

## Abstract

Cancer is among the leading causes of death worldwide. While some types of cancer became almost entirely curable, majority of malignant tumors are still potentially deadly diseases due to unsensitivity of tumors to conventional chemotherapy or diversity of cancer cells within the tumor and subsequent development of resistance. The underlying mechanism of action of conventional antitumor drugs is mostly related to cell division. DNA damage, inhibition of DNA synthesis and repair or disrupted formation of mitotic spindle are the most common mechanisms. However, it implies that most of the drugs are cytotoxic for rapidly dividing cells in general which results in variety of undesirable side effects for patients. Search for novel anticancer drugs targeting cancer cells more selectively has been point of interest of researchers for decades. Hundreds of new potential anticancer drugs are being described every year, some possessing so far unrecognized mechanisms of action. Process called drug repurposing examines drugs that have already been approved for clinical use in other than oncology field and results into discovering of interesting "novel" anticancer agents. Another general trend is represented by shift towards development of targeted therapy which is slowly replacing traditional cytotoxic chemotherapy.

**Keywords:** chemotherapy, cytostatics, cancer, inhibition of proliferation, novel drugs