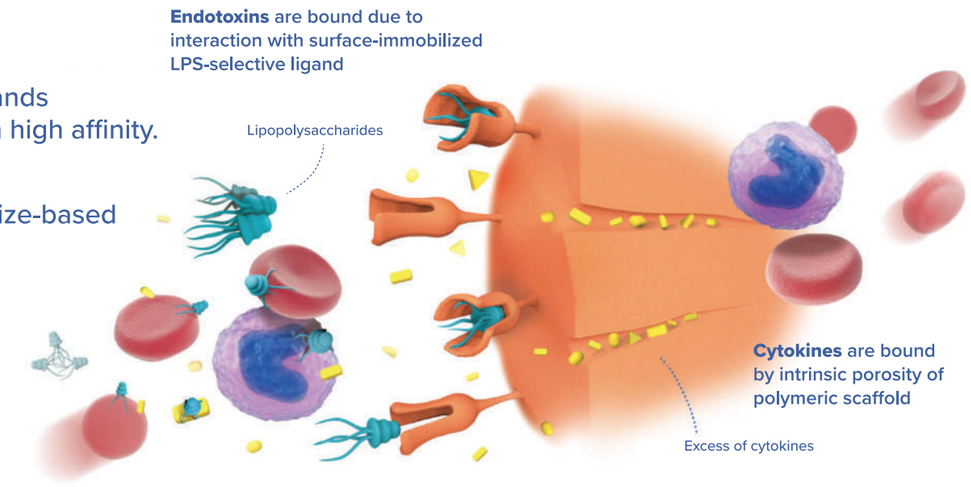
EFFERON® LPS IS THE FIRST HEMOADSORPTION CARTRIDGE TO COMBINE ENDOTOXIN AND CYTOKINE REMOVAL – GIVING PHYSICIANS A POWERFUL, PATHOGENETICALLY JUSTIFIED TOOL FOR IMMUNOLOGICAL BALANCE RESTORATION AND SEPSIS MANAGEMENT.

ENDOTOXIN ADSORPTION

- Efferon® LPS contains covalently immobilized ligands that bind the lipid A component of endotoxin with high affinity.
- Ensures irreversible capture of free endotoxin and its aggregates — even those not filtered by size-based membranes.
- Interrupts the vicious cycle of endotoxin-induced cytokine activation and organ dysfunction.
- Removes the upstream trigger of septic shock at its source.



CYTOKINE ADSORPTION

- The cartridge's **hypercrosslinked polystyrene** matrix provides a high-surface-area structure for adsorbing inflammatory cytokines (IL-6, IL-1β, TNF-α, etc).
- **Hydrophobic and Van der Waals** interactions enable adsorption, allowing continuous regulation of cytokine levels.
- The porous structure ensures albumin-sparing selectivity while targeting **mid-sized inflammatory mediators.**
- Reduces systemic inflammation, stabilizes hemodynamics, and protects organs.
- Modulates hyperinflammation without immune suppression.

RESULTS OF A MULTICENTER RANDOMIZED CONTROLLED TRIAL

(Rey et al., SHOCK, 2023; 59(6):846–854)

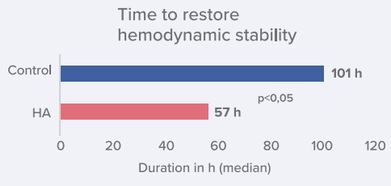
Patients with abdominal sepsis and septic shock; N=58 2:1 randomized (38/20).

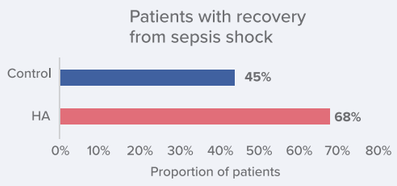
Control group: Standard treatment
Intervention group (HA): Standard treatment + 2 x hemoadsorption with Efferon® LPS

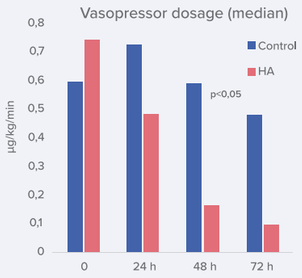
Primary endpoint:
Resolution of septic shock → restoration of hemodynamic stability

Hemodynamic parameters:

- Significant increase in MAP and reduction in vasopressor requirements within 24 hours.
- Median time to restore hemodynamic stability: 57 h vs. 101 h (Efferon vs. control).
- Resolution of septic shock in 68 % vs. 45% patients.

