Charakterystyka fenotypowa i funkcjonalna nowej psiej linii komórkowej typu NK

Phenotypic and functional characteristics of the new canine NK-type cell line

Summary

By being a model organism, dog fills the gap between the research conducted on mice and on patients very well due to the similarities of the development and course of cancer. Cell lines established from the primary cancer cells are a convenient tool for the fast and efficient screenings of new therapeutic approaches. Currently, many canine cancer cell lines are available, including those arising from type B and type T leukemias and lymphomas, however up to date no canine natural killer (NK) cell line was characterized. NK cells can kill cancer and viral-infected cells without prior immunization which is recently used for designing immunotherapeutic approaches. The aim of this project was to characterize phenotypically and functionally new cell line arising from a canine cancer which was initially evaluated as a NK-type.

Experiments included in this thesis proved that a new cell line CNK-89 displays the phenotype of NK cells: the presence of CD5, CD8, CD45, CD56, NKp46 and CD79a proteins as well as the transcripts for CD56, NKG2D, NKp30, NKp44, NKp46 and perforin genes. Functionally, CNK-89 cells showed cytotoxicity against canine B-type leukemia/lymphoma cells. Priming of CNK-89 cells with interleukins IL-12 and IL-18 for 48 hours increased their cytotoxic properties and this effect was still visible after 7 days from interleukins removal.

The characteristics of CNK-89 cells performed in this project can contribute to the development of the research focused on canine immunotherapies which in turn may be beneficial to the therapies for human cancers.