**Performance of the ADVIA Centaur HIV Ag/Ab Combo (CHIV) Assay for the Detection of p24 Antigen and HIV Types, Subtypes, and Circulating Recombinant Forms**


### Background

Circulating Recombinant Forms (CRFs) are HIV-1 variants that include genetic material from other HIV-1 subtypes. They represent an evolutionary adaptation of HIV-1 to escape detection by the host immune system. The ADVIA Centaur HIV Ag/Ab Combo (CHIV) Assay is a platform that targets both HIV p24 antigen and circulating antibodies to HIV-1, HIV-2, and CRFs. This assay is designed to identify these circulating antigens and antibodies simultaneously, enabling the detection of HIV-1 and HIV-2 infections, as well as certain CRFs.

### Methods

**Asymptomatic p24 Sensitivity (Table 1)**

<table>
<thead>
<tr>
<th>Lot</th>
<th>p24 Ag Sensitivity (IU/mL)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1.07</td>
</tr>
<tr>
<td>2</td>
<td>0.99</td>
</tr>
<tr>
<td>3</td>
<td>8.60</td>
</tr>
</tbody>
</table>

**Coated with gp36**

- gp36 is a subunit of HIV-1 gp120, and its presence is crucial for the detection of HIV-1 infection.

**Comparison of the nucleic acid sequences for HIV-1 gp41/120 and HIV-2 gp36**

- HIV-1 gp41/120
  - Envelope protein essential for virus entry
  - Variability within gp41/120 reflects diversity in HIV-1 subtypes

- HIV-2 gp36
  - Envelope protein important for HIV-2 infection
  - Conserved sequence for gp36 in HIV-2 subtypes A and B

**Diluted Viral Lysates**

- The ADVIA Centaur CHIV assay was evaluated across multiple lots for its sensitivity and specificity.

**Table 7.**

- Antibodies and antigens used for the assay validation.

**Table 8.**

- Results of the assay validation, comparing the ADVIA Centaur CHIV assay to other reference methods.

**Conclusions**

- The ADVIA Centaur CHIV assay is capable of detecting p24 antigen and circulating antibodies to HIV-1, HIV-2, and certain CRFs.

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**Abstract**

Objective: The aim of the ADVIA Centaur HIV Ag/Ab Combo (CHIV) assay was to evaluate the performance of the circulating HIV-1 and HIV-2 antigen assay. The assay is designed to identify both circulating HIV-1 and HIV-2 antigens, as well as HIV-2 antibodies.

Methods: Three asymptomatic p24 sensitivity tests were performed on Lot 1, Lot 2, and Lot 3, respectively. The sensitivity of the assay was determined by plotting ADVIA Centaur Index values for each dilution factor. The sensitivity of the assay was compared to the mean p24 Ag sensitivity of 1.05 IU/mL across the CHIV assay lots.

Results: The ADVIA Centaur CHIV assay performed with excellent sensitivity and specificity, showing a sensitivity of 1.05 IU/mL across multiple lots. In addition, the assay was able to detect circulating HIV-1 and HIV-2 antigens, as well as HIV-2 antibodies, across various subtypes and genotypes.

Conclusion: The ADVIA Centaur CHIV assay demonstrated excellent sensitivity and specificity, making it a reliable tool for the detection of circulating HIV-1 and HIV-2 antigens.

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**Figures**

- Flowchart of the assay process.
- Graph showing the dilution range and sensitivity of the assay.

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**Tables**

- Table 1: Asymptomatic p24 sensitivity test results.
- Table 2: Comparison of nucleic acid sequences for HIV-1 gp41/120 and HIV-2 gp36.
- Table 3: Results of the assay validation, comparing the ADVIA Centaur CHIV assay to other reference methods.

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**Conclusion**

The ADVIA Centaur CHIV assay demonstrated excellent sensitivity and specificity, making it a reliable tool for the detection of circulating HIV-1 and HIV-2 antigens. The assay was able to detect circulating HIV-1 and HIV-2 antigens, as well as HIV-2 antibodies, across various subtypes and genotypes, highlighting its potential for widespread use in clinical settings.