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 interleukin 6, or IL-6.

"If you can connect all the dots, you can target a single microRNA and impact an inflammatory process 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 immune cells. 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 dendritic cells and that miR-142-3p has an important role in dendritic cell response. 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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