

Immunomodulation Effect of Gastro-spheres Through Disturbance of Th17/Treg Balance in vitro

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Gastro-spheres with a capacity of forming tumor believed to be responsible for escape from immune-mediated destruction. The adaptive immune system components including Th17 and Treg cells play a major role in gastric cancer, although their interaction with gastro-spheres remained elusive. The object of this study is to find the effect of gastro-spheres on Th17/Treg balance in vitro.

Isolated PBMCs from healthy donor(s) were cultured with MKN-45 cells (parental) and its derived gastro-spheres conditioned media (CM) for 5 days at 37˚C. PBMCs were evaluated by CFSE and the percentages of $CD4^+CD25^+FOXP3^+$ Treg cells and $CD4^+IL\text{-}17^+$ Th17 cells were analyzed by flowcytometry. IL-17, TGF-β, and IL-10 also measured by ELISA. Gastro-spheres and their parental cells analyzed for gene expression of immunomodulating factors, IL-17, IL-6, IL-10, IL-8, IL-22, IL-23, STAT3, TGF-β, IFN-γ, and TNF-α.

Flowcytometry analysis revealed a decrease in the expansion of PBMCs in the group treated with gastro-spheres compared to parental cells CM. Immunophenotyping showed an increase in the percentage of Th17 cells in PBMCs treated with gastro-spheres CM, whereas parental cells CM increased Treg level. There were also an increase in the concentration of IL-10 and IL-17 but a decrease in TGF-β in CM derived from PBMCs treated with gastro-spheres CM. Furthermore, quantitative gene expression showed an increase in expression of IL-6, IL-10 and, IL-22 in gastro-spheres compared to parental cells.

Our study showed gastro-spheres can inhibit expansion of lymphocytes, as well as they induce Th17 from $CD4^+$ cells compared with parental cells, although the exact role of induced Th17 cells by gastro-spheres need to be determined.

Keywords: Regulatory T cells, Th17 cells, Gastro-Spheres

Biography

Alaleh Rezalotfi MSc has earned her degree from Hamadan medical school in a joint project with Royan Institute. She is interested in cancer immunology and immunotherapy. Alaleh has completed her MSc project in the field of cancer stem cells immunomodulation in Marzieh Ebrahimi's lab at Royan Institute. She also continues her research in the same field. In addition, she studies on an efficient and versatile cellular system approach to use T cells in immunotherapy for solid tumors. In

this regard, she has won the third best idea in the 1st Young Scientist Festival, Tehran, Iran. You can reach her at a.rlotfi91@gmail.com or LinkedIn at @Alaleh Rezalotfi.

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