

Endotoxin removal with Alteco LPS Adsorber: safe, specific and effective

The Alteco LPS Adsorber from Alteco Medical AB is used in hemoperfusion to treat endotoxemia, sepsis or septic shock caused by gram-negative bacteria (suspected or verified). By removing endotoxin from the bloodstream during extracorporeal treatment, Alteco LPS Adsorber can turn the course of sepsis and stabilize the patient's hemodynamic parameters.¹

- Safe: class IIa medical device with no contraindications and no side effects, adverse events or allergic reactions reported.
- Specific: there are no indications of other substances being captured or of interactions with other substances when using the Alteco LPS Adsorber.
- Effective: the treatment time is 2 hours and normally only one treatment is needed.

Clinical applications

Fight symptoms of gram-negative bacterial infection, sepsis and septic shock

Sepsis is the body's overwhelming, dysregulated response to an infection, which may lead to tissue damage, acute failure of multiple organs including lungs, kidneys and liver, and even death. With nearly 49 million cases worldwide and 11 million deaths globally per year – or 1 in 5 – it is now thought that sepsis kills more people than cancer.²

The Alteco LPS Adsorber can turn the course of gram-negative sepsis and regain control over the systemic failure and stabilize the patient in the acute situation.

A proactive tool in cardiac surgery to mitigate the effects of translocation

Translocation can occur after certain types of surgeries, especially those with long clamping time (> 90 minutes). Increased intestinal permeability can lead to translocation of gram-negative bacteria from the gut to the bloodstream, potentially causing severe symptoms of endotoxemia and sepsis. High levels of endotoxin correlate with a significantly higher risk of post-operative infection.³ Implementing the Alteco LPS Adsorber in the Heart- and Lung machine (HLM) during surgery could therefore be of benefit through preventive elimination of endotoxin, to avoid post-surgical complications.^{4,5}

¹ [B. Adamik, Prolonged Cardiopulmonary Bypass is a Risk Factor for Intestinal Ischaemic Damage and Endotoxaemia](#)

² [The Lancet, Global, regional, and national sepsis incidence and mortality, 1990–2017: analysis for the Global Burden of Disease Study](#)

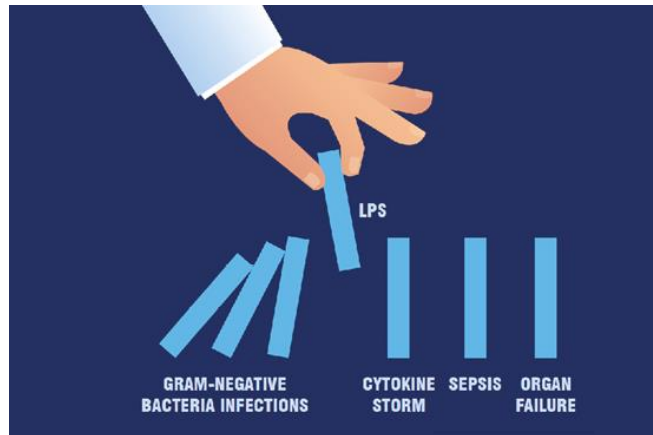
³ [Europe PMC – Endotoxemia related to cardiopulmonary bypass is associated with increased risk of infection after cardiac surgery: a prospective observational study.](#)

⁴ [ResearchGate – Risk factors of sepsis after open congenital cardiac surgery in infants: A pilot study](#)

⁵ [Prolonged Cardiopulmonary Bypass is a Risk Factor for Intestinal Ischaemic Damage and Endotoxaemia, B. Adamik](#)

Part of the ICU toolkit in COVID-19

Some COVID-19 patients in ICU suffer from cytokine storms, a severe immune response that can have life-threatening consequences. Endotoxin is among the most potent bacterial inducers of cytokines⁶ and by removing endotoxin from the bloodstream, it may be possible to avoid further damage to vital organs and tissues. The Alteco LPS Adsorber offers ICU teams an innovative and effective tool to complement best practice medical treatment for patients suffering from heightened immune response from endotoxin induced cytokine storms.



Severely ill COVID-19 patients are also at high risk of sepsis due to secondary gram-negative bacterial infections. Nearly 60% of COVID-19 patients in the ICU have secondary bacterial infections - most commonly respiratory infections from gram-negative bacteria. Also, using mechanical and hemodynamic support heightens the immune response of the patient. Being on ECMO- and/or a CRRT machine, the patient may have an inflammatory response to extracorporeal circulation (complement activation) resulting in increased endotoxin levels. The Alteco LPS Adsorber may therefore be of use in COVID-19 patients suspected to have gram-negative bacterial infection and/or signs of inflammatory response.^{7,8,9,10}

About Alteco Medical

Alteco Medical is in the business of extracorporeal adsorption of human toxins in acute and planned hospital treatments. Our mission is to safely stabilize patients in toxic immune response situations. Alteco Medical provides a solution for hospitals across the world to remove endotoxin (lipopolysaccharides, LPS) in the patient's bloodstream to counteract the threat of endotoxemia during their hospital stay. Our product, the Alteco LPS Adsorber, contains a specific, tailor-made synthetic peptide that binds to Lipid A, the toxic part of LPS.



⁶ [Exotoxins and endotoxins: Inducers of inflammatory cytokines](#)

⁷ [European Sepsis Alliance: Update: Can COVID-19 Cause Sepsis? Explaining the Relationship Between the Coronavirus Disease and Sepsis](#)

⁸ [Risks and features of secondary infections in severe and critical ill COVID-19 patients](#)

⁹ [The Lancet: Clinical course and risk factors for mortality of adult inpatients with COVID-19 in Wuhan, China: a retrospective cohort study](#)

¹⁰ [PubMed: Elevated levels of endotoxin, oxygen-derived free radicals, and cytokines during extracorporeal membrane oxygenation](#)