 and 3 should be stored at 2 to 8°C.
- Opened Reagent 2 should be stored at room temperature.
- Opened Reagents 1, 2, and 3 should be handled with care to prevent contamination.

CAUTION: Reagent bubbles may interfere with proper detection of reagent level in the cartridges, causing insufficient reagent aspiration that could impact results.

Reagent Storage
- Unopened and opened reagents are stable until the expiration date when stored at 2 to 8°C.
- Reagent stability is 60 days if the reagent is unopened and stored at room temperature.

Indications of Deterioration
Instability or deterioration should be suspected if there are visible signs of leakage, microbial growth, or calibration does not meet the appropriate criteria. If changes are noted, the assay should be discontinued.

Symbols in Product Labelling
- **CERULOPLASMIN**
- **ARCHITECT**
- **SENTINEL CH. SpA Via Robert Koch, 2 Milan 20125 Italy**

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PROCEDURE

Materials Provided
- MULTIGENT Ceruloplasmin Kit
- MULTIGENT Plasmaproteins Cal 3x

Materials Required but not Provided
- Saline (0.85% to 0.90% NaCl) for specimens that require dilution

Assay Procedure

For a detailed description of how to run an assay on the ARCHITECT c Systems, refer to Section 5 of the ARCHITECT System Operations Manual.

Specimen Dilution Procedure

The ARCHITECT c Systems have an automatic dilution feature.

Serum and Plasma: Specimens with ceruloplasmin values exceeding linearity are flagged and may be diluted by following either the Automated Dilution Protocol or the Manual Dilution Procedure.

Automated Dilution Protocol

If using the Automated Dilution Protocol, the system performs a dilution of the specimen and automatically corrects the concentration by multiplying the result by the appropriate dilution factor. To set up the automatic dilution factor, refer to Section 2 of the ARCHITECT System Operations Manual for additional information.

Manual Dilution Procedure

- Use saline (0.85% to 0.90% NaCl) to dilute the sample.
- The operator must enter the dilution factor in the patient or control order screen. The system uses this dilution factor to automatically correct the concentration by multiplying the result by the entered factor.
- If the operator does not enter the dilution factor, the result must be multiplied by the appropriate dilution factor before reporting the result.

NOTE: If a diluted sample result is flagged indicating it is less than the linear low limit, do not report the result. Run using an appropriate dilution.

For detailed information on ordering dilutions, refer to Section 5 of the ARCHITECT System Operations Manual.

CALIBRATION

Calibration is stable for approximately 10 days (240 hours) and is required with each change in reagent lot number. Verify calibration curve with at least two levels of controls according to the established quality control requirements for your laboratory. If control results fall outside acceptable ranges, recalibration may be necessary.

For a detailed description of how to calibrate an assay, refer to Section 6 of the ARCHITECT System Operations Manual.

Standardization

For information on standardization, refer to the MULTIGENT Plasmaproteins Cal 3x package insert.

QUALITY CONTROL

As appropriate, refer to your laboratory standard operating procedure(s) and/or quality assurance plan for additional quality control requirements and potential corrective actions:
- Two levels of controls (normal and abnormal) are to be run every 24 hours.
- If more frequent control monitoring is required, follow the established quality control procedures for your laboratory.
- If quality control results do not meet the acceptance criteria defined by your laboratory, patient values may be suspect. Follow the established quality control procedures for your laboratory. Recalibration may be necessary.
- Review quality control results and acceptance criteria following a change of reagent or calibrator lot.

RESULTS

Refer to Appendix C of the ARCHITECT System Operations Manual for information on results calculations.

To convert results from mg/dL to g/L, multiply mg/dL by 0.01.

Representative performance data are given in the SPECIFIC PERFORMANCE CHARACTERISTICS section of this package insert.

Results obtained in individual laboratories may vary.

EXPECTED VALUES

<table>
<thead>
<tr>
<th>Reference Range</th>
<th>Serum and plasma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range (mg/dL)</td>
<td>Range (g/L)</td>
</tr>
<tr>
<td>20 to 60</td>
<td>0.20 to 0.60</td>
</tr>
</tbody>
</table>

It is recommended that each laboratory determine its own reference range based upon its particular locale and population characteristics.

SPECIFIC PERFORMANCE CHARACTERISTICS

Reportable Range

The reportable range for MULTIGENT Ceruloplasmin is from 2 mg/dL to the value of the assigned calibrator concentration.

Limit of Quantitation (LOQ)

The LOQ for MULTIGENT Ceruloplasmin is 1.88 mg/dL (0.0188 g/L). LOQ represents the lowest measurable ceruloplasmin concentration at which the CV < 20%.

Interfering Substances

Interference studies were conducted using an acceptance criteria of a 10% deviation from the target value.

<table>
<thead>
<tr>
<th>Interfering Substance</th>
<th>Interferent Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bilirubin</td>
<td>≤30 mg/dL (≤513.0 μmol/L)</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>≤500 mg/dL (≤5.0 g/L)</td>
</tr>
<tr>
<td>Intralipid</td>
<td>≤1,000 mg/dL (≤10 g/L)</td>
</tr>
<tr>
<td>Rheumatoid factor</td>
<td>≤70 IU/mL</td>
</tr>
</tbody>
</table>

Precision

The precision of the MULTIGENT Ceruloplasmin assay is ≤10% Total CV. Precision was determined over 5 days with two runs and four replicates of each control per day. Representative results are summarized below.

<table>
<thead>
<tr>
<th>Control Level</th>
<th>N 4 04 04 0</th>
<th>Mean (mg/dL)</th>
<th>Within Run SD</th>
<th>Between Run SD</th>
<th>Total SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>40</td>
<td>15.56</td>
<td>0.93</td>
<td>0.93</td>
<td>1.86</td>
</tr>
<tr>
<td>2</td>
<td>40</td>
<td>15.88</td>
<td>0.88</td>
<td>0.88</td>
<td>1.76</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>15.64</td>
<td>0.86</td>
<td>0.86</td>
<td>1.72</td>
</tr>
</tbody>
</table>

Method Comparison

Serum results from the MULTIGENT Ceruloplasmin assay on the AEROSET System were compared with results from a commercially available immunoturbidimetric method.

AEROSET vs. ARCHITECT c Systems

The results obtained in individual laboratories may vary.

<table>
<thead>
<tr>
<th></th>
<th>N 4 04 0</th>
<th>Y - Intercept</th>
<th>Correlation Coefficient</th>
<th>Slope</th>
<th>Range (mg/dL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>AEROSET</td>
<td>3</td>
<td>-1.6205</td>
<td>0.9991</td>
<td>0.001</td>
<td>14.8 to 77.8</td>
</tr>
<tr>
<td>ARCHITECT c</td>
<td>5</td>
<td>-3.5341</td>
<td>0.9873</td>
<td>0.001</td>
<td>15.5 to 71.7</td>
</tr>
</tbody>
</table>

To convert results from mg/dL to g/L, multiply mg/dL by 0.01.
BIBLIOGRAPHY


TRADEMARKS

The ARCHITECT c System family of instruments consists of the c4000, c8000, and c16000 Systems. AEROSET, ARCHITECT, c4000, c8000, c16000, cSystem, MULTIGENT, and SmartWash are trademarks of Abbott Laboratories in various jurisdictions. All trademarks are property of their respective owners.

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