

عنوان مقاله:

Evaluation of in vitro Effect of Pyocyanine Pigment on Interleukin- γ Secretion from Peripheral Blood Mononuclear Cells in Cancer Patients

محل انتشار:

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خلاصه مقاله:

Background and Objective: The pyocyanine pigment in *Pseudomonas aeruginosa* stimulates blood cells to secrete IL- γ . IL- γ cytokine is an activator of cytotoxic T cells and natural killer cells. These cells destroy the target cells of patients with cancer. This study aimed to evaluate the effects of pyocyanine on the IL- γ secretion from peripheral blood mononuclear cells (PBMCs) in patients with breast, prostate, and bladder cancers. **Materials and Methods:** In this cross-sectional descriptive study, a total of 30 *Pseudomonas aeruginosa* isolates were collected from different clinical specimens (urine, blood, burns, etc.) of patients admitted to Namazi Hospital in Shiraz, Iran, from October to December 2019. The pyocyanine was extracted from the isolates by chloroform. Also, twenty-eight peripheral blood samples were selected from 21 patients with breast, prostate, and bladder cancers and 7 healthy controls. Following the isolation of PBMCs from patients and the control group using Ficoll density gradient, samples were prepared for cell culture. Half of the PBMCs were treated with pyocyanine (0.5 $\mu\text{g/mL}$), and the rest of them remained without treatment. Then, the IL- γ secretion from the treated and untreated cells with pyocyanine was investigated by ELISA method. Statistical analysis was done using SPSS 22. **Results:** Significant increases were seen in the IL- γ secretion from PBMCs in the patients with breast ($P=0.032$), prostate ($P=0.002$), bladder ($P=0.009$) cancers, and healthy controls ($P=0.004$) after treatment with pyocyanine in comparing with before treatment with this pigment in vitro. **Conclusion:** Low concentrations of pyocyanine can stimulate the PBMC of cancer patients to secrete IL- γ cytokines. Further studies should be performed on the immunostimulatory effects of pyocyanine in laboratory animals.

کلمات کلیدی:

Cancer, Immunostimulant, Pyocyanine, Interleukin- γ , پیوسیائین، اینترلوکین γ ، تحریک کننده ایمنی، سرطان

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