10 determinations at 10.7 mg/L was 4.1% within-batch, and
11.9% between-batch; at 26.9 mg/L, 3.5% and 4.9%; and at
73.4 mg/L, 1.7% and 5.8%. Comparison of results obtained
with the RA-1000 and a modified "in-house" immunoturbidi-
metric method (2) gave the regression equation: [Sera-Pak
albumin method] = 1.06 [immunoturbidimetric method] –
0.19 mg/mL (r = 0.99). Bilirubin and hemoglobin do not
affect the assay, but grossly lipemic specimens (initial blank
absorbance >1.0) can give erratic results and such speci-
mens should not be analyzed.

The assay is quick (8-min throughput) and price compares
favorably with other kits on the market.

Settings for the RA-1000 are as follows:

<table>
<thead>
<tr>
<th>Assay</th>
<th>Method</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immunoassay</td>
<td></td>
<td>0-1</td>
</tr>
<tr>
<td>IA Table</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Type</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>% Sample vol</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Filter pos</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Delay</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Default blank</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>% Reagent vol</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>Units</td>
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<td>0-100</td>
</tr>
<tr>
<td>Unit factor</td>
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<tr>
<td>Decimal point</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>RBL low</td>
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</tr>
<tr>
<td>RBL high</td>
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<td>0-100</td>
</tr>
<tr>
<td>Range low</td>
<td></td>
<td>0-100</td>
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<tr>
<td>Range high</td>
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</tr>
<tr>
<td>Normal low</td>
<td></td>
<td>0-100</td>
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<tr>
<td>Normal high</td>
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<tr>
<td>Slope</td>
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<td>0-100</td>
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<td>0-100</td>
</tr>
<tr>
<td>IA Type</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>% STD</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>% ASP</td>
<td></td>
<td>0-100</td>
</tr>
<tr>
<td>STD 1</td>
<td></td>
<td>0-100</td>
</tr>
</tbody>
</table>

*These values may vary between kits.

We thank Miles Laboratories Limited for providing kits for
this study.

References
1. Dona V, Maierma M, Terenghi G, Berti G. Poster session, XIII
2. Stroud RE. An immunoturbidimetric assay for microalbumi-
meeting, 1985. Technicon Instruments U.K., Hamilton Close, Bas-
sinake, England.

Effect of Extreme Humidity and Temperature on
Seralyzer and Reflotron Test Strips, Amin A. Nanji, 1
Raymond Poon, 2 and Irwin Hinberg 2 (1 Dept. of
Pathology, University of Ottawa and Ottawa General
Hospital, and 2 Health Protection Branch, Ottawa,
Canada)

The manufacturers recommend that test strips for use in
the Seralyzer (Ames Division, Miles Laboratories, Elkhart,
IN) be stored at 30 °C, and that test strips for the Reflotron
(Boehringer Mannheim, Dorval, Québec) be refrigerated.
Because many countries go through extremes of tempera-
ture and humidity, we examined the effect of temperature
and humidity on test-strip performance.

Humidity chambers (glass desiccators) were kept at a
relative humidity of 92 to 98%. Testing was done at room
temperature (21 °C) and at 34 °C. "Control" strips were
stored according to manufacturer's instructions. The test-
strips were left overnight (14 h) in the respective storage
conditions, then used to measure selected analytes in pa-
ients' samples.

The following tabulation summarizes our results, show-
ing the range of results for five test strips at each different
temperature.

<table>
<thead>
<tr>
<th>Assay</th>
<th>Control</th>
<th>21 °C</th>
<th>34 °C</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seralyzer</td>
<td>Glucose, mmol/L</td>
<td>12.1-12.9</td>
<td>13.0-13.6</td>
</tr>
<tr>
<td></td>
<td>Aspartate aminotransferase, U/L</td>
<td>137-148</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td>Potassium, mmol/L</td>
<td>6.8-6.9</td>
<td>5.6-7.3</td>
</tr>
<tr>
<td>Reflotron</td>
<td>Glucose, mmol/L</td>
<td>16.1-17.3</td>
<td>24.2-29.2</td>
</tr>
<tr>
<td></td>
<td>Triglycerides, mmol/L</td>
<td>0.97-1.02</td>
<td>1.84-1.91</td>
</tr>
<tr>
<td></td>
<td>γ-Glutamyltransferase, U/L</td>
<td>87-92</td>
<td>30-73</td>
</tr>
</tbody>
</table>

Clearly, storage of strips under conditions other than
those recommended by the manufacturer can lead to erro-
neous results. Because the strips used with the Reflotron
must be refrigerated, problems may be less likely to occur.
With the Seralyzer strips, storage at room temperature can
mean extremely variable conditions, especially where facili-
ties are not air-conditioned. We also recognize that results
obtained for strips stored longer at lesser humidities will
differ from the results obtained in our study.

Supported by a grant from Health and Welfare, Canada.

Kinetic Fluorimetric Assay for Alpha-1-Antitrypsin
Elastase-Inhibitory Capacity in Serum, S. E. Nethercott
and N. A. Kalaneker (Med. Biochem. Dept., Royal
Infirmary, Cardiff CF2 1SZ, U.K. Address
and correspondence to N.A.K.)

The functional activity of serum alpha-1-antitrypsin (AAT)
is diminished in cigarette smokers even though the immu-
nochemical concentration may be normal or increased (1).
We have developed a kinetic fluorimetric assay for measur-
ing the functional activity of AAT by adapting an end-point
assay with the substrate Me-O-Suc-Ala-Ala-Pro-Val-AMC
(2), obtained from Cambridge Research Biomedicals Ltd.,
Cambridge, U.K. We used a "Multistat III" centrifugal
analyzer with an attached fluorimeter (Instrumentation
Laboratory Inc., Cheshire, U.K.). Serum was sampled from
18 apparently healthy adult blood donors, eight patients
with AAT deficiency, and 18 patients with an acute-phase
response, and either promptly analyzed or stored at ~20 °C
until analysis. Samples were diluted 50-fold in Tris buffer
(200 mmol/L, pH 8.0), pre-incubated with 20 μL of elastase
(20 pmol; specific activity 95 kU/g) and 100 μL (6.4 mmol)
of substrate in the sample cuvet. Methyl umbelliferyl (final
concentration 14.2 μmol/L), prepared in 18 mmol/L sulfuric
acid and subsequently diluted in Tris buffer, was used as the
reference fluorescent compound, and a 3.55 μmol/L concen-
tration of it was used for calibrating the instrument.

After mixing, we measured the changes in relative fluo-
rescence at 5-s intervals for 60 s (λex 370 nm, λem 450 nm).