Cancer is one of the major causes of death worldwide and its treatment remains to be very challenging. Conventional chemotherapy may cause many severe side effects - the serious problem of intravenous systemic chemotherapy is the unspecific targeting to the tumor and difficulties to achieve therapeutic levels of drug within or adjacent to the tumor. Biodegradable polymeric micelles have emerged as one of the most promising platforms for targeted and controlled anticancer drug delivery due to their excellent biocompatibility, prolonged circulation time, enhanced accumulation in tumor, and *in vivo* degradability. According to the most recent recommendations, future nanomedicine should be focused mainly on active targeting of nanocarriers based on ligand-receptor recognition, which may show better efficacy than passive targeting in human cancer therapy. Therefore, the aim of the project is to obtain dual-targeted biodegradable micelles from block polymer for delivery of anticancer drugs. **Combining two targeting ligands may improve the selectivity and uptake of the nanomedicine by specific tumor cells and provide the possibility to target different cells, which are involved in the development of the tumor or cells that possess two kinds of receptors on the surface.** It has been reported that the cells overexpressing the receptors for folate or vitamin B12, also overexpress receptors for biotin.

In the frame of this project biodegradable micelles will be obtained with various kinds of block polymers functionalized with folic acid and biotin. The micelles will be loaded with one or two active agents (docetaxel and resveratrol) for combined therapy. Drug loading properties and release kinetics will be studied. Morphology of micelles will be observed using TEM and cryo-TEM. Confocal microscopy and flow cytometry will be used to evaluate cell internalization of the micelles. Finally, the anticancer properties of the developed nanocarriers will be tested under *in vitro* and *in vivo* conditions.

The developed micelles would be significant improvement of cancer therapy. Increasing functionality of nanocarriers with two kinds of molecular targeting agents should enable delivery of the drugs specifically to tumors and reduce their accumulation in normal tissues, thus improving the therapeutic index.