Reviewer’s report

**Title:** Challenges and limitations of routine immunoassay-based drug of abuse/toxicology screening used in emergency medicine

**Version:** 1 **Date:** 20 March 2009

**Reviewer:** Alain Verstraete

**Reviewer’s report:**

. Major Compulsory Revisions
. 1. The title should be more specific, and mention e.g. molecular similarity analysis. In its present form, one expects a more clinical article, with an evaluation of immunoassays and GC-MS, and recommendations for clinical and laboratory practice.

2. P 11&20. I am surprised that the authors don’t mention venlafaxine (55th most prescribed drug in the US) as a possible cause of PCP false positives, as it was mentioned in at least 3 publications.

. Minor Essential Revisions
3. P17: the text suggests that figure 2B compares the detection of lorazepam and lorazepam glucuronide, but lorazepam is not shown in the figure.

4. P17: the cleavage of glucuronide bonds is included in the reaction of some assays (EMIT & KIMS), so it doesn’t increase analysis time.

5. P 24: please correct the sentence: Of the remaining positive screens … were included patients, e.g. the remaining positive screens … included patients

Discretionary Revisions

6. I wonder whether the explanations on the studies chosen to place the brackets in the figures 2-4 should be mentioned in the text or in the figure legends.

7. Maybe the issue of the cut-off could be discussed as well. Most cut-offs are placed relatively high, to avoid false positives in workplace testing. Lowering them could lower the number of false negatives e.g. for benzodiazepines.

8. Maybe the message in figure 5 B would be clearer in a pie chart.

**Level of interest:** An article whose findings are important to those with closely related research interests

**Quality of written English:** Acceptable

**Statistical review:** No, the manuscript does not need to be seen by a statistician.
Declaration of competing interests:

The reviewer has been consultant to several immunossay manufacturers (Roche, Dade Behring (now Siemens), Biosite (now Inverness), Abbott and Biorad. He has performed several evaluations of drug of abuse immunoassays and his lab is reference lab for the Inverness/Biosite Triage test.