

Researchers find potential new way to fight sepsis

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By digging a little deeper, researchers may have found a potential target for reversing the deadly blood infection sepsis.

Scientists at the University of Michigan Health System looked at microRNA, a type of RNA that does not code for a protein itself but that can regulate the expression of other genes and proteins. They found that by attacking the right microRNA they could influence a key trigger of inflammatory diseases such as sepsis.

Traditionally, researchers have gone after a bigger target, attempting to find compounds that directly control inflammatory triggers such as <u>interleukin 6</u>, or IL-6.

"If you can connect all the dots, you can target a single microRNA and impact an <u>inflammatory process</u> like sepsis. But given the role of IL-6 in other diseases, we think this might have broader implications than sepsis for diseases where IL-6 plays a role," says study author Pavan Reddy, M.D., associate professor of hematology/oncology at the U-M Medical School.

Results of the study appear in the June 9 issue of *Blood*.

The researchers looked specifically at dendritic cells, specialized types of cells that are considered the first-responders in an immune response. Dendritic cells are also amongst the most important cells that turn on other <u>immune cells</u>. Using bioinformatics tools, the researchers



identified two microRNAs within the dendritic cells that seemed most predominant in regulating IL-6. One, called miR-142-3p, was shown to have a direct link to regulating IL-6, and only IL-6.

The researchers were then able to specifically target miR-142-3p that would block it from influencing IL-6. They found in mice that doing this reduced deaths from sepsis.

"We showed that microRNAs have unique expression profiles in <u>dendritic cells</u> and that miR-142-3p has an important role in dendritic <u>cell response</u>. This suggests targeting microRNAs may be a novel strategy for treating sepsis," says lead study author Yaping Sun, M.D., Ph.D., internal medicine research investigator at the U-M Medical School.

The researchers believe this approach will also hold potential for other inflammatory diseases such as juvenile rheumatoid arthritis, inflammatory bowel disease and graft-vs.-host disease, a frequent complication of bone marrow transplant. More research is needed before any treatments become available to patients.

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