

Using Excel to Make Scientific Plots

Exercise #1: Biuret Assay

The Biuret assay is used to measure the amount of protein in a solution. It is useful when the concentration of protein is relatively high, greater than 0.1 mg protein per mL of solution. In the Biuret assay the peptide bonds in protein are bound by a Cu (II) cations in a basic solution and this complex has a much darker blue color than unbound Cu (II) cations. Thus, in an excess of Cu (II) ions, the more intense the blue color, the more protein present in the sample. The amount of blue color is measured by determining the absorbance of light at 550 nm, A_{550} , using a spectrophotometer. A standard curve must be prepared that plots the relationship between A_{550} and the amount of protein in the assay. Then, for a sample with an unknown amount of protein the A_{550} will indicate the amount of protein.

The following data were obtained by performing a Biuret assay. Do the following with these data:

- 1) Prepare a plot of the standard curve. X value = amount of protein in μg , Y value = A_{550} , plot the best fit straight line that includes the origin (0,0).
- 2) Determine the equation for the best fit straight line.
- 3) Determine the amount of protein in the sample of FCS.

<u>Protein in test tube, μg</u>	<u>Absorbance at 550 nm</u>
0	0.000
0	0.000
200	0.046
200	0.040
400	0.097
400	0.094
600	0.141
600	0.147
800	0.190
800	0.190
1000	0.241
1000	0.246
? FCS	0.164
? FCS	0.172