

## **VEGF-TARGETED LIPOSOMAL NANOCARRIERS FOR DRUG DELIVERY TO BRAIN TUMORS**

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### **Abstract**

Conventional therapies are not effective in case of glioblastoma multiforme because of the rapid progression, intense infiltrative growth with high resistance and less penetration activity for drugs. New approach in the tumor treatment could be site-directed delivery of therapeutic agents based on monoclonal antibodies against VEGF to brain tumors. The aim of the study was to evaluate prospects of using monoclonal antibodies against VEGF for targeted delivery of liposomes to brain tumor. In the present study we synthesized PEGylated liposomes conjugated with monoclonal anti-VEGF antibodies. VEGF-targeted liposomes had a narrow particle size distribution and high dispersion stability. Affinity of conjugated anti-VEGF was 70% of initial. We have developed anti-VEGF liposomes which were highly specific for VEGF-positive tumors cells in vitro and in vivo. Experiments on intracranial rat C6 model showed that anti-VEGF liposomes highly specific accumulated in malignant tumor and were taken up by glioma cells. Thus, the highly specific targeting antibodies can significantly increase the efficiency of delivery and distribution nanocarriers in tumors, which overexpress VEGF.

**Keywords:** Scanning thermal microscopy, molecular dynamics, nanoscale, heat transfer

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