Our Experience in using A1 Lectin for Solid Organ Transplant Triaging Between Group A1 and Non-Group A1 Donors

Amanda Graham, MLS (ASCP)CM SBBCM, Rachel Beddard, MD and Samantha Gomez Ngamsuntikul, MD

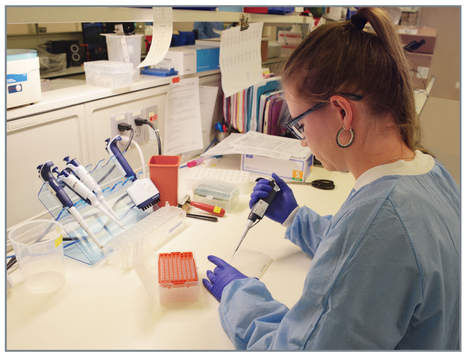
Background/Case Studies:

The lectin extracted from the seeds of *Dolichos biflorus* is known to agglutinate A1 red blood cells (RBC) and is commonly referred to as Anti-A1. This lectin does not contain anti-A1 specifically, but rather Anti-A. Because of the quantitative difference of A antigen binding sites on A1 cells compared to A2 and other Asubgroup cells (roughly 2 million versus 500,000 respectively), Anti-A1 lectin can be diluted to agglutinate only red cells with enough binding sites to produce antibody-mediated lattice formation. ABO molecular testing via real-time PCR targets ABO genes to determine predicted phenotype based on genotype. This case presents a comparison between the two methods to evaluate lectin reliability.

The lectin extracted from the seeds of *Dolichos biflorus* is known to agglutinate A1 red blood cells (RBC)

Study Design/Methods:

On 01/02/2020, our Immunohematology Reference Laboratory (IRL) began ABO/Rh testing for a solid organ transplant client requiring A1 lectin testing and reflex ABO molecular testing on all samples which result as blood types A or AB. The client uses initial lectin results to make crucial preliminary decisions in matching solid organ donors with recipients, making timely and accurate results essential. The molecular result serves as confirmation of the serological result.Correlation between A1 lectin and ABO molecular results is important as transplants are being organized based on the initial information provided.
Per the Anti-A1 lectin package insert, any agglutination should be interpreted as a positive result and is therefore classified as A1. No agglutination should be interpreted as negative and classified as non-A1.



Our Immunohematology Reference Laboratory (IRL) began ABO/Rh testing for a solid organ transplant client.

Results/Findings:

	Date Tested	A1 Lectin Result	ABO Molecular Result
Sample 1	12/17/2020	2+MF	A20
Sample 2	11/23/2021	2+	A20
Sample 3	6/2/2022	3+	A20
Sample 4	7/3/2022	2+MF	A20
Sample 5	3/10/2023	2+MF	A2A2

Table 1 exhibits 5 examples of discrepant A1 lectin and ABO molecular results since testing implementation.

Conclusion:

Due to the nature of Anti-A1 lectin manufacturing, it is plausible that an under-diluted reagent could show agglutination when tested against some A2 red cells. Caution should be used in result interpretation when reactivity is less than 4+ positive. Anti-A1 lectin testing should be used only as a tool to determine if cells are A1 positive when strong 4+ reactivity is observed. However, we cannot definitively say that weaker reactivity observed with Anti-A1 lectin indicates an A1 positive cell. Molecular testing is a helpful tool to use in tandem with serological results, as it can be used to confirm indeterminate serological results.