



CPAL

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Change of Method: Serum Protein Electrophoresis and Immunotyping via Capillary Electrophoresis

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Summary:

Effective August 12, 2008, CPAL will perform serum protein electrophoresis via capillary electrophoresis using the *Sebia Capillarys System*. The primary advantage of this system in our laboratory will be increased throughput capacity and the streamlining of the interpretive portion of the analysis.

Serum Protein Electrophoresis

Protein electrophoresis is a well established technique routinely used in clinical laboratories for screening serum and other fluids for protein abnormalities. The Capillarys has been developed to provide complete automation of this testing with fast separation and good resolution. In many respects, the methodology can be considered as an intermediary type of technique between classical zone electrophoresis and liquid chromatography. The Capillarys system uses the principle of capillary zone electrophoresis in free solution. With this technique, charged molecules are separated by their electrophoretic mobility in an alkaline buffer with a specific pH. Separation also occurs according to the electrolyte pH and electro-osmotic flow. The Capillarys system has 8 capillaries functioning in parallel allowing 8 simultaneous analyses. A high voltage protein separation is then performed and direct detection of the proteins is made at 200 nm at the cathodic end of the capillary. Proteins are detected in the following order: gamma globulins, beta-2 globulins, beta-1 globulins, alpha-2 globulins, alpha-1 globulins, and albumin with each zone containing one or more protein.

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For questions about this and other information, call Central Pennsylvania Alliance Laboratory at 1-888-480-1422.

Immunotyping (IT)

The characterization of monoclonal proteins via capillary electrophoresis is termed Immunotyping (IT) and is a variation of the previous method of immunofixation (IFE).

In this procedure, each sample is mixed with individual antisera that are specific against gamma (IgG), alpha (IgA), and mu (IgM) heavy chains, and kappa (free and bound) light chains and lambda (free and bound) light chains respectively. The electrophoregrams are evaluated visually to detect the presence of specific reactions with the suspect monoclonal proteins. The superimposition of the antisera patterns with reference pattern (Serum Protein Electrophoresis) permits the visualization of disappearance and/or decrease of a monoclonal fraction on the antiserum pattern to indicate a gammopathy.

The report formats for both serum protein electrophoresis and serum immunotyping will remain unchanged. Some interpretive comments have been modified to reflect the changes in methodology.

Reference Ranges:

	<u>g/dL</u>	<u>%</u>
Albumin	(3.79-4.49)	(55.8-66.1)
Alpha-1	(0.20-0.33)	(2.9-4.9)
Alpha-2	(0.48-0.80)	(7.1-11.8)
Beta	(0.54-0.93)	(7.9-13.7)
Gamma	(0.75-0.93)	(11.1-18.8)