

## **Abstract**

Anti-tumor treatment involves several therapeutic approaches. One of them is chemotherapy with low-molecular-weight cytostatic drugs, whose disadvantage is the systemic manifestation of cytostatic effects even in healthy tissue. Nevertheless, at the end of the last century, a new concept of high molecular weight polymer nanomaterials with minimized the side effects of treatment was introduced. The binding of the drug to the polymeric nanomaterial makes it possible to improve the biodistribution of the drug in the body and thereby reduce its toxicity, while often leading to a significant increase in anti-tumor activity. The application of the high-molecular-weight polymer nanomaterials and their drug conjugates in treatment utilizes the differences between healthy and tumor tissue. One of the important difference is increased production of matrix metalloproteinases enzymes in the tumor microenvironment, which is mainly used to tumor site-controlled release of polymer-bound drug.

**Keywords:** polymer nanomaterial, matrix metalloproteinase, release of the drug, penetration, EPR effect