# Article information:

流感血凝抑制 (HAI) 測定的自動解釋：是否需要傾斜平板？ - PMC  
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5491073/>

# Article summary:

1. The hemagglutination inhibition assay (HAI) is commonly used to evaluate vaccine-induced antibody responses and antigenically characterize influenza viruses.

2. Lack of standardization in endpoint interpretation and interference from non-specific inhibitors in clinical samples can lead to variability in HAI results.

3. An automated image analysis algorithm can be used to achieve an accurate and non-subjective interpretation of HAI assays without the need to tilt plates, improving consistency in HAI testing.

# Article rating:

Appears moderately imbalanced: The article provides some useful information, but is missing several important points or pieces of evidence that would be required to present the discussed topics in a balanced and reliable way. You are encouraged to seek a more balanced perspective on the presented issues by exploring the provided research topics and looking at different information sources.

# Article analysis:

The article discusses the use of an automated image analysis algorithm to interpret the results of the hemagglutination inhibition assay (HAI) without tilting plates. The HAI is a widely used method for evaluating vaccine-induced antibody responses and antigenically characterizing influenza viruses. The lack of standardization in endpoint interpretation and interference from non-specific inhibitors in clinical samples can lead to a high degree of variability in the results.

The article presents a side-by-side comparison study performed during FDA’s biannual serological screening process for influenza viruses, where titer calls for more than 2200 serum samples were made by the Cypher One automated hemagglutination analyzer without tilting and by an expert human with tilting. The results showed that there was 95.6% agreement between expert readers and the automated interpretation method (within ±1 dilution) for the complete dataset. The performance was also evaluated based on red blood cells (turkey and guinea pig) and influenza strains (12 different viruses). For a subset of samples that did not require plate tilting using guinea pig red blood cells, there was 97.2% agreement with expert readers. For a subset using turkey red blood cells that required plate tilting, there was 94.3% agreement with expert readers.

The article provides valuable insights into how an automated image analysis algorithm can be used to achieve an accurate and non-subjective interpretation of HAI assays without tilting plates. However, it is important to note that the study only evaluated one specific automated hemagglutination analyzer, and further studies are needed to evaluate other analyzers' performance.

Additionally, while the article acknowledges that HAI testing lacks standardization due to non-specific inhibitors in clinical samples, it does not explore potential biases or sources of variability introduced by these inhibitors or other factors such as sample preparation or operator technique.

Overall, while the article presents promising results for using an automated image analysis algorithm for HAI interpretation without plate tilting, further research is needed to fully understand its potential biases and limitations in real-world applications.

# Topics for further research:

* Sources of variability in hemagglutination inhibition assay results
* Standardization efforts for hemagglutination inhibition assays
* Non-specific inhibitors in clinical samples and their impact on HAI testing
* Comparison of different automated hemagglutination analyzers for HAI interpretation
* Best practices for sample preparation and operator technique in HAI testing
* Limitations and potential biases of automated image analysis algorithms in HAI interpretation

# Report location:

<https://www.fullpicture.app/item/c4fb523f4788f8f52be64982f0313d50>