Amino Acid Analysis
Post Column Ninhydrin Derivitization

Instrumentation: Hitachi L-8800
Cost: $71,000
5 Yr. Warranty: $5,000
  year 1 and 2   everything covered
  year 3-5      major components only
Repairs:
  2002 $3700
  2003 $7600
Other costs:
  Separation Column $2900

Very similar to the Beckman 6300
NIST AA Standard

~ 1 hour recycle time

Channel 1
Amino Acids

Channel 2
Imino Acids

570 nm

440 nm
NIST BSA (1.0 mg/mL)

Accuracy and Precision

Parameters:
- $n = 9$ BSA samples, 2 operators
- Inner error bar = 1 standard deviation
- Outer error bar = Average percent error
NIST BSA Amino Acid Composition

Accuracy and Precision

[Bar chart showing the number of amino acids for each type, with different operators represented by different colors and symbols.]

Diamond - Theoretical AA number for BSA
Yellow = Operator 1
Blue = Operator 2
Amino Acid LOQ and LOD

Quantitation Range 0.1 - 50 nanomoles

Percent (%) vs. Nanomoles analyzed

Ave. % Error
For each AA
N=3

LOQ  LOD
NIST BSA (~66 kDa) LOQ
Quantitation Range 5 - 1000 picomoles
(Working Range 0.1 to 20 mg/mL)

Ave % Error (16 AA’s)

LOQ (< 10%)

NIST BSA control
n = 3

Picomoles analyzed
The Effect of Protein Contamination on Average Percent Error Values

The diagram shows a linear relationship between Percent Protein Contamination and Ave. % Error (16 AA’s). The NIST BSA control is indicated with an n = 3.