Reviewer’s report

Title: Cross-reactivity of Steroid Hormone Immunoassays: Clinical Significance and Two-Dimensional Molecular Similarity Prediction

Version: 2
Date: 24 May 2014

Reviewer: Kamisha L Johnson-Davis

Reviewer’s report:

The purpose of this study was to determine cross-reactivity of a variety of steroid compounds on the Roche Diagnostics Elecsys immunoassay for cortisol, DHEA sulfate, estradiol, progesterone, and testosterone. In addition, the authors utilize computational methodology to attempt to predict cross-reactivity of compounds for steroid hormone immunoassays, which makes this manuscript unique. The two-dimensional similarity analysis seems to correlate well with the cross-reactivity study in the package inserts of the steroid immunoassays.

Reviewer’s comments:

1. In the results section on page 9, the last paragraph states that “All compounds with strong cross-reactivity for the Roche Elecsys Cortisol assay had 2D-similarities to cortisol of 0.867 or high.” Since the next sentence states that tetrahydrocortisone had a 2D-similarity greater than 0.867 but was not cross-reactive, the sentence should be corrected to state “The majority of the compounds with strong cross-reactivity for the Roche Elecsys Cortisol assay had 2D-similarities to cortisol of 0.867 or high.”

2. The figure legends for figures 2B – 6B should include a sentence to describe which analytes are represented by the circles, squares, triangles, and diamonds.

I recommend accepting the manuscript for publication.

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:

I declare that I have no competing interests.