MicroRNA-29a promotes apoptosis of monocytes by targeting STAT3 during sepsis

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ABSTRACT. Sepsis is a major cause of morbidity and mortality in critically ill patients. The sepsis syndrome results from a dysregulated inflammatory response to infection that leads to multiple-organ failure, but the underlying mechanisms remain poorly understood. More and more reports show that microRNAs (miRNAs) play an important role in sepsis. In the progression of this syndrome, cells change their behavior in response to cytokines stimulated by sepsis, such as interleukin-10 (IL-10). IL-10 can activate JAK2-STAT3 in the cells to protect them from damage. miR-29a is a potential miRNA directly targeting STAT3. In this study, we investigate the role of miR-29a in targeting STAT3 during sepsis. When cells were treated with IL-10, STAT3 was activated in monocytes, as determined using western blotting. It was verified that STAT3 was a new target gene of miR-29a. miR-29a could inhibit IL-10-induced cytokine release by targeting JAK-STAT3 in monocytes. In conclusion, this study demonstrates for the first time that miR-29a inhibits STAT3 in human monocytes during sepsis.

Key words: miR-29a; Monocytes; Sepsis; STAT3