EuroSciCon

EuroSciCon Congress on

Enzymology and Molecular Biology

August 13-14, 2018
Paris, France

Insights Enzyme Res 2018, Volume 2
DOI: 10.21767/2573-4466-C1-003

ROLES OF MICRORNAS IN TH17 AND TREG IN POST STROKE PULMONARY INFECTION

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Background: Th17 plays an important role in promoting the inflammatory response in the body, while Treg cells have the function of inhibiting excessive inflammation. Therefore, Th17/Treg ratio plays an important part in regulating the inflammatory response. Th17 and Treg are all differentiated from the naive $CD4^+$T cells, which is mainly in the spleen. In the case of stroke, when infected, the Th17/Treg ratio increases, but the body's immunity is reduced. Studies have shown that there is a specific expression of microRNA in the subsets of T cells. We speculate those microRNAs that are specifically expressed in Th17 and Treg in maintaining their polarity and characteristic cell function.

Objective: We aimed to study the expression of specific expression of microRNA in Th17 and Treg in the case of post stroke pulmonary infection. The effects of these microRNA on the differentiation, function and plasticity of Th17 and Treg were also studied.

Methods: The right MCO rats were injected *Pseudomonas aeruginosa* bacterial suspension into the trachea after 24h (the experimental group) and in the control group, the right external carotid artery was separated and ligated, but the thrombus line was not inserted. The bacterial suspension was injected into the trachea 24h after operation also. After 24h, the two groups of animals were sacrificed and the spleen was taken out. The naive $CD4^+$T cell were isolated by flow cytometry. The expression level of this characteristic microRNA was detected. In *in vitro* experiments, the inhibitors and activators of differential expression of microRNA in Th17 and Treg were applied to Th17 and Treg, respectively. Then, firstly, we use antigen to stimulate the two subsets and measured the cell function by detecting their specific cytokine. Secondly, Treg was cultured under Th17 polarization condition, Th17 was cultured under Treg polarization condition and the proportion of two cells and their specific cytokine were detected by 3 days after.

Results: Some characteristic microRNA in the two subsets expressed differently (miR-519-3P, miR-559, miR-129-3p, miR-542-3p and miR-548). These microRNA affected the level of differentiation (miR-519-3P, miR-559 and miR-129-3p), cell function and plasticity of Th17 (miR-519-3P) and Treg (miR-129-3p, miR-542-3p and miR-548), respectively.

Conclusion: In the presence of stroke, the difference in expression of some microRNA can change differently, function and plasticity of Th17 and Treg and then influence the immune function when there is pulmonary infection.

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