Challenge

Sepsis is a medical condition characterized by a whole-body inflammatory state as a response to infection and is still the second leading cause of death in non-coronary intensive care unit patients and the third leading cause of death in Germany; it affects mostly elderly, immunocompromised and critically ill patients. The management of sepsis is a major challenge, since it occurs in 1-2% of all hospitalizations. Mortality rates range from 20-60% depending on the severity of the condition. Polytraumatized patients can also suffer from systemic inflammatory response syndrome (SIRS), a condition similar to sepsis, although the cause is not an infection, but the release of cytokines and chemokines in response to the injuries. In both sepsis and SIRS the subsequent activation of complement and coagulation systems in the body destroys the fragile homeostasis of the body and leads to bleeding, the release of free oxygen radicals and the formation of thrombi, ultimately resulting in organ failure. Treatment options are limited to fighting the infection with antibiotics and treating the symptoms of organ failure with haemodialysis and ventilation. The only sepsis medication commercially available that directly targets the immune system is activated protein C, for which a modest (6%) decrease in mortality has been reported.

Technology

MALP-2 is a lipopeptide originally isolated from mycoplasma which can be synthesized in vitro; MALP-2 has been shown to stimulate chemokine and cytokine release which attracts and activates cells of the immune system. The compound was clinically tested in patients with inoperable pancreatic cancer and has been proven to be non-toxic. Experiments in mice showed that MALP-2 greatly reduces mortality rates from 62.5% (control) to 22% (treatment) after artificially induced sepsis if injected during the clinically relevant timeframe of 6 hours after the induction of sepsis. MALP-2 therefore shows great promise for use as a specific treatment against sepsis and SIRS.

Commercial Opportunity

In-licensing or cooperation for the development of a kit for sepsis treatment.

Developmental Status

Data have been collected from a mouse model which demonstrate the proof of concept for sepsis treatment with MALP-2.

Patent Situation

A European patent application has been filed in 2009.

Further Reading