ELIMINATION OF BACKGROUND INTERFERENCE USING SPHEROTECH AND COMMERCIAL EDTA

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AIM

The Gift of Life Michigan Laboratory performs living-related workups for one Michigan transplant center which include HLA typing, FCXM and antibody testing. Occasionally, while performing antibody testing there are patients that need to have repeat testing due to an elevated One Lambda LS-NC (>500 MFI). Repeat testing includes treating the sera with One Lambda's Adsorb Out. We conducted a study to determine if by treating the patient's sera preemptively with Spherotech's, SPHERO Polystyrene Particles + commercial EDTA it will in turn reduce the high background and remove the prozone effect while comparing the results to our current practice of treating the sera with Adsorb Out + in-house 6% EDTA. Therefore, minimizing the need for reflex testing, thereby reducing technologist's time and overall associated costs.

METHODS

Serum from 20 patients that have LS-NC >500

- Sera was run untreated
- Sera was treated with One Lambda's Adsorb Out and our in-house 6% EDTA
- Sera was treated with Spherotech's SPHERO Polystyrene Particles and commercial EDTA
- These 20 patients were then run on One Lambda's LABScreen platform for both PRA and Single Antigen Class I and Class II

Serum from 5 patients with known high titer anti-HLA antibodies (prozone effect)

- Sera was run untreated
- Sera was treated with dilutions (1:8 and 1:16)
- Sera was treated with DTT
- Sera was treated with in-house 6% EDTA
- Sera was treated with Spherotech and commercial EDTA
- These 5 patients were then run on One Lambda's LABScreen platform for Single Antigen Class I and Class II

RESULTS

LABScreen PRA I/II results for 20 patient sera that were treated with Adsorb Out reduced on average 67% while the patient sera treated with Spherotech + commercial EDTA reduced on average 83%.

LABScreen Single Antigen I results for 20 patient sera that were treated with Adsorb Out + in-house 6% EDTA reduced on average 79% while patient sera treated with Spherotech + commercial EDTA reduced on average 92%.

LABScreen Single Antigen II results for 20 patient sera that were treated with Adsorb Out + in-house 6% EDTA reduced on average 87% while patient sera treated with Spherotech + commercial EDTA reduced on average 93%.

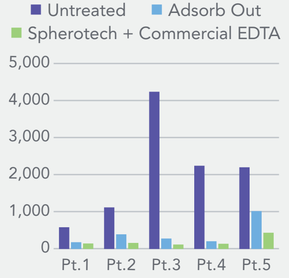
When comparing serum treatment effects on sera that exhibit high titer anti-HLA antibodies (prozone); Spherotech + commercial EDTA rivals our current practice of in-house 6% EDTA treatment. The MFI of these high titer anti-HLA antibodies are revealed most prominently with in-house 6% EDTA and Spherotech + commercial EDTA.

Linear regression analysis of MFI values between the in-house 6% EDTA and Spherotech + commercial EDTA demonstrated a strong correlation between the two treatments for both Class I ($R^2 = 0.9851$) and Class II ($R^2 = 0.9841$).

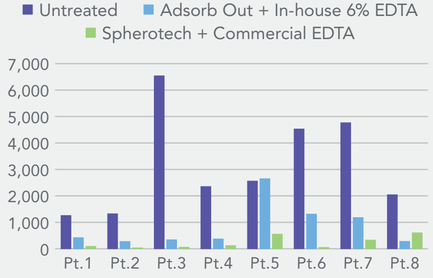
CONCLUSION

This study demonstrates that Spherotech + commercial EDTA treated serum effectively reduces LS-NC while discovering anti-HLA antibodies that may otherwise go undetected. Therefore, enhancing sensitivity and specificity in HLA antibody testing.

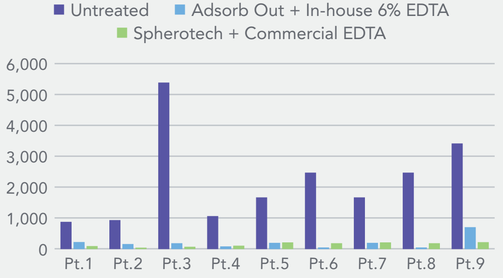
Reduction of LS-NC MFI for PRA I/II Testing



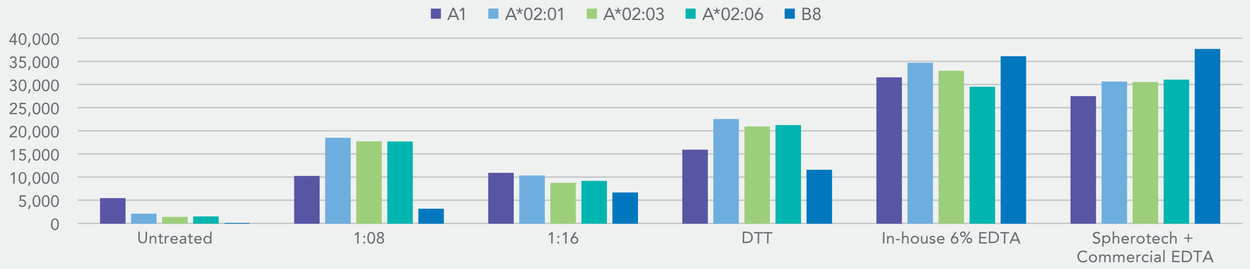
Reduction of LS-NC MFI for Single Antigen I Testing



Reduction of LS-NC MFI for Single Antigen II Testing



Serum Treatment Effectiveness on Revealing Class I anti-HLA Antibodies



Serum Treatment Effectiveness on Revealing Class II anti-HLA Antibodies