



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



Cynthia Coulter, Margaux Taruc, James Tuyay, Christine Moore
Immunoanalysis Corporation, Pomona, CA, U.S.A.

Abstract

- Using proficiency samples of known concentration received between January 2008 and May 2009, the stability of codeine (COD), morphine (MOR), and 6-acetylmorphine (6-AM) in oral fluid was determined.
- Data was collected by GC/MS and the results were compared to originally reported values.

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).

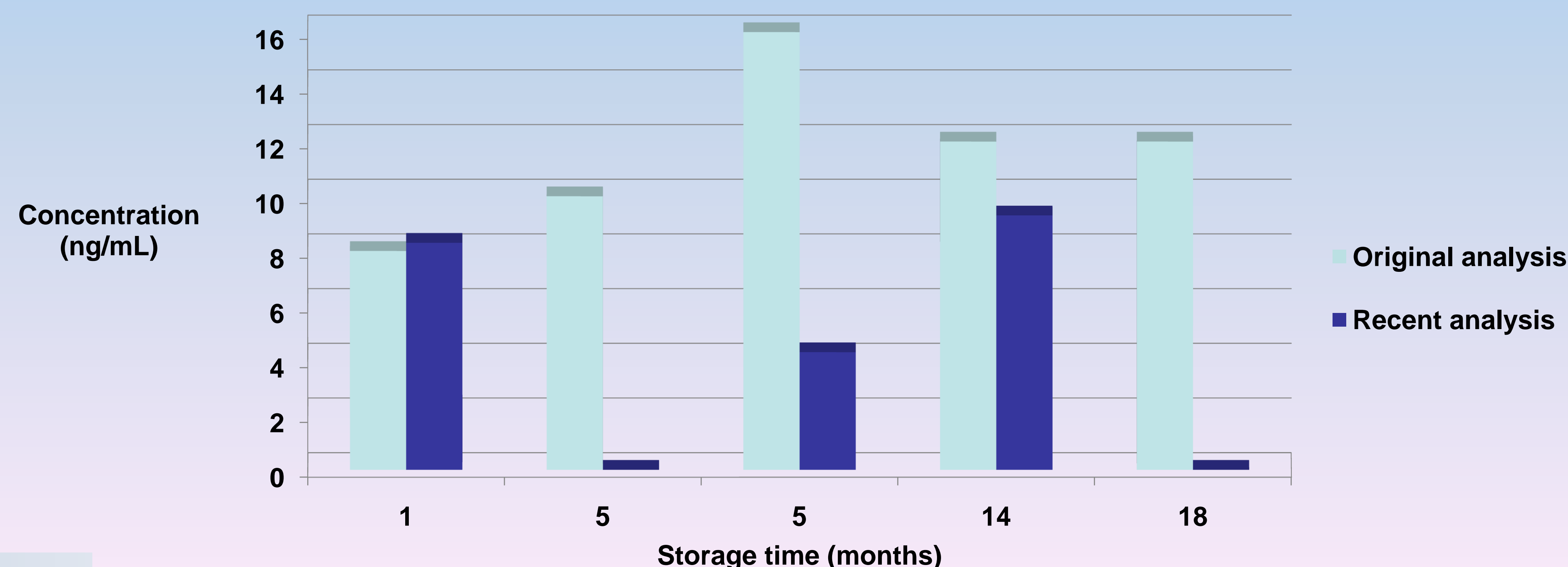
Data Summary

	original ng/mL	June 2009 ng/mL
01/2008 OFU-02	12	0
04/2008 OFU-11	12	9.3
01/2009 OFU-02	16	4.3
01/2009 OFU-04	10	0
05/2009 OFU-07	8	8.3

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.

6-acetylmorphine in oral fluid specimens



Oral Fluid

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