

Making Universal Blood:

GlycoNet start-up ABOzymes Biomedical Inc.

In accident situations and surgical emergencies, type O blood is the priority go-to because it is the “universal donor” blood type. But it is always in short supply. ABOzymes Biomedical Inc., a GlycoNet start-up founded in 2020, has developed an enzyme-based technology that can efficiently and fully convert type A to type O blood under physiological conditions. The technology has an immense potential to address the shortage of universal donor blood, and could drastically reduce wait times for organ transplant.

Key Benefits

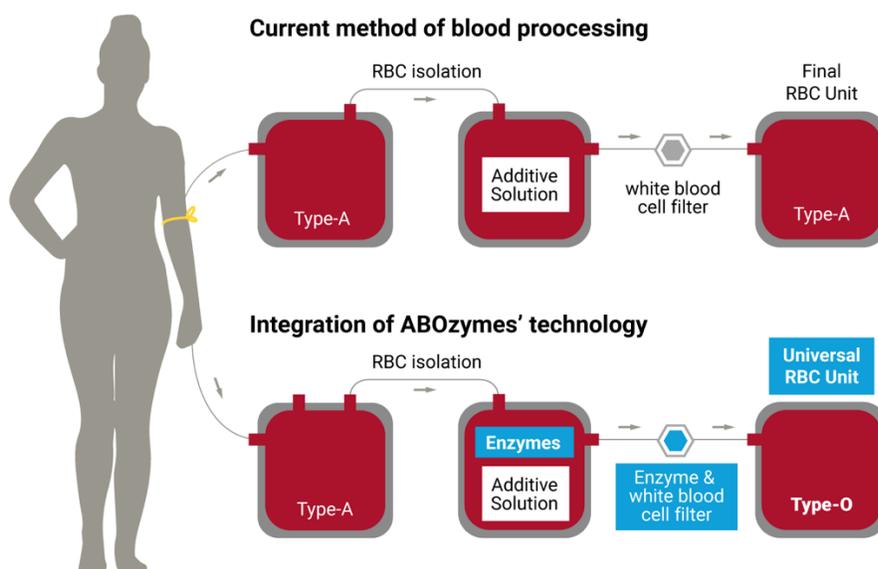
- 30x more efficient conversion than competitors’ technologies
- No adverse side effects on converted blood
- Integrated workflow with existing blood processing procedure

Global Impact & Market

In the US, only 7% of the population have universal donor type blood, albeit it being the most demanded type of blood in the hospitals. The limited supply of universal donor blood leads to severe shortages during public health emergencies, such as the COVID-19 pandemic. Other companies are seeking approaches like blood substitutes or artificial blood. However, poor safety profiles and high production cost are two major hurdles for these approaches.

The Technology

Given that more than 40% of US populations have A type blood, ABOzymes Biomedical Inc. developed an enzyme technology that can efficiently (99.99% at 5 µg/mL) cleave the A-type antigen on the surface of red blood cells (RBC), rendering O-type antigens—the antigens considered as the universal donor type.



Compatible with Blood Donation Process

The enzyme system used by ABOzymes can seamlessly integrate into existing blood processing workflows without additional complicated and costly steps. The enzymatic reactions occur under physiological conditions, which leaves the RBC intact after being converted. The enzymes can work directly on RBC surface in whole blood and any other used blood bank buffer system, whereas conversion enzymes from other sources are not functional in these conditions.

Lead Product

- ABOPac-A

Other Applications

Universal donor organs, whole blood conversion, convert B type to O type

ABOzymes
Biomedical