allylic alcohol moiety of codeine. The TMS derivatives can be injected directly into the GC/MS, and do not require a drying step—an advantage compared with the acetyl derivatization procedure.

We found acid hydrolysis better than enzymatic hydrolysis for liberation of the conjugated opiates. Analytical recoveries (larger peaks) of morphine were better and the acid hydrolysis is shorter than the enzymatic procedure, which takes several hours or an overnight incubation. Opiates decompose, however, if urine is refluxed for >30 min. Similar findings were noted by Fish and Hayes (5).

Operating in the "scan" mode, the on-column sensitivity for morphine is about 40 ng (with a signal/noise ratio >10), indicating the method has sufficient sensitivity for use in drug testing and confirmation.

References

Misidentification of Urine Lipid Bodies Owing to Use of Starch-Powdered Gloves, Pierre-Etienne Senécal and Jacques Rochette (Département de biochimie médicale, Hôpital du St-Sacrement, 1050 Chemin Ste-Foy, Québec, QC, Canada G1S 4L8)

We have found that the powder from at least one brand of powdered gloves ("Tru-Touch"; Becton Dickinson, Missisauga, Canada) can give rise to false urine lipid bodies (ULB) under microscopy. This is noteworthy in light of the increasing trend to wear gloves during manipulations of body fluids (1).

This is of clinical importance because the presence of positively birefringent ULB may lead to the diagnosis of the nephrotic syndrome (2, 3). ULB are sometimes called "oval fat bodies" (4, 5), and they can form fatty casts. If contamination has already occurred or is suspected, three criteria can be used to distinguish true from false ULB. Firstly, as shown in Figure 1, false ULB are not as regular and round as true ULB. Secondly, under crossed polarized light, the conical texture of the maltese crosses of false ULB, more appropriately termed "French cross pâté" (6), tend to be off center. Thirdly, true ULB tend to accompany proteinuria, as in the nephrotic syndrome (2); usually the degree of proteinuria has already been determined by dipstick analysis. We found no advantage in using a stain ("SediStain"; Clay-Adams, Parsippany, NJ) to differentiate true ULB from false. Sudan III stain in 70% alcohol has been advocated for this use. Martin and Small (7) used the temperature of the transition from anisotropism to isotropism (~42 °C) to characterize oval fat bodies (7), but we find this impracticable in the usual clinical laboratory.

The contaminant was shown to be corn starch by the color it developed with an iodine solution; this finding was confirmed by the manufacturer. A commercial talcum powder did not resemble ULB at all when examined under the same conditions.

Thus we suggest that all laboratories performing microscopic urinalyses verify whether this artifact could occur in their own laboratory: scrape a glove's interior with a slide, cover the residue so obtained with normal urine, and search for contamination, using the aforementioned criteria.

References
4. Derman H. Identification and purification of formed elements in the urine. In: Sunderman FW, Sunderman FW, eds. Laboratory

"URIN-PAK" Immunoturbidimetric Method Evaluated for Measuring Albumin in Urine, Angela S. Linton and David J. F. Rowe (Dept. of Chem. Pathol., The General Hospital, Southampton, S09 4XY, U.K.)

"URIN-PAK" (Miles Laboratories Ltd., Stoke Poges, Slough SL2 4LY, U.K.) measures low concentrations of albumin in human urine by immunoturbidimetry, and thus can detect early increases in albumin excretion in diabetes. We evaluated the kit according to the manufacturer’s instructions, except for changing the sample volume from 24 

\mu L to 36 

\mu L and increasing the reaction temperature to 30 °C, comparing results with those by an in-house immunoturbidimetric method (1). For both methods we used an IL Multistat III centrifugal analyzer. Three concentrations of quality-control samples were analyzed with each batch of samples.

**Evaluation protocol:**

1. Within- and between-batch precision data.
2. 100 patients’ samples assayed by both methods.
3. Measurement of antigen excess limits with URIN-PAK.
4. Maximum-absorbance data for standards, with use of URIN-PAK vs in-house (Dako) antibody.

