

## Normothermic Machine Perfusion and Inflammatory Mediators Adsorption: First Kidney Transplant Experience

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### ***Kidney Transplant / Ex-vivo Perfusion / PerSorb (CytoSorbents)***

**Procedure:** A 75-year-old donor kidney underwent **320 minutes of ex-vivo normothermic machine perfusion (NMP)** with the **PerSorb® (CytoSorbents)** device, designed to **adsorb inflammatory cytokines** (e.g., interleukin IL-6, IL-8, MCP-1) via size exclusion and hydrophobic interaction for extended criteria donor (ECD) organs.

#### **Key Findings:**

- **Effective cytokine removal** was achieved without sorbent saturation, despite rising inflammatory levels during perfusion.
- **Urine output was high** during perfusion, and **no delayed graft dysfunction (DGF)** occurred post-transplant.
- **Post-transplant outcomes were favorable**, with the recipient stable and well at 6-month follow-up.

#### **Cytokine Profile:**

- Pro-inflammatory cytokines increased, while anti-inflammatory mediators like IL-10 and HGF decreased—indicating **concentration-dependent modulation**.
- Mass balance (MB) analysis confirmed **active cytokine adsorption**, offering better insight than systemic trend observation alone.

#### **Proteomic Analysis:**

- **331 proteins identified**, with minimal non-cytokine reduction, reinforcing **cytokine selectivity** of the device.
- Proteins mainly belonged to **complement and coagulation cascades**.

#### **Clinical Relevance:**

- The combination of NMP and PerSorb® appears **safe, feasible, and potentially effective** for reducing ischemia-reperfusion injury (IRI) in ECD kidneys.
- This technique may help **"recondition" suboptimal grafts**, improving post-transplant outcomes.
- The kidney was transplanted without delayed graft dysfunction, and the recipient had excellent outcomes at six months.

**Conclusion:** PerSorb® during NMP shows **strong potential** for enhancing extended criteria donor organ kidney viability and recovery. While results are promising, **larger clinical trials are needed** to confirm long-term benefits and expand clinical use.

#### **CytoSorbents comment:**

PerSorb® is a hemoadsorption column technically based on CytoSorb®, and manufactured by CytoSorbents USA specifically for use within ex-vivo perfusion circuits.