

# PreSorb is superior to Adsorb Out in reducing high background and false positive reactivity in HLA single antigen bead assay

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## **BACKGROUND and AIM**

The high background (high NC) and false positive reactivity in single antigen bead assay (SAB) potentially compromise the accuracy of antibody testing results and complicate the interpretation for clinical significance. Currently, Adsorb Out (ADS) is commonly used to reduce background but it is only effective for a portion of specimens. PreSorb, a new product that became available on market recently, has been shown to be effective in reducing high background and certain false positive reactivity. The current study aim to determine the effectiveness of PreSorb in different scenarios. Table 1. Impact of PreSorb on the results of HLA single antigen bead assay in comparison with ADS treatment.

Specimen	n	ADS	PreSorb	Summary for results (when NC MFI dropped <1500: effective)
NC serum	3	N/A	1X	Both class I and class II remain negative (no change)
PC serum	2	N/A	1X	Both class I and class II remain the same with MFI variation <1000
High NC	2	1X	1X	Both ADS and PreSorb effectively reduced NC
High NC	2	1X	1X	ADS was not effective (NC even higher) but PreSorb effective
High NC	3	2X	1X	Need 2X ADS treatments to be effective, needed 1X PreSorb treatment to be effective
High NC	2	2X	1X	After 2X ADS treatments, results were still invalid; PreSorb 1X treatment is effective

## **METHODS**

We retrospectively reviewed previously tested samples and screened samples with interfering factors, including high NC, long-tail pattern, pan-DR pattern, pan-Cw pattern, Cw1/12/15 pattern, DP1/5, DQ3, DQ2/DQA1\*05 reactivities. We selected 3-5 samples for each scenario and treated them with PreSorb according to the manufacture's protocol. Some of these samples have been previously tested with ADS treatment, and the results from ADS and PreSorb treatments were analyzed and compared. To determine if the PreSorb has an impact on the previous assigned specificities, we also analyzed the results for PreSorb-treated negative control, positive control, as well as the samples with previously detected DSAs.

			Pan-DR reactivity was removed in three samples, but not in the other two samples			
Pan-Cw 2	N/A	1X	Pan-Cw reactivity was removed in both tested samples			
Cw1/12/15 2	N/A	1X	Cw1/12/15 reactivity was removed, but other assignment remained the same			
Individual Cw1, Cw12, 3 (1 fo	r each) N/A	1X	No impact			
Cw 15						
Long tail	N/A	1X	No impact			
DP1-DP5 2	N/A	1X	No impact			
DQ2/ 3	N/A	1X	No impact			
DQA1*05						
DQ3 2	N/A	1X	No impact			
Sample with DSA 3	N/A	1X	Both class I and class II DSA assignment remain the same with MFI variation <1000.			

Figure 1. Representative results for the effectiveness of PreSorb in removing pan-DR, pan-Cw, Cw1/12/15 reactivity and high background in sample resistant to ADS treatment.



## RESULTS

A total of 38 specimens have been tested with PreSorb treatment. The specimen category, number, treatment and results are summarized in the Table 1. Briefly, one-time (1X) PreSorb treatment effectively reduced the background in all samples with high NC (n=9, regardless class I or class II); removed pan-DR pattern in 3 of 5 samples; removed pan-Cw pattern (n=2) as well as Cw1/12/15 pattern (n=2). However, PreSorb treatment did not change the long-tail pattern and DP1/5 reactivity. Additionally, PreSorb treatment did not

. Case with pan-Cw reactivity removed	D. Case with Cw1/12/15 reactivity removed
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#### E. Case resistant to ADS treatment showed valid result after PreSorb treatment

CLASS I								
1x ADS RUN (INVALID)		2x ADS RUN (INVALID)		2x ADS RUN Repeat (INVALID)		PRESORB (1X treatment: valid)		
NC	2297.4	NC	3538.19	NC	3068.5	NC	75.18	
РС	10997.6	PC	8027.6	PC	8307.56	PC	9675.82	
NC Bead Higher Than All Other Beads NC Bead Higher Than A		Than All Other Beads	NC Bead Higher Than All Other Beads		A11	1211		
CLASS II								
1x ADS RUN (INVALID) 2x A		2x ADS RUN (	x ADS RUN (INVALID)		2x ADS RUN Repeat (INVALID)		PRESORB (1X treatment: valid)	
NC	2478.13	NC	2557.16	NC	2654.03	NC	49.26	
РС	9647.15	PC	7739.93	PC	8055.6	PC	9536.4	
NC Bead Higher Than All Other Beads NC Bead Higher Than All Other Beads		NC Bead Higher Than All Other Beads		Negativ	Negative			

## CONCLUSION

One-time PreSorb treatment of serum effectively reduced the high background,

#### change the results for NC serum, PC serum, and other

specimens with HLA antibodies.

#### removed false positive Pan-DR and Pan-Cw reactivities in most of tested

#### specimens. PreSorb is superior to the ADS in terms of reducing the testing

#### background and false positive reactivities.

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**CONFLICTS OF INTEREST: All authors declare that no potential conflicts of interest exist** 

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