

ABSTRACT

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Title of Thesis Monitoring of CAR-T lymphocytes in the course of hemato-oncological therapy

The diploma thesis deals with the therapy of T cells with a chimeric antigen receptor (CAR) in the treatment of blood malignancies. Specifically, it focuses on monitoring the population of CAR-T cells in patients over time, after the administration of a therapeutic product. Measurements were made from whole blood samples by measurement on a flow cytometer. The theoretical part is devoted to hematological malignancies: their diagnosis and treatment, as well as to CAR-T cells: history, production, clinical use, side effects and determinations. The experimental part is dedicated to processing of the measured results.

The goal of the thesis was to prepare a research on the given topic and evaluate the results of monitoring the population of CAR-T cells over time.

The performed technique was able to demonstrate CAR-T cells in the blood of all patients, flow cytometry using a test tube from the company Exbio and using the antiFMC63 scFv antibody from the company Acro Biosystems appears to be a suitable method. The rate of expansion of CAR-T cells was individual for each patient. In two patients, CAR-T cells were still detected a year after administration of the product. Adverse effects of CRS and ICANS were widely observed in patients, which, however, did not correlate with the degree of expansion of CAR-T cells or with the yield of CD3⁺ cells from apheresis.

Key words: CAR-T cells, hematological malignancies, flow cytometry, immunotherapy