1. The precision data are shown in following tabulation:

<table>
<thead>
<tr>
<th></th>
<th>Within-batch</th>
<th>Between-batch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ames</td>
<td>In-house</td>
<td>Ames</td>
</tr>
<tr>
<td>Low (15 mmol/L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 14</td>
<td>n = 18</td>
<td>n = 16</td>
</tr>
<tr>
<td>x = 15.2</td>
<td>x = 17.1</td>
<td>x = 14.9</td>
</tr>
<tr>
<td>CV 1.02%</td>
<td>CV 1.88%</td>
<td>CV 2.48%</td>
</tr>
<tr>
<td>Medium (30 mmol/L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 14</td>
<td>n = 18</td>
<td>n = 16</td>
</tr>
<tr>
<td>x = 30.5</td>
<td>x = 33.9</td>
<td>x = 32.9</td>
</tr>
<tr>
<td>CV 1.83%</td>
<td>CV 2.79%</td>
<td>CV 3.24%</td>
</tr>
<tr>
<td>High (60 mmol/L)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n = 18</td>
<td>n = 11</td>
<td>n = 15</td>
</tr>
<tr>
<td>x = 73.6</td>
<td>x = 65.8</td>
<td>x = 67.2</td>
</tr>
<tr>
<td>CV 1.03%</td>
<td>CV 0.99%</td>
<td>CV 1.78%</td>
</tr>
</tbody>
</table>

2. There was a close correlation (r = 0.97) and little bias between the methods; mean urinary albumin concentration = 23.7 and 23.6 mg/L (URIN-PAK and in-house method, respectively).
3. Antigen excess (URIN-PAK) appeared at 200 mg/L.
4. Five and 10 mg/L URIN-PAK standards showed low reaction absorbances, whereas at higher albumin concentrations URIN-PAK produced greater net absorbances than did the in-house method (ΔA at 40 mg/L = 0.21 and 0.11, at 80 mg/L = 0.30 and 0.18, respectively).

The Ames URIN-PAK immunoturbidimetric albumin method thus correlated closely with an in-house method.

URIN-PAK performed with greater precision, perhaps related to the larger sample volume and to greater antibody avidity. A major disadvantage of URIN-PAK was that, in the Multistat III analyzer, a third of the assays gave no measurable reaction absorbance at 5 mg/L, preventing automatic calculation of results. This would need correcting before routine use with the Multistat III.

**Reference**


Ames' "Microbumintest" Evaluated, and Its Correlation with Total Protein and Albumin Concentration in Urine, Angela S. Linton and David J. F. Rowe (Dept. of Chem. Pathol., The General Hospital, Southampton S09 4XY, U.K.)

"Microbumintest" (Ames Division, Miles Laboratories Limited, Stoke Poges, Slough SL2 4LY, U.K.) is a qualitative tablet test for measurement of protein in urine, particularly for diabetes screening to detect "microalbuminuria," which predicts progression to diabetic nephropathy and renal failure (1, 2).

We assessed Microbumintest to determine its ease of use, its correlation with quantitative measurements of total protein and albumin, its sensitivity and specificity in detecting albuminuria at a cutoff of 40 mg/L. We assessed it against a three-point reference chart: negative, 1+ positive, and 2+ positive. A negative result is stated to predict >98% of the time, the presence of <120 mg of protein or <40 mg of albumin per liter.

We used 89 urine samples from diabetic patients, assessing them by Microbumintest, by quantitative tests for total protein (benzathionium chloride) and albumin (immunoturbidimetry) (3), and by Ames' "Multistix" for protein, relative density (specific gravity), and pH.

We found Microbumintest easy to use, and we could easily distinguish between a negative, 1+ positive, 2+ positive result—denoted 1, 2, and 3, respectively, in Figure 1, which shows comparative results for total protein and albumin. There was no correlation between Microbumintest results