Tehranolide Could Shift the Immune Response towards Th1 and Modulate the Intra-Tumor Infiltrated T Regulatory Cells

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ABSTRACT

Artemisia diffusa contains a new type of sesquiterpene lactone with an endoperoxide group (Tehranolide). **Objective:** Due to the existing similarity between the structures of Tehranolide and Artemisinin, it was hypothesized that Tehranolide would have similar effects as Artemisinin. In this study, the immunotherapeutic effectiveness of Tehranolide was investigated by direct intra-tumoral injection. **Methods:** Tehranolide was purified from *Artemisia diffusa*, and its effect on the tumor volume was investigated. The splenocyte proliferation, shifting of cytokine profile, and the presence of naturally-occurring CD4+CD25+Foxp3+ Treg cells were assessed to describe the anti-tumor immune response. **Results:** Analysis of immune response showed that, intra-tumoral injection of Tehranolide decreased the rate of tumor growth compared to control group. Furthermore, the proliferative response of mice treated with Tehranolide was enhanced. In comparison with the control group, production of both IL-4 and IFN-γ was induced ($p<0.05$). The results indicated a decrease in tumor CD4+CD25+Foxp3+ T lymphocytes in the Tehranolide-treated group compared to the control group. **Conclusion:** Treatment of tumors with Tehranolide attenuated CD4+CD25+Foxp3+ Treg cell-mediated immune suppression and elicited a persistent anti-tumor immunity against cancer.

Keywords: Tehranolide, T Regulatory Cell, IFN-γ, IL-4

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