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The selective removal of LPS and LTA from human blood. Construction and use of a medical device based on the peptide SET-M33

Alessandro Pini
University of Siena, Italy

Sepsis is a clinical syndrome caused by the body's immune and coagulation systems. Septic shock is a life-threatening condition that is characterized by low blood pressure despite adequate fluid replacement, and organ dysfunction or failure. Sepsis is an important cause of death in people of all ages (Perner et al, 2017, Intensive Care Med). It is triggered by bacterial infections and by the release of LPS and LTA from bacterial surfaces (Ianaro et al, 2009 Mini Rev Med Chem; Kang et al, 2016 Arch Pharm Res).Here it will be described the construction of a new device for the selective removal of LPS and LTA from blood of patient with sepsis. This medical device is based on a resin conjugated with SET-M33 (Brunetti et al. 2016, Sci Reports), a synthetic peptide capable to strongly bind LPS and LTA from Gram-negative and Gram-positive bacteria, respectively. The device is able to remove selectively LPS and LTA from human blood samples without affecting serum protein content. It is currently under development for the clinical use in Intensive Care Units where sepsis is among the most imporant cause of death worldwide.

Biography

Alessandro Pini is Associate Professor of Biochemistry at the University of Siena, Italy. He has a degree in Biology, a PhD in Biotechnology, and a postgraduate degree in Clinical Biochemistry. He was visiting researcher at the Centre of Protein Engineering, MRC, Cambridge, UK, and at the Swiss Federal Institute for Research (ETH), Zurich, Switzerland. He is founder and president of the company SetLance, based in Siena. SetLance has a special focus in the identification and early development of peptide-based drugs. He is author of dozens of publications and inventor in 12 patents regarding antibodies and peptides and their applications.

pinia@unisi.it

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