

# Researchers discover potential novel treatment against septic shock

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Septic shock is caused by excessive and systemic reaction of the entire body against infectious agents, in most cases of bacterial origin. The number of deaths by septic shock in intensive care units is very high and is still increasing, despite numerous large scale clinical trials. Scientists of VIB and UGent, supervised by Peter Vandenabeele, demonstrated in a mouse study that a potential novel treatment for sepsis may consist of the simultaneous neutralization of two harmful cytokines in the blood circulation, namely interleukin-1 and interleukin-18.

In the VIB research unit of Peter Vandenabeele, postdoctoral researcher Tom Vanden Berghe, in collaboration with Anje Cauwels, discovered a novel potential treatment for sepsis based on a combination strategy. The study was performed in mice and revealed that it is crucial to neutralize two harmful cytokines in the [blood circulation](#) simultaneously, more specifically interleukin-1 and interleukin-18. Neutralization of interleukin-1 is currently being used for the treatment of acute rheumatoid arthritis, while neutralization of [interleukin-18](#) has been proposed for the treatment of several other inflammatory diseases.

Peter Vandenabeele (VIB/UGent): "Hitting one target is not sufficient. Biology is full of pleiotropy and synergism, also in diseases. Hitting multiple targets, also in [septic shock](#), may be the way to go".

The application of the novel combined therapy for the [treatment](#) of septic patients in the hospital may benefit from the fact that each of those anti-cytokine treatments is already in clinical use. This may create

renewed hope for the fight against this life-threatening disease, which is still increasing due to antibiotic-resistant bacteria as well as the growing number of patients whose immune system is weakened by disease or therapy (for example: cancer, auto-immune diseases, organ transplantation, and diabetes).

These new findings strengthen a growing awareness that in complex diseases like sepsis it may not be sufficient to neutralize one mediator, but that combination strategies may be essential to increase the chance for successful therapy. The researchers hope that the efficiency of this novel combined therapy in patients may be explored in the future, with the help of pharmaceutical industry and clinical testing.

**More information:** "Simultaneous Targeting of Interleukin-1 and -18 is Required for Protection against Inflammatory and Septic Shock."

Vanden Berghe T, Demon D, Bogaert P, Vandendriessche B, Goethals A, Depuydt B, Vuylsteke M, Roelandt R, Van Wonterghem E, Vandebroecke J, Choi SM, Meyer E, Krautwald S, Declercq W, Takahashi N, Cauwels A, Vandenabeele P. *American Journal of Respiratory and Critical Care Medicine*, February 1, 2014.

[www.ncbi.nlm.nih.gov/pubmed/24456467](http://www.ncbi.nlm.nih.gov/pubmed/24456467)

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