

Glioblastoma multiforme is a malignant primary brain tumour, with very poor survival rate. Treatment strategies of gliomas involves combined chemotherapy - and radiotherapy with surgical resection of tumour tissue. Standard glioma therapy does not significantly increase survival rate and also have limitation because of its side effect. The innovative approach of glioma treatment therapy is analysis of level of microRNAs in cancer cells. Glioblastoma cells have a significantly increased expression or suppression level of selected microRNAs comparing to the healthy brain tissue. Determining the differences in the levels of microRNAs in glioblastoma cells, can be used in targeted therapy to regulate normal levels of microRNA and eliminate cancer cells. The milestone is to provide a microRNA sequence, as unchanged structure, directly inside into cancer cell forced by nanomaterials. Gold, graphene oxide and reduced graphene oxide, are characterized by low toxicity, but also allow these nano-delivery system to deliver a substance - mikroRNA directly to the tumor cells. Nanoplatfoms as a carriers for forced mikroRNA delivery, deregulated level of microRNA expression in glioma cells and cause activation of cell death by apoptosis. Furthermore, nanoplatfoms linked with microRNAs are able to inhibit the processes of unlimited proliferation of tumour cells by inhibition of PI3K / AKT pathway. The obtained results can explain the role of level of microRNAs in cancer cells, and the ability to use nanoplatfom linked with microRNA against glioblastoma multiforme.