

How blocking the 'Programmed Death 1' protein may treat or prevent sepsis and severe infection

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Scientists have made an important discovery that could lead to new drugs that reduce the severity of blood infections leading to sepsis. Research presented in the August 2010 issue of *Journal of Leukocyte Biology* shows how interfering with the function of the cell membrane protein called "Programmed Death 1" (PD-1) improves survival in a clinically relevant model of severe infection.

"Clinical trials of anti-PD-1 are currently underway in patients with cancer and in patients with [hepatitis C](#)," said Richard S. Hotchkiss, M.D., co-study author from the Department of Anesthesiology at Washington University School of Medicine in St. Louis, MO. "It is hoped that blocking PD-1 will lead to enhanced [immune function](#) and a resultant improved tumor elimination and viral eradication respectively."

To make this discovery, the researchers studied two groups of mice with a surgically induced severe infection that simulates a ruptured appendix in humans. One group of mice received an inactive antibody while the other group of mice received an antibody that blocked PD-1. The mice that received the PD-1 blocking antibody had a greater survival rate when compared to the mice that received the inactive control antibody. Results show that PD-1 inhibits the ability of the immune system to fight infection by suppressing the function of [immune cells](#). Thus, blocking PD-1 can restore the ability of the host to combat infections, also helping to improve chances for survival.

"This research may lead to a new class of drugs that could treat severe bacterial infections, including those that are becoming increasingly resistant to today's antibiotics," said John Wherry, Ph.D., Deputy Editor of the [Journal of Leukocyte Biology](#), "This study is one of science's many steps to keep pace or a step ahead of the evolutionary progress that these microorganisms are making."

More information: Pavan Brahnamdam, Shigeaki Inoue, Jacqueline Unsinger, Katherine C. Chang, Jonathan E. McDunn, and Richard S. Hotchkiss Delayed administration of anti-PD-1 antibody reverses immune dysfunction and improves survival during sepsis. *J Leukoc Biol* 2010 88: 233-240. [doi: 10.1189/jlb.0110037](https://doi.org/10.1189/jlb.0110037)

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