

**TEST: SERUM PROTEIN ELECTROPHORESIS (SPE)**

**PRINCIPLE:**

No group of molecules present in human body fluids is as functionally important to normal physiology as are the proteins. SPE allows the clinical scientist to detect a variety of pathophysiological states such as paraprotein disorders and hyper and hypogammopathies by showing changes in both the quantity and the molecular nature of several classes of serum proteins. After electrophoretic separation, at least 5 bands may be resolved and quantified by densitometry including albumin, alpha-albumin, alpha-1-regions, alpha-2-region, beta-globulin and gamma-globulin. SPE provides one of the best tools for the general screening of the human health state in conjunction with follow-up procedures such as specific protein quantitation immunoelectrophoresis immunofixation and high resolution electrophoretic techniques.

**METHOD:** Electrophoresis

**SPECIMEN REQUIREMENTS:**

Blood collected in a red top tube with no additive or in a serum separator tube (gel barrier).

Do not use hemolyzed specimens. Minimum of 50  $\mu$ l of serum is required, optimum volume is 100  $\mu$ l. Store specimens at 2-8°C for up to 72 hours or freeze at -20°C or below in a non-defrosting freezer (avoid repeated freeze-thaw cycles).

**REFERENCES:**

1. Paragon SPE kit package insert instructions. P.N. 015-556458-J Beckman Instrument, Inc. Fullerton, CA. Sept. 1993.
2. Beckman Instrument, Inc., Beckman Paragon Electrophoresis Manual, Brea, CA. 1982
3. Dimopolulos, G.T., Plasma Proteins in Health and Disease, Ann. N.Y. Acad. Sci 94:1 (1961).

**Normal Values:**

**Protein Fraction**

<b>Albumin</b>	<b>3.5 – 5.5 g/dl</b>
<b>Alpha 1</b>	<b>0.2 – 0.4 g/dl</b>
<b>Alpha 2</b>	<b>0.4 – 0.7 g/dl</b>
<b>Beta</b>	<b>0.5 – 1.0 g/dl</b>
<b>Gamma</b>	<b>0.4 – 1.4 g/dl</b>
<b>A/G Ratio</b>	<b>1.39 – 2.23</b>
<b>Total Protein</b>	<b>5.6 to 8.1 g/dl</b>

**Turnaround Time:** One Week