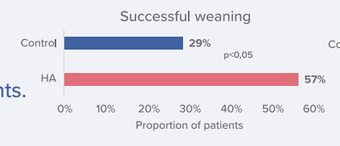


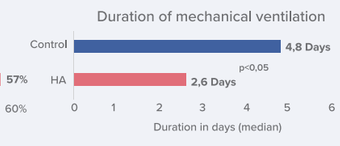




Respiratory Outcomes

- Shorter duration of mechanical ventilation (median 2.6 days vs. 4.8 days).
- Successful weaning achieved in 21/37 vs. 5/17 patients.
- Increase in PaO_2/FiO_2 ratio observed after 24 hours.





Multi-organ dysfunction

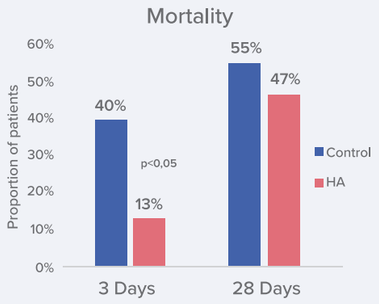
- **SOFA score reduction:** from 7 → 3 points at 72 h.

Renal Function

- Creatinine levels decreased.
- Reduced need for renal replacement therapy (RRT).

Biomarkers of systemic inflammation

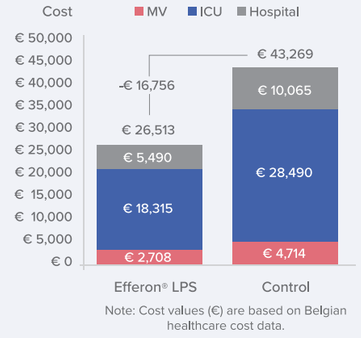
- PCT, CRP, IL-6 reduced
- LPS reduced in 75% of patients



Cost-Effectiveness

An exploratory health-economic analysis presented at ISICEM 2025 suggested that the use of Efferon® LPS for septic shock could reduce treatment costs by up to 38.7% through earlier shock resolution.

(Ethgen O. et al., Critical Care 2025; 29(Suppl 1):P220).



Note: Cost values (€) are based on Belgian healthcare cost data.

INDICATIONS

Sepsis and septic shock

Elevated levels of cytokines in blood, «cytokine storm» syndrome

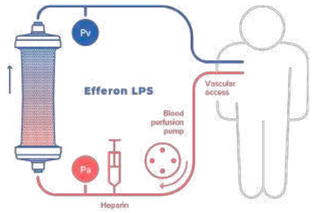
(e.g., pancreatitis, post-op complications, trauma)

Elevated levels of endotoxin in blood, critical endotoxemia

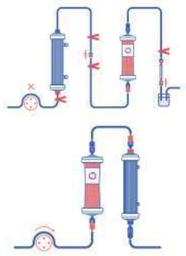
Use in combination with RRT, ECMO, or cardiopulmonary bypass

APPLICATION

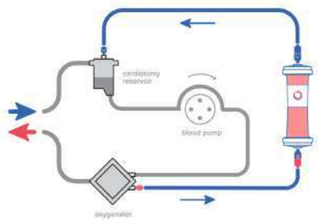
Isolated hemoadsorption



In combination with RRT



In combination with ECMO/CPB



Reference

1. Bessonov I.V., Morozov A.S., Kopitsyna M.N. // A polymeric sorbent, preparation and use thereof, patent No WO2018217137, 2018.
2. Rey S., Kulabukhov V.M., Popov A., Nikitina O., Berdnikov G., Magomedov M., Pisarev V. // Hemoperfusion using the LPS-selective mesoporous polymeric adsorbent in septic shock: a multicenter randomized clinical trial. Shock. 2023;59(6):846–854. doi:10.1097/SHK.0000000000002121.
3. Ethgen O., Popov A.Y., Nesmeyanov A.N., Kulabukhov V.V., Sklifosovsky N.V., Russell S., Bessonov I.V. // Potential savings associated with faster septic shock resolution in the ICU: An exploratory analysis of extracorporeal hemoperfusion using the Efferon LPS device. Critical Care. 2025;29(Suppl 1):P220.

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Efferon® LPS

NEXT-GENERATION HEMOADSORPTION

FOR LIFE-THREATENING INFLAMMATION

RESTORE BALANCE

- Multimodal action: endotoxin and cytokine removal
- Next-generation adsorption technology
- Indicated for sepsis and septic shock (per IFU)
- Clinical efficacy demonstrated in a multicenter randomized controlled trial
- Manufactured in Europe

CE MARK UNDER EU MDR REQUIREMENTS