

Universal Kidneys - A Major Breakthrough in Transplant Science**Poonam Sharma, Sujatha Suriyamoorthi**

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Scientists have taken a step toward easing one of organ transplantation's most persistent challenges: blood group compatibility. In a study published in *Nature Biomedical Engineering*, researchers reported converting a blood-type-A kidney into a blood-type-O kidney and transplanting it into a brain-dead recipient.

Blood type mismatch remains a major reason, patients—especially those with type O blood—remain on transplant waiting lists for years. To address this, the team used an enzyme-based technique known as enzyme-converted O (ECO), which removes blood-group antigens that elicit immune rejection.

“The ECO process has already been demonstrated to work in lungs, and we expect it should translate to other organs as well,” said Stephen Withers, professor emeritus at the University of British Columbia and a co-author of the study.

The researchers treated a type-A kidney that had been deemed unsuitable for routine transplantation by circulating it through a standard perfusion system containing specific enzymes. The process took roughly two hours. Withers stated, “Perfusion technology was adapted to strip away the antigens that cause problems.”

The converted kidney was transplanted into a brain-dead recipient with high levels of anti-A antibodies, without antibody-reducing therapy. The organ functioned well for two days before immune responses appeared on the third day, as antigens gradually returned.

“With standard immunosuppression, longer tolerance may be achievable. While still experimental, the approach could eventually shorten transplant waiting times, particularly for type O patients.

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