Stability of 6-acetylmorphine in oral fluid proficiency samples over 18 months
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Abstract

Objectives
• To determine the stability of opiates in neat oral fluid proficiency samples.

Methods
• Neat oral fluid samples (3mL, pH 7.0) were received from RTI International, NC as part of the proficiency scheme.
• The neat oral fluid was stored in amber glass bottles at 4°C until ready for analysis.
• ELISA immunoassay screening and GC/MS were initially carried out upon receipt of the specimens.
• Samples were re-analyzed in June 2009.
• All samples (N=5) and calibrators were diluted 1+3 with Quantisal™ buffer prior to analysis but were stored in the original containers not in Quantisal™ buffer.

Results

• Of the 25 proficiency samples, 6 tested positive for opiates. One other sample testing positive for oxycodone, hydrocodone and hydromorphone is not discussed here.
• Originally reported results were all within +/- 20% of expected concentrations, as targeted by RTI, at concentrations ranging from 8 to 16ng/mL.
• Samples that were reanalyzed were stored for various lengths of time 18, 14, 5 and 1 months increments.
• All samples, when reanalyzed for codeine and morphine, showed no loss of drug and were within +/- 10% of original values. However, 6-AM demonstrated a significant loss ranging from 100% for a sample stored for 18 months to no measurable loss in a sample stored for one month; there was no consistent rate of loss per month.
• One sample originally had a concentration of 12ng/mL showed no 6-AM remaining after 18 months of storage.
• An initial hypothesis that the loss may occur quickly in the first 5 months was disproved by analysis of one sample with an original concentration of 12ng/mL showing a concentration of 9ng/mL after 14 months of storage (1.6% loss per month).

6-acetylmorphine in oral fluid specimens

Data Summary

Summary

• The stability of 6-AM in neat oral fluid should be studied using a much larger pool of samples and at a greater number of time intervals.
• However, in past studies 6-AM has been shown to degrade rapidly with the majority of the drug loss within the first 5 